




**Validation report form for renewal of crediting period for
CDM project activities
(Version 03.0)**

Complete this form in accordance with the instructions attached at the end of this form.

BASIC INFORMATION

Title and UNFCCC reference number of the project activity	5 MW Solar PV Power Project at NTPC Faridabad UNFCCC ref. No- 9964
Number and duration of the next crediting period	02 01/06/2021 to 31/05/2028
Version number of the validation report	02
Completion date of the validation report	09/03/2021
Version number of PDD to which this report applies	06
Project participants	M/s NTPC LIMITED
Host Party	India
Applied methodologies and standardized baselines	AMS I.D Version 18.0 "Grid connected renewable electricity generation" Selected standardized baseline: N/A
Mandatory sectoral scopes	Sectoral scope : 1- Energy industries (renewable - / non-renewable sources)
Conditional sectoral scopes, if applicable	NA
Estimated amount of annual average GHG emission reductions or GHG removals by sinks in the next crediting period	6,287 tCO ₂ e per annum
Name and UNFCCC reference number of the DOE	Earthood Services Private Limited UNFCCC ref.No- E-0066
Name, position and signature of the approver of the validation report	 Dr. Kaviraj Singh Managing Director

SECTION A. Executive summary

Earthood Services Private Limited (ESPL) has been contracted by M/s NTPC LIMITED to conduct the validation for renewal of crediting period of the project “5 MW Solar PV Power Project at NTPC Faridabad” (UNFCCC Ref. No. 9964), against CDM Project Standard for project activities Version 02.0/08/.

The project activity involves installation of 5 MW Solar Photo Voltaic (PV) Power Project at the Jajru village, Faridabad in the state of Haryana. The power generated by the project will be replacing the equivalent amount of electricity from the Indian Grid system of India, which is dominated by fossil fuel-based grid connected power plants.

The project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 6,287 tCO₂e per year, thereon displacing 6,675.4447 MWh/year amount of electricity from the generation-mix of power plants connected to the Indian electricity grid. Total estimated GHG emission reductions for the chosen 7-year renewable crediting period will be 44,010 tCO₂e.

Scope of Validation

The scope of the services provided by Earthood Services Private Limited for the project is to perform validation of the renewable of crediting period for the project activity. The scope of validation is to assess the claims and assumptions made in the revised project design document (PDD) against the UNFCCC criteria, including but not limited to, CDM PS/8/, CDM VVS/7/, applied methodology/10/ and other relevant rules and requirements established for CDM project activities.

Validation Process

The validation process is undertaken by validation team that involves the following:

- the desk review of documents and evidences submitted by the project participant in context of the reference CDM rules and guidelines issued by CDM EB,
- undertaking telephonic interview with the representative of the project participant,
- reporting audit findings with respect to clarifications and non-conformities and the closure of the findings, as appropriate and
- preparing a draft validation report for renewable of crediting period complying with the CDM requirements

An independent Technical Review team reviews the validation report prepared by validation team. The final validation report that is accepted by Technical Reviewer is then approved on behalf of Earthood Services Private Limited and processed further as per CDM procedures.

Conclusion

The review of the revised PDD, supporting documentation and subsequent follow-up actions (interviews) has provided Earthood with sufficient evidence to determine the fulfilment of stated criteria.

Earthood is of the opinion that the project activity “5 MW Solar PV Power Project at NTPC Faridabad (UNFCCC ref. No- 9964)” as described in the final PDD/ 2.1 / version 06 dated 25/02/2021 meets all relevant requirements of CDM, meets host country criteria and has correctly applied methodology AMS I.D (version 18.0)/10/. Therefore, the project is being recommended to CDM EB for its renewable of crediting period.

SECTION B. Validation team, technical reviewer and approver**B.1. Validation team member**

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk review	On-site inspection	Interview(s)	Verification findings
1.	Team Leader and Local Expert	EI	Soni	Ravi Kant	Central Office	Y	NA	Y	Y
2.	Verifier and Meth Expert	EI	Soni	Ravi Kant	Central Office	Y	NA	Y	Y
3	Technical Expert	EI	Soni	Ravi Kant	Central Office	Y	NA	Y	Y

B.2. Technical reviewer and approver of the validation report for RCP

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical Reviewer	IR	Garg	Shreya	Central Office
2.	Expert to TR	IR	Garg	Shreya	Central Office
3.	Approver	IR	Singh	Kaviraj	Central Office

SECTION C. Means of validation**C.1. Desk/document review**

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The validation for the renewal of crediting period is performed primarily as a document review of the project design document version (final) 06 dated 25/02/2021. The cross checks between information provided in the revised CDM PDD and information from sources other than those used, if available, the team's sectoral or local expertise and, if necessary, independent background investigations. The details of the documentation reviewed during the validation are provided under Appendix 3 of this report.

C.2. On-site inspection

On-site inspection has not been done for validation of renewal crediting period. In accordance with the paragraph 30 of CDM VVS for PAs version 02.0, it is mandatory for the DOE to conduct an on-site inspection at validation for the proposed CDM project activity if:

- (a) Its estimated annual average of greenhouse gas (GHG) emission reductions or net anthropogenic GHG removals is more than 100,000 tCO₂ eq; or
- (b) There is pre-project information that is relevant to the requirements for registration of the project activity and may not be traceable after the registration.

The estimated annual average emission reductions for the project activity are 6,287 tCO₂ and the project activity is already registered, hence both the cases (a&b) are not applicable for the project activity, hence site visit has not been conducted. In line with the guidelines provided under paragraph 31 of CDM VVS for PAs version 02.0, alternative means are used and justified that they are sufficient for the purpose of validation.

The source documents/alternative means of validation referred by the assessment team to validate the particular aspect of RCP validation are as follows.

1. The project activity is registered under CDM (UNFCCC ref.No- 9964). The project has undergone CDM verification for the monitoring period from 01/06/2014 – 31/08/2017. The information regarding the project implementation, actual operations and a review of the monitoring system were verified through on-site inspection on 13/11/2017 by the DOE (LGA Technological Center, S.A. (Applus+ Certification)/06 /. As per the section 3.1 of the verification report/06 / for the monitoring period (01/06/2014 – 31/08/2017), the verifying DOE has confirmed that the implementation and actual operation of project activity was in compliance with the registered PDD. Therefore, it is considered that project implementation would have not changed materially, since then.
2. In order to confirm the project implementation, the assessment team has verified the, latest INTER - OFFICE MEMO/16/, commissioning certificate/14/ and power purchase agreement/15/ signed by the project proponent with state utility for the project activity and concluded that the capacity of project, lifetime, location, monitoring system, data recording and calibration responsibility is consistent with the same mentioned in the revised PDD/02/.
3. Telephonic interview of project participant representative is done and the latest photographs/videos of the equipment's/24/ installed at project site (indicating the name plate details) are checked by the assessment team and the details found consistent with the revised PDD.

Duration of on-site inspection: NA				
No.	Activity performed on-site	Site location	Date	Team member
1.	Not applicable	-	-	-
...	-	-	-	-

C.3. Interviews

The site visit for the project location is not conducted by the assessment team, however telephonic interview was conducted and the following stakeholders were interviewed.

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Singh	Mr. A.N Shrivastav	DGM (M/s NTPC LIMITED)	28/01/2021	Eligibility of project for RCP validation, Ownership of project activity	Ravi Kant Soni
2.	Meena	Mr. Kapil	Manager(RE ENGG)	28/01/2021	Project implementation,	Ravi Kant Soni

No.	Interviewee			Date	Subject	Team member
			(M/s NTPC LIMITED)		applicability of methodology, calculation of EF, Monitoring and calibration procedure	

C.4. Sampling approach

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Not Applicable

C.5. Clarification requests (CLs), corrective action requests (CARs) and forward action requests (FARs) raised

Area of validation findings	No. of CL	No. of CAR	No. of FAR
Compliance with PDD form	-	-	-
Application and selection of methodologies and standardized baselines	-	-	-
Validity of original baseline or its update	-	CAR #1	-
Estimated emission reductions or net anthropogenic removals		CAR #2	-
Validity of monitoring plan	-	-	-
Crediting period		-	-
Project participants	-	-	-
Post-registration changes	-	-	-
Others (please specify)	CL #1 (Missing documents)	-	FAR #1
Total	01	02	01

SECTION D. Validation findings

D.1. Compliance with PDD form

Means of validation	The project participants used a later version of the PDD form/11/ for the revised PDD than the version of the PDD form of the registered PDD. By means of checking updated PDD with the latest applicable and available PDD template form, version 11.0, the DOE can confirm that the information transferred to the later version of the PDD form is materially the same as that in the registered PDD besides those changes highlighted and assessed under this report.
Findings	No non-conformity was observed in this regard. Therefore, no finding was raised.
Conclusion	The updated PDD is in line with the latest applicable PDD form/11/.

D.2. Application and selection of methodologies and standardized baselines

Means of validation	Through document review and telephonic interview, the assessment team reassessed the applicability of baseline, monitoring methodology and standardized baseline in the methodology based on the knowledge of the project from the initial validation, subsequent verifications and the confirmation from the PP. The project was originally registered based on methodology AMS I.D. version 17. The updated PDD applies methodology AMS I.D. version 18.0. This is appropriate because the methodology AMS I.D. version 18.0 is of its latest approved version of methodology applied in the original PDD and is valid at the time of submission of the revised PDD for the renewal of the crediting period; hence it meets the condition that for renewal of the crediting period, the methodology shall not be changed.
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Following tools referred to by the methodology are also applied:

- Tool to calculate the emission factor for an electricity system – Version 07.0.0, EB 100 annex 4/13/
- Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period." Version 03.0.1, EB 66 annex 47 /12/

The methodology and the applied tools are valid as of the finalization of the validation report. The title, reference as well as version number is correctly provided in revised PDD/2/ for the renewal of the crediting period. The applicability of the baseline and monitoring methodology is justified in the revised PDD for the renewal of the crediting period. All applicability conditions are completely and correctly included in the revised PDD and the same are demonstrated below:

Sr. No	Criteria	Means of validation	Conclusion
1	This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass: (a) Supplying electricity to a national or a regional grid; or (b) Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling.	Project activity is Greenfield solar power project, supplying electricity to national grid. This is verified thorough the PPA /15/, commissioning certificate/14/.	Criteria (a) fulfilled
2	As per Appendix table 1 of AMS.I D version 18 is applicable for following project types: a. Project supplies electricity to a national/regional grid b. Project supplies electricity to an identified consumer facility via national/regional grid (through a contractual arrangement such as wheeling)	The electricity generated by the project being supplied to national grid. This is verified through the PPA /15/.	Criteria (a) fulfilled
3	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); or (d) Involve a rehabilitation of (an) existing plants(s)/unit(s); or (e) Involve a replacement of (an) existing plant (s).	Project activity is Greenfield solar power project. This is verified thorough the commissioning certificate/14/ and PPA /15/.	Criteria (a) fulfilled
4	Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to	Project activity is Greenfield solar	Criteria are not relevant to the

		<p>apply this methodology:</p> <ul style="list-style-type: none"> • The project activity is implemented in an existing reservoir with no change in the volume of reservoir; • 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; • 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. 	power project/05/.	project activity.
	5	<p>If the new unit 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 new unit co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW.</p>	<p>This project activity includes only the renewable generation component and capacity is 5 MW.</p> <p>This is verified thorough the commissioning certificate/14/ and PPA /15/.</p>	Criteria are not relevant to the project activity.
	6	<p>Combined heat and power (co-generation) systems are not eligible under this category.</p>	<p>Project activity is Greenfield solar power project.</p> <p>The project activity is not a co-generation system</p>	A criterion is not relevant to the project activity.
	7	<p>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.</p>	<p>Project activity doesn't involve capacity addition /15/.</p>	Criteria are not relevant to the project activity.

8	In the case of retrofit, rehabilitation or replacement, to qualify as a small-scale project, the total output of the retrofitted, rehabilitated or replacement unit shall not exceed the limit of 15 MW.	This condition is not applicable to the project activity.	Criteria are not relevant to the project activity.
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.	This condition is not applicable to the project activity.	Criteria are not relevant to the project activity.
10	In case biomass is sourced from dedicated plantations, the applicability criteria in the tool "Project emissions from cultivation of biomass" shall apply.	This condition is not applicable to the project activity.	Criteria are not relevant to the project activity.

The applied methodology refers to latest available versions of the following tools;

Tool to calculate the emission factor for an electricity system/13/:

The revised PDD refers and correctly applies the latest version of tool to calculate the emission factor for an electricity system, version 07.0/13/. Also, the PP has referred the CEA Baseline CO2 Emission Database version 15, dated December 2019 /19/ which was the latest available database at the time of PDD submission for RCP validation of the project activity. This version of the database (ver. 15) is designed to be consistent with version 07.0 of the "Tool to calculate the emission factor for an electricity system" published by the CDM Executive Board.

The location of the project activity is in the state of Haryana, in India. As per CEA Baseline CO2 Emission Database/19 /, the state of Haryana comes under the Indian regional electricity grid in India, the geographic and system boundaries of which are clearly identified; information on the characteristics of the grid is available. Thus, the tool is applicable for the project activity.

Methodological Tool 21: Demonstration of additionality of small-scale project activities, v 13.1:

This tool is not required to be applied during validation of renewal crediting period. As per the paragraph 280 of CDM PS for PAs, the PP is not required to reassess the additionality of the project activity nor update the section of the PDD relating to additionality.

The assessment team has validated the documentation referred to in the PDD and

	<p>verified the documentation content for verifying the justification of the applicability of the methodology and confirmed that the documentation referred to in the PDD is correctly quoted and interpreted. The assessment team has also crosschecked the information provided in the PDD with the documentation other than from the PDD based on the local and sectoral knowledge of the assessment team.</p> <p>Thus, all the applicability conditions of the applied methodology are confirmed in line with paragraphs 68 of VVS for PAs version 02.0. Based on the above discussion, the validation team confirms that the proposed project activity meets all the applicability conditions and all other stipulations of the selected methodology AMS I.D Version 18.0.</p>
Findings	No non-conformability was observed during assessment for validation of crediting period. Therefore, no finding was raised.
Conclusion	The assessment team confirms that the project meets each of the applicability conditions of the methodology; it also meets all the other stipulations and limitations mentioned in the other sections of the applied methodology/10/; the continued validity of the baseline is assessed and the emissions which would be resulted from the baseline scenario are updated at the start of the 2 nd crediting period, as per the requirements of AMS I.D, version 18.0. Therefore, CDM requirements stipulated under VVS for PAs Version 02.0 §§404(b) is satisfied completely.

D.3. Validity of original baseline or its update

Means of validation	<p>In accordance with VVS for PAs version 02.0 §§404, The assessment team reviewed the updated PDD/02/, and evaluated whether project participants 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.</p> <p>Since the data and parameters used for determining the original baseline that was determined ex ante (and not monitored during the crediting period) are no longer valid, hence the assessment team has verified, whether the PP updated such data and parameters in accordance with the step 1.4 of the Methodological Tool “Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period”.</p> <p>The assessment team confirms that there have been no changes in the relevant national and/or sectoral regulations on implementation of projects to generate electricity from solar energy and sell to NEWNE grid (which is now a part of Integrated Indian grid) since the previous crediting period.</p> <p>On the other hand, the baseline scenario for installation of solar PV projects to generate electricity and sell to state/national grid is still valid according to methodology AMS I.D, version 18.0</p> <p>As demonstrated in the registered PDD, the baseline scenario for the Project is continuous operation of the existing power plants to meet electricity demand. As per AMS-I.D., version 18.0 §§ 19, “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 baseline for the Project remains the same as that in the revised PDD.</p> <p>The baseline for the project activity will remain the same as described in the registered PDD.</p> <p>In the absence of project activity, the same amount of electricity would otherwise have been generated by the operation of some grid connected fossil fuel based</p>
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power plants or newly added generation sources into NEWNE grid (Now part of Indian grid). A verifiable description of the baseline scenario has been included in the final revised PDD.

The information presented in the PDD has been validated by an initial document review of all data. Further confirmation has been made based on the telephonic interviews and a review of information from similar projects and/or technologies. The sources referenced in the revised PDD have been quoted correctly. The information was verified against credible sources, such as the following:

- Commissioning Certificates /14/
- Power Purchase Agreement with state electricity board /15/
- CEA guidelines (CO2 Baseline Database for the Indian Power Sector, Version 15 /19/

The steps from the Methodological Tool “Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period “as per CDM VVS for PAs version 02.0 were applied to assess the validity of the current baseline and/or to update the baseline at the renewal of a crediting period:

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

In accordance with the guidance provided under paragraph 284 of CDM PS for PAs version 02.0, “*The project participants shall assess and incorporate the impact of national and/or sectoral policies and circumstances, existing at the time of requesting renewal of crediting period, on the current baseline GHG emissions, without reassessing the baseline scenario*”.

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

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

Following relevant mandatory national & sectoral policies in state of Haryana are prevailing:

- The Electricity Act, 2003 /21/
- National Electricity Policy, 2005 /22/
- Tariff Policy, 2006 /23/

The assessment has confirmed that the current baseline as described in the registered PDD is in compliance with the relevant mandatory national & sectoral policies as listed above, there are no national or local laws or regulations that entail the installation of solar PV project in Haryana.

There are no relevant mandatory national and/or sectoral policies forbidding equivalent electricity generated by the project activity that is supplied to the Indian grid which is current baseline of the project activity. Therefore, baseline scenario remains unchanged and is in compliance with all the relevant mandatory national and/or sectoral policies.

Step 1.2: Assess the impact of circumstances

The assessment team has confirmed that the baseline scenario as identified at the time of validation of the project activity was 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.

Thus, assessment team has confirmed that the project activity is a Greenfield solar PV plant and a voluntary investment which intends to replace equivalent amount of electricity at grid to renewable source. The investment does not lead to any continued baseline practice for the PP within their scope whereas the continued operation of the project activity would continue to replace equivalent amount of electricity at grid.

Therefore, the same baseline as identified in the previous crediting period is still valid for the project.

Furthermore, the assessment team has verified that the PP has considered the latest available CO₂ Baseline Database (CEA database, version 15)/19/ at the time of requesting renewal of the crediting period for establishing the baseline emission factor, which itself considered all the new circumstances. Hence, the new circumstances do not have an impact on the baseline emission.

As per the requirement of the sub-step, it has been assessed that there were no impact of circumstances existing at the time of requesting renewal of the crediting period on the current baseline scenarios.

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

The lifetime of the project activity is 25 years /14/; hence baseline equipment (Solar PV modules) continuously used for electricity generation during next crediting period without any investment. The assessment team able to conclude that an investment is not the most likely scenario for the renewal crediting period under consideration.

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

The grid emission factor calculated ex-ante for the 1st crediting period needs to be updated, as per the valid and latest version of "Tool to calculate the emission factor for an electricity system" /13/, the most recent information available should be used to update the emission factor for the 2nd crediting period. Hence, the emission factor is updated accordingly and appropriately described in the following section D.4 of this report.

Conclusion on step 1:

The assessment team confirm that the current baseline is still valid as per methodology AMS-I.D., version 18.0. However, the grid emission factor needs to be updated for the subsequent crediting period.

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

Step 2.1: Update the current baseline

As discussed above the baseline scenario of the project activity is still sustained in the second crediting period, hence reassessment of baseline scenario is not required. The baseline emission factor is calculated as per the latest version of CEA CO₂ baseline database version 15 /19/ available at the time of initial PDD submission for renewal of crediting period.

The approved baseline methodology has been correctly applied to identify a complete list of realistic and credible baseline scenarios, and the identified baseline scenario most reasonably represents that would occur in the absence of the proposed CDM project activity. The assessment team considers the baseline scenario is realistic and credible.

	<p>In regard to requirement of VVS for PAs version 02.0.§§83, the assessment team is able to confirm the following statements:</p> <ul style="list-style-type: none"> a) All the assumptions and data used by the project participants are listed in the PDD, including their references and sources; b) All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the PDD; c) Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence, and can be deemed reasonable; d) Relevant national and/or sectoral policies and circumstances are considered and listed in the PDD; e) The approved baseline methodology has been correctly applied to identify the most reasonable baseline scenario, and the identified baseline scenario reasonably represents what would occur in the absence of the proposed CDM project activity. <p>Step 2.2: Update the data and parameters</p> <p>The baseline emission factor will be updated ex-ante, as described in section D.4 of this report. The parameters described under step 1.4 were appropriately updated considering the latest version of methodology AMS I.D., version 18.0.</p>
Findings	CAR #1 was raised and resolved.
Conclusion	<p>The assessment team confirms that there have been no changes in the relevant national and/or sectoral regulations on installation of solar PV project for exporting electricity to power grid since the previous crediting period.</p> <p>On the other hand, the baseline scenario for the project remains the same as that in the registered PDD as “Electricity delivered to state grid by the Project that would otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid”.</p> <p>The assessment of continued validity of the current baseline scenario and update of the baseline emissions are complied with Methodological Tool “Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period version 03.0.1” as per VVS for PAs version 02.0.</p> <p>In line with CDM-PS version 02.0/08/ §§283, 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 GHG emission reductions that would have resulted from that scenario.</p>

D.4. Estimated emission reductions or net anthropogenic removals

Means of validation	<p>The calculation of the emissions reductions exactly follows the procedures described in the methodology AMS I.D, version 18.0 /10/ and relevant tool, e.g., the “Tool to calculate the emission factor for an electricity system”/13/.</p> <p>The assessment team has assessed the calculation of project emissions, baseline emissions, leakage emissions and emission reductions. Corresponding calculations have been carried out based on calculation spreadsheet. The consistency of the parameters and equations presented in revised PDD, as well as calculation spreadsheet etc., has been compared with the information and requirements presented in the methodology and respective tools.</p> <p>The assumptions and data used to determine the emission reductions are listed in</p>
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the revised PDD and all the sources have been checked. Based on the information reviewed it is confirmed that the sources used are correctly quoted and interpreted in the PDD.

The values presented in the PDD are considered reasonable based on the documentation and references reviewed and the results of the interviews.

The estimation of the emission reductions is considered correct as the calculations have been reproduced by the assessment team with the attainment of the same results.

The algorithms for the determination of the baseline, project, and leakage are discussed in the following sections.

The GHG emission reductions are calculated applying the updated version of methodology AMS I.D version 18.0

Baseline Emissions:

As per the paragraph 22 of the methodology AMS I.D version 18.0:

“Baseline emissions include only CO₂ emissions from electricity generation in power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants”. The baseline emissions are to be calculated as follows:

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

Where:

BE_y = Baseline emissions in year y (t CO₂)

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

$EF_{grid,y}$ = 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” (tCO₂/MWh)

$EG_{BL,y} = EG_{PJ, facility,y}$ (for Greenfield projects paragraph 26 AMS I.D version 18.0)

Where,

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

The baseline emissions equivalent to tCO₂ due to the project have been calculated as the product of the net electricity supplied to the grid and the grid emission factor as per the combined margin approach described in the ‘Tool to calculate the emission factor for an electricity system’ version 07.0. The power produced will be exported to the Indian grid. Hence, the grid emission factor and the corresponding baseline emissions have been calculated for the Indian grid.

The emission factor has been calculated as per Methodological Tool 07: Tool to calculate the emission factor for an electricity system” v 07.0 as recommended by the applied methodology AMS I.D v 18.0.

“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’.”

It is verified that the latest available version for "Tool to calculate the emission factor for an electricity system" is version 07.0 /13/ and the PP has correctly referred to the same in the section B.6.1 of the final revised PDD /02/ to determine the baseline grid emission factor.

The PP has considered Option (a) of Para 17 to calculate the grid emission factor as per the Methodological Tool 07 "Tool to calculate the emission factor for an electricity system" version 07.0 since data is available from an official source.

In accordance with step 1 of Tool; the project participant has identified the electricity system is based on the option 1 (under the para 17 of the tool) which is unified Indian Grid system. Therefore, the Indian grid has been correctly identified for the calculation of electricity emission factor, as the project displaces electrical energy from Indian grid, as per the CEA database version 15/19/.

It is to be noted that CEA database version 15 was published in December 2019 and it was the most recent information available version at the time of first submission of the PDD to DoE, hence referred for determination of emission factor for the second crediting period.

It can be confirmed that the determination of grid emission factor in compliance with the "Tool to calculate the emission factor for an electricity system" (version 07.0.0), which 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". Thus, the Project Participant has considered the national grid that is delineated by the Central Electricity Authority of India which was found to be correct and acceptable.

The values of OM and BM have been determined ex-ante as per the CEA CO₂ baseline database version 15 published on December 2019, which is published by the Ministry of Power, Government of India/21/. In step 2 of the Tool, the PP has considered option I "Only grid power plants are included in the calculation."

Further under step 3, the PP has used the simple operating margin calculation method to determine the operating margin (OM). Validation Team has verified from the CEA CO₂ baseline database/19/ 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. Therefore, it is satisfied the condition stipulated under Para 40 (a) of Methodological Tool 07, Version 07, hence the simple OM method (Option a in paragraph 38) has been used as low cost/must run resources constitute less than 50% of total grid generation.

As per Tool para 40 -42; The PP has chosen ex-ante option (option a of Para 42 of Methodological Tool 07, version 07) for calculation of Simple OM emission factor using a 3-year generation-weighted average/13/, based on the most recent data available at the time of submission of the PDD.

In step 4, the PP has calculated the simple operating margin as per Option B as stipulated under Para 47 (b) of Methodological Tool 07, version 07. The PP has considered an average of the latest available three years i.e., 2016-17, 2017-18 and 2018-19 for calculation of simple OM emission factor. The value for weighted average operating margin has been validated and used as 0.9622 tCO₂/MWh /19/.

In step 5; the Build margin for the Indian grid is considered as 0.8811 tCO₂/MWh

as per “Tool to calculate the emission factor for an electricity system” (Version 07.0, EB 100, Annex 4) para 72 (i.e., as per the provision of the section 6.5 of the tool) where the Option 1 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/data from CEA CO₂ Baseline Database version 15, dated December 2019 and is fixed for the entire crediting period.

In step 6, the combined margin (CM) emission factor is calculated based on option (a) i.e., weighted average CM as accordance to Tool. The weighted average combined margin has been calculated by the PP, considering the 75% weighted for operating margin and 25% for build margin; this is in accordance with the tool which states that for “*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*”.

The combined margin emission factor for the project activity arrives as 0.9419 tCO₂/MWh. The PP has provided the detailed calculation for the same in the ER calculation sheet. The baseline emission factor for the electricity system has been calculated on ex-ante basis and will remain fixed for the entire second crediting period.

In accordance with the Methodological tool 07: Tool to calculate the emission factor for an electricity system Version 07.0.0 /13/, “*Regional or national average default values can be used for calculation of CO₂ Emission Factor if values are reliable and documented in regional or national energy statistics / energy balances*”.

The Central Electricity Authority of India (CEA) is a statutory organisation and the sole authority for publication of such data in India and hence, accepted. The assessment team verified that the parameters are determined ex-ante:

Parameter	Value	Source	Means of Validation
EF _{grid,OM,y} Operating Margin of the Indian Grid	0.9622 tCO ₂ /MWh	Baseline Carbon Dioxide Emission Database Version 15 from the Central Electricity Authority (CEA), Ministry of Power, Government of India /19/	Verified value against default value listed in CEA database version 15 dated December 2019 /19/.
EF _{grid,BM,y} Build Margin of the Indian Grid	0.8811 tCO ₂ /MWh	Baseline Carbon Dioxide Emission Database Version 15 from the Central Electricity Authority (CEA), Ministry of Power, Government of India /19/.	Verified value against default value listed in CEA database version 15 dated December 2019 /19/.
EF _{grid,CO2,y} Combined margin CO ₂ emission factor for the	0.9419 tCO ₂ /MWh	Baseline Carbon Dioxide Emission Database Version 15 from the	Verified value against default value listed in CEA database

project electricity system in year y		Central Electricity Authority (CEA), Ministry of Power, Government of India /19/.	version 19 dated December 2019 /19/.
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The OM has been determined as the average of the previous 3 years' values (2016-17, 2017-18 and 2018-19) mentioned in the CEA database. The value of BM (for year 2018-19) has been sourced directly from the CEA database/19/. The combined margin emission factor has been arrived at by applying weights of 75% for OM and 25% from BM, as specified in the methodological tool 07, version 07.0.0, §§ 86 (b) for second crediting period for solar project.

The baseline emissions for the project activity have been calculated as per AMS I.D Version 18.0 §§22. The baseline emissions for the project activity have been calculated to be 6,287 tCO₂ per year.

The assessment team confirms that all data sources and assumptions are appropriate and calculations are correct, applicable to the CDM project activity and will result in a conservative estimate of the emission reductions.

Estimation of Project Emissions (PE_y):
As per the paragraph 39 of applied methodology AMS I.D version 18, for the most renewable energy project activities, PE_y = 0. Except for:

- 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."

Any of the conditions mentioned is not applicable for the project activity, hence PE_y = 0.

Estimation of Leakage Emissions (LE_y):
As per the paragraph 42 of AMS I.D version 18, The only renewable projects that consider leakage are biomass sourced from dedicated plantations, which is not the case of the project activity, thus leakage emissions are zero (LE_y = 0).

Emission reductions:
Emission reductions are calculated as follows:

$$ER_y = BE_y - LE_y - PE_y,$$
where

$$ER_y : \text{Emission reductions in year } y \text{ (tCO}_2\text{)}$$

$$BE_y : \text{Baseline Emissions in year } y \text{ (tCO}_2\text{)}$$

$$LE_y : \text{Project emissions in year } y \text{ (tCO}_2\text{)}$$

$$PE_y : \text{Leakage emissions in year } y \text{ (tCO}_2\text{)}$$

As discussed above PE_y=0 and LE_y=0 , hence

$$ER_y = BE_y - 0 - 0$$

$$ER_y = BE_y$$

$$ER_y = EG_{PJ, facility, y} \times EF_{grid, y}$$

Value of EG_{PJ, facility, y} (EG_{BL, y}) is estimated to be 6,675.44 MWh per year. Hence baseline emission reductions as follows:

$$BE_y = 6675.44 \text{ MWh} \times 0.9419 \text{ tCO}_2/\text{MWh}$$

$$= 6,287 \text{ tCO}_2$$

$$ER_y = BE_y = 6,287 \text{ tCO}_2 \text{ per year for the selected 7 years crediting period.}$$
Total emission reductions during the Second crediting period are estimated to be 44,010 tCO₂.

Note: The PP has applied the degradation factor as 1% from first year of second renewable crediting period (8th operational year) till 4th year (11th operational year), as stated in the registered PDD (p.19) that degradation factor of 1% should be

	<p>applied from 2nd year of project operation till 11th year.</p> <p>Degradation factor from 5th year (12th operational year) of second crediting period is applied as 0.85%, that is in accordance with the technical specifications provided by the manufacturer & technology supplied/18/. As outlined under section 4 clause 4.1.1 (i) of the document /18/, <i>“Each solar PV modules used in the solar PV plant/system must be warranted by the manufacturer for their output peak watt capacity, which should not be less than 90% of its rated power at the end of 10 years and 80% of its rated power at the end of 25 years from the completion of the trial run.”</i></p> <p>In order to achieve the warranted output peak watt capacity, the maximum degradation factor 0.85% can be applied from 12th year to 25th year of project operation, hence the estimation of annual generation for second crediting period is found to be appropriate.</p>
Findings	CAR #2 was raised and resolved.
Conclusion	<p>The assessment team has assessed the calculations of project emissions, baseline emissions, leakage emissions and emission reductions. Corresponding calculations have been carried out based on calculation spreadsheets. The parameters and equations presented in the PDD, as well as other applicable documents, have been compared with the information and requirements presented in the methodology and respective tools. The assessment team has compared all the formulae to ensure consistency between those presented in the calculation files and in the PDD, methodology, and tools. This is found to be correct.</p> <p>In general, the assessment team is able to confirm the following:</p> <ul style="list-style-type: none"> ➤ All assumptions and data used by the project participants are listed in the PDD and/or supporting documents, including their references and sources; ➤ All documentation used by the project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PDD; ➤ All values used in the PDD are considered reasonable in the context of the proposed CDM project activity; ➤ The baseline methodology has been applied correctly to calculate project emissions, baseline emissions, and leakage emissions; ➤ All estimates of the baseline, project and leakage emissions can be replicated using the data and parameter values provided in the PDD. <p>The assessment team confirms that the baseline, the estimated GHG emission reductions in the final updated PDD comply with the applicable requirements in the section 7.5.5 PS for PAs version 02.0, and the valid version of the methodology applicable to the registered CDM project activity.</p>

D.5. Validity of monitoring plan

Means of validation	<p>The assessment team reviewed the updated PDD, checked whether the PDD update the monitoring plan section in accordance with all relevant applicable requirements in the CDM PS for PAs. Also verified whether the PDD list all data and parameters to be monitored, as required by the applied methodology and whether the monitoring plan explained the operational and management structure, responsibilities and institutional arrangement for data collection/archiving, QA/QC procedures.</p> <p>The project applies the approved consolidated monitoring methodology AMS-I. D version 18.0 for grid-connected electricity generation from renewable sources.</p> <p>The monitoring parameter relevant to this project activity described in the applied methodology is:</p> <p>$EG_{PJ, facility, y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh)</p> <p>For project $EG_{PJ, facility, y} = EG_{BL, y}$</p>
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	<p>During the telephonic conversation with PPs representative and through the review of latest INTER OFFCIE MEMO ,PPA & actual photographs of project site, it is verified that, the parameter ($EG_{BL,y}$) is directly monitored through the dedicated meters (main, check and standby meter) installed by the state utility NTPC at each out going feeder at pooling substation .INTER OFFICE MEMO is being taken jointly by the officials of NTPC Ltd and project participant's representative and accordingly INTER OFFICE MEMO Report is being prepared. The monitoring methodology applies consistently the choice of the option selected for monitoring of baseline emissions. The monitoring plan provide procedures for the collection and archiving of all relevant data necessary for estimation or measuring the emission reductions within the project boundary during the crediting period. The assessment team has also verified the actual photographs of monitoring equipment's (indicating technical specifications), video recording of online SCADA system and the CDM verification records/06/ and it is confirmed that registered monitoring plan as described in the revised PDD was implemented and followed during previous crediting period/06/ and in accordance with the applied methodology.</p> <p>All the relevant data records will be kept by the Project owner during the crediting period and electronically archived for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later. Data management and quality control measures have been confirmed through desk review of the project documents/02/ and interview with the PPs representatives/24/. Assessment team confirmed that project is not involve any sampling plan in monitoring of project activity parameters hence section B.7.2 in the revised PDD is not applicable for this project activity.</p> <p><u>Implementation of the monitoring plan:</u></p> <p>An organizational structure is provided in section B.7.3 of the revised PDD. The functions such as data collection, aggregation, verification, calculation, archiving, as well as the maintenance of equipment's etc. have been defined. Quality assurance and quality control procedures for recording, maintaining and data archiving etc. will be ensured according to CDM EB rules.</p> <p>The calibration of the meter will be implemented as per national standard. An emergency treatment process has been defined in PDD when the meter is in malfunction. Data management and quality control system are quoted in PDD. The monitoring staffs will be trained based on the training program described in the revised PDD. The procedures described in the revised PDD have been recognized by the assessment team through document review and telephonic interviews with the relevant personnel.</p> <p>It is confirmed that remaining aspects of monitoring plan like monitoring procedure, metering system, calibration procedure, data recording, monitoring role and responsibility and QA/QC procedure as mentioned in the registered PDD, will remain same during the 2nd crediting period.</p> <p>The assessment team is able to confirm that the proposed monitoring plan is feasible within the project design.</p>
Findings	No non-conformability was observed during assessment for validation of crediting period. Therefore, no finding was raised.
Conclusion	<p>The assessment team confirms that the monitoring plan contains all necessary parameters which have been clearly described in revised PDD /02/ and that the means of monitoring described in the plan complies with the requirements of the methodology.</p> <p>In conclusion, based on document review and stakeholder interview, together</p>

	<p>based on local and sectoral expertise, the assessment team confirms that:</p> <ul style="list-style-type: none"> ➤ The monitoring plan of the revised PDD is in compliance with the requirements of the methodology AMS I.D version 18.0. ➤ Monitoring arrangements described in the monitoring plan of the revised PDD are feasible within the project design. ➤ The PP's ability to implement the monitoring plan can be guaranteed. The monitoring plan of the revised PDD is complied with the registered PDD. <p>The assessment team is of the opinion that the project participants are able to implement the monitoring plan and the emission reductions achieved can be reported ex-post for verification.</p>
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D.6. Crediting period

Means of validation	<p>The assessment team checked whether the updated PDD indicated that the next crediting period commences on the day immediately after the expiration of the current crediting period by means of a document review, use of official sources and interviews with relevant personnel during remote audit.</p> <p>The first 7 years renewable crediting period was from 01/06/2014 to 31/05/2021; the Project Participant is applying for a 2nd renewable crediting period, which is 7 years (01/06/2021 – 31/05/2028).</p>
Findings	No non-conformability was observed during assessment for validation of crediting period. Therefore, no finding was raised.
Conclusion	The assessment team confirmed that the notification regarding to the request for renewal of Crediting period of the project meets the requirements of paragraph 274 CDM PCP for PAs version 02.0 and the next crediting period of the registered CDM project activity commences on the day immediately after the expiration of the current crediting period. Therefore, CDM requirements stipulated under VVS for PAs Version 02.0 §§412() is satisfied completely.

D.7. Project participants

Means of validation	<p>The assessment team checked whether the names of the project participant included in the updated PDD are consistent with the names of the project participants in the registered PDD by means of desk review and interviews of PPs representative.</p> <p>The project participant in registered PDD is M/s NTPC LIMITED (project owner). The project participant in updated PDD is same as in the registered PDD and indicated in latest version of the MoC statement, dated 06/08/2020 available at project UNFCCC web page/05/.</p>
Findings	No non-conformability was observed during assessment of details of Project Participant. Therefore, no finding was raised.
Conclusion	The assessment team confirms that the project participants in the updated PDD are consistent with the actual situation. Therefore, CDM requirements stipulated under VVS for PAs Version 02.0 §§412 a (vi) is satisfied completely.

D.8. Post-registration changes

Type of post-registration changes (PRCs)	Confirmation (Y/N)	Validation report for PRCs	
		Version	Completion date
Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents ¹	N	-	-
Corrections	N	-	-
Change to the start date of the crediting period	N	-	-
Inclusion of a monitoring plan	N	-	-
Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents	N	-	-
Changes to the project design	N	-	-
Changes specific to afforestation and reforestation project activities	N	-	-

SECTION E. Internal quality control

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The draft validation report for renewal of crediting period prepared by the validation team was reviewed by an independent technical review team to confirm if the internal procedures established and implemented by ESPL were duly complied with and such opinion/conclusion is reached in an objective manner that complies with the applicable CDM rules/requirements. The technical review team is collectively required to possess the technical expertise of all the technical area/sectoral scope the project activity relates to. All team members of the technical review team were independent of the validation team.

The technical review process may accept or reject the validation opinion or raise additional findings in which case these must be resolved before requesting for registration. The technical review process is recorded in the internal documents of ESPL and the additional findings gets included in the report.

The final report approved by the technical reviewer is authorized by the Managing Director and issued to PP and/or submitted for request for renewal, as appropriate on behalf of ESPL.

¹ Other standards, methodologies, methodological tools and guidelines (to be) applied in accordance with the applied(selected) methodologies are collectively referred to as the other (applied) methodological regulatory documents).

SECTION F. Validation opinion

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Earthood Services Private Limited (ESPL) has performed a validation of renewal of crediting period of the “5 MW Solar PV Power Project at NTPC Faridabad” (Ref. No. 9964). The validation was performed on the basis of the updated sections of the PDD relating to the baseline, estimated emission reductions and the monitoring plan using the most recent version of baseline and monitoring methodology applicable for the project activity.

The final validation opinion was finalized in accordance with the CDM VVS for PAs version 02.0 and the CDM PS for PAs version 02.0 including the assessment of:

- a) An impact of new relevant national and/or sectoral policies and circumstances on the baseline taking into account relevant guidance from the Board with regard to renewal of the crediting period at the time of requesting renewal of crediting period;
- b) The correctness of the application of an approved baseline methodology for the determination of the continued validity of the baseline or its update, and the estimation of emission reductions for the applicable crediting period.

The review of the project design documentation and the subsequent follow-up interviews have provided ESPL with sufficient evidence to determine the validity of the original baseline and/or its update through an assessment. The project correctly applies the latest baseline and monitoring methodology AMS I.D “Grid connected renewable electricity generation”, version 18.0.

Given that the project is implemented as designed and the underlying assumptions do not change, the project is likely to achieve the estimated amount of annual emission reductions of 6,287 tCO₂e and a total estimated emission reduction of 44,010 tCO₂e over the 2nd renewable crediting period as specified within the final revised PDD/2.1/.

The monitoring plan provides for the monitoring of the project’s emission reductions. The monitoring arrangements described in the monitoring plan are feasible within the project design. It’s ESPL opinion that the project participants are able to implement the monitoring plan and the emission reductions achieved can be reported ex-post for verification.

In summary, it is ESPL opinion that the project activity “5 MW Solar PV Power Project at NTPC Faridabad” (Ref. No. 9964) in India, as described in the PDD, version 06 dated 25/02/2021 meets all relevant UNFCCC requirements for the renewal of the crediting period. Hence ESPL submitted the request for renewal of the crediting period of the project activity.

Appendix 1. Abbreviations

Abbreviations	Full texts
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM PCP	Clean Development Mechanism Project Cycle Procedure
CDM PS	Clean Development Mechanism Project Standard
CDM VVS	Clean Development Mechanism Validation and Verification Standard
EB	Executive Board
EF	Emission Factor
EPC	Engineering, Procurement and Construction
ER	Emission Reductions
CEA	Central Electricity Authority
CER	Certified Emission Reduction
CL	Clarification Request
DOE	Designated Operational Entity
DNA	Designated National Authority
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
GOI	Government of India
IPCC	Intergovernmental Panel on Climate Change
JMR	Joint Meter Reading
MP	Monitoring Plan
MR	Monitoring Report
MWh	Megawatt hour
PDD	Project Design Document
PPA	Power Purchase Agreement
PP	Project Participant
PRC	Post Registration Changes
PS	Project Standard
RMP	Revised Monitoring Plan
RCP	Renewal of Crediting Period
TR	Technical Review
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard
UID	Unique Identification number
UNFCCC	United Nations Framework Convention on Climate Change

Appendix 2. Competence of team members and technical reviewers

Competence Statement			
Name	Ravi Kant Soni		
Country	India		
Education	B. Tech. (Mechanical Engineering) M. Tech. (Energy Management)		
Experience	8 Years +		
Field	Energy and Climate Change		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	AMS-I.D., AMS-I.C., ACM0002		
Local expert	YES (India)		
Financial Expert	No		
Technical Reviewer	No		
TA Expert	YES (TA 1.2)		
Reviewed by	Shreya Garg	Date	04/06/2019
Approved by	Anshika Gupta	Date	04/06/2019

Competence Statement			
Name	Shreya Garg		
Country	India		
Education	M.Sc. (Climate Science & Policy), TERI University		
Experience	6 Years +		
Field	Climate Change		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	AMS.I.A., AMS.I.C., AMS.I.D., AMS.I.F., AMS.II.D., AMS.II.G., AMS.II.J., AMS.III.AV., ACM0002, ACM0012		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert	YES (TA 1.2, TA 3.1)		
Reviewed by	Abhishek Mahawar	Date	01/03/2018
Approved by	Ashok Gautam	Date	01/03/2018

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
Basic Documents (Monitoring Report, Project Design Documents, Previous Verification Reports)				
1	PP	Registered PDD Version 04	Dated 09/04/2018	PP
2	PP	Revised PDD, version 05	Dated 07/01/2021	PP
2.1	PP	Revised PDD, version 06(final)	Dated 25/02/2021	PP
3	PP	Emission reduction calculation sheet, Version 01	Dated 07/01/2021	PP
3.1	PP	Emission reduction calculation sheet, Version 02	Dated 17/02/2021	PP
4	URS Verification Private Ltd	Validation report (Report No: CCMS/0140)	Dated 23/05/2014	Other: UNFCCC
5	UNFCCC	CDM Project activity view page "5 MW Solar PV Power Project at NTPC Faridabad" https://cdm.unfccc.int/Projects/DB/URSCert1400838548.0/view	-	Other: UNFCCC
6	LGAI Technological Center, S.A. (Applus+ Certification)	Verification report for monitoring period 01/06/2014 – 31/08/2017.	Dated 11/07/2018	Other: UNFCCC
7	UNFCCC website	Clean Development Mechanism Validation and Verification Standard for Project Activity (CDM-VVS for PA), version 02.0 as per EB 101, Annex 2	Dated 29/11/2018	Other: UNFCCC
8	UNFCCC website	CDM Project Standard for Project Activity (CDM-PS for PA), version 02.0 as per EB 101, Annex 1	Dated 29/11/2018	Other: UNFCCC
9	UNFCCC website	CDM Project Cycle Procedure for Project Activity (CDM-PCP for PA), version 02.0 as per EB 101, Annex 16	Dated 29/11/2018	Other: UNFCCC
10	UNFCCC website	AMS-I.D "Grid connected renewable electricity generation", version 18	-	Other: UNFCCC
11	CDM EB	PDD template form	Version 11.0	Other: UNFCCC
12	CDM EB	Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period (EB 66, Annex 47)	V 03.0.1 Dated 02/02/2012	Other: UNFCCC
13	CDM EB	Tool to calculate the emission factor for an electricity system	Version 7.0	Other: UNFCCC
14	NTPC Ltd	Commissioning Certificate	Dated 30/03/2013	PP
15	NTPC Ltd	Power purchase Agreement	Dated 14/07/2011	PP
16	NTPC Ltd	Latest Monthly INTER OFFICE MEMO	-	PP
17	PP	Latest Monthly electricity sales invoices towards the grid authority	-	PP

18	NTPC Ltd	Technical specification of main equipment's (Document No-CS-5704-004-9	-	PP
19	CEA	CEA CO ₂ Baseline Database for the Indian Power Sector Version 15	December 2019	Other
20	CEA	Central Electricity Authority (Installation and Operation of Meters) Regulations - Notified on 17/03/2006 No.502/70/CEA/DP&D - AmendmentsNotifiedon26/06/2010No.502/6/2009/DP&D/D-I (http://www.cea.nic.in/reports/regulation/meter_reg.pdf)	17/03/2006	Other: CEA
21	Ministry of Power, GOI	The Electricity Act, 2003 (http://www.cercind.gov.in/Act-with-amendment.pdf)	Dated 26/05/2003	Other
22	Ministry of Power, GOI	National Electricity Policy,2005 (https://powermin.nic.in/en/content/national-electricity-policy)	Dated 12/02/2005	Other
23	Ministry of Power, GOI	Tariff Policy, 2006 http://www.oriarc.org/documents/National%20Electricity%20Tariff%20Policy.pdf	January 2006	Other
24	PP	Telephonic con-call with PPs representatives on 28/01/2021. Latest photographs of SCADA system, Solar PV modules, and energy meters installed at site.	-	PP

Appendix 4. Clarification requests, corrective action requests and forward action requests

Table 1. CL from this validation

CL ID	01	Section no.	C.1	Date : 03/02/2021
Description of CL				
Please submit the following documents: <ul style="list-style-type: none">• Power Purchase Agreement signed with state utility• Commissioning certificates of WTGs• Latest “Inter office memo” & invoice issued for the project activity Since the second crediting period is being started after 31/12/2020, hence please submit the signed risk acknowledgement and acceptance form.				
Project participant response				Date : 25/02/2021
The following documents are submitted herewith along with the revised set of documents: <ul style="list-style-type: none">• Power Purchase Agreement signed with state utility• Commissioning certificate• December 2020 - “Inter office memo” & invoice issued for the project activity The signed risk acknowledgement and acceptance form is being submitted along with this submission.				
Documentation provided by project participant				
Power Purchase Agreement signed with state utility Commissioning certificate December - 2020 Inter office memo & invoice issued for the project activity Risk acknowledgement and acceptance form.				
DOE assessment				Date: 10/03/2021
The PP has submitted the requested documents, found satisfactory, hence accepted. CL #1 is closed.				

Table 2. CAR from this validation

CAR ID	01	Section no.	D.3	Date	03/02/2021
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Description of CAR	
As per clause 284 of Project standard, “The project participants shall assess and incorporate the impact of national and/or sectoral policies and circumstances, existing at the time of requesting renewal of crediting period on the current baseline GHG emissions, without reassessing the baseline scenario”. Please clarify why the information’s regarding the impact of national and/or sectoral policies and circumstances, existing at the time of requesting renewal of crediting period, on the current baseline GHG emissions are not provided in the PDD.	
Project participant response	Date : 25/02/2021
The relevant national and/or sectoral policies, regulations and circumstances have not been revised since the information described in the registered PDD. However, the amendments on the Electricity Act made on 2007 have been updated in the revised PDD.	
Documentation provided by project participant	
Revised Renewal PDD Version 6.0	
DOE assessment	Date: 10/03/2021
The PP has updated the PDD including the information’s regarding the impact of national and/or sectoral policies and circumstances, existing at the time of requesting renewal of crediting period, on the current baseline GHG emissions, found to be appropriate, hence accepted CAR#1 is Closed.	

CAR ID	02	Section no.	D.4	Date : 03/02/2021
Description of CAR				
As per the registered PDD, module degradation factor as 10% for first ten years is to be applied from second year, however in the revised ER sheet degradation factor is applied as 1% for the entire crediting period (second). Please clarify the appropriateness of the approach.				
Project participant response				Date : 25/02/2021
ER sheet and PDD has been revised to consider the degradation factor as 1% from second year onwards till 11 th year of operation and from 12 th year it becomes 0.85 % till the end of life of the project” in line with the manufacturer technical specification.				
Documentation provided by project participant				
Manufacture technical specification Revised Renewal ER sheet Revised Renewal PDD Version 6.0				
DOE assessment				Date: 10/03/2021
The PP has applied the degradation factor as 1% from first year of second renewable crediting period (8 th operational year) till 4th year (11 th operational year), as stated in the registered PDD (p.19) that degradation factor of 1% should be applied from 2nd year of project operation till 11th year. Degradation factor from 5th year (12 th operational year) of second crediting period is applied as 0.85%, that is in accordance with the technical specifications provided by the manufacturer & technology supplied, hence accepted. CAR #2 is closed.				

Table 3. FAR from this validation

FAR ID	01	Section no.	D	Date : 03/02/2021
Description of FAR				
The PP is requested to apply any GWP values adopted by the CMP for any ERs achieved on or after 01/01/2021; and update their project design document in accordance with any requirements of the CMP guidance after their decision-making at CMP 16.				
Project participant response				Date : DD/MM/YYYY
-				
Documentation provided by project participant				
-				
DOE assessment				Date: DD/MM/YYYY

- - - - -

Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
03.0	31 May 2019	Revision to: <ul style="list-style-type: none">• Ensure consistency with version 02.0 of the “CDM validation and verification standard for project activities” (CDM-EB93-A05-STAN) and version 02.0 of the “CDM project cycle procedure for project activities” (CDM-EB93-A06-PROC);• Make editorial improvements.
02.0	31 October 2017	Revision to align with the requirements of the “CDM validation and verification standard for project activities” (version 01.0).
01.0	23 March 2015	Initial publication.
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