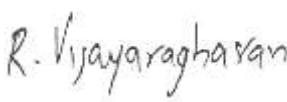





**Validation report form for renewal of crediting period for  
CDM project activities  
(Version 02.0)**

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

**BASIC INFORMATION**

<b>Title and UNFCCC reference number of the project activity</b>	The Converging World Renewable Energy India Wind Farm Phase 1 (UNFCCC no: 4243)
<b>Number and duration of the next crediting period</b>	Second crediting period; Duration 7 years
<b>Version number of the validation report for RCP</b>	Version 1.0
<b>Completion date of the validation report for RCP</b>	23 <sup>rd</sup> January 2019
<b>Version number of PDD to which this report applies</b>	Version 2.0 dated 22 <sup>nd</sup> January 2019
<b>Project participants</b>	CW Renewable Energy (India) Private Limited The Converging World
<b>Host Party</b>	India
<b>Applied methodologies and standardized baselines</b>	Grid connected renewable electricity generation AMS-I.D. ver. 18 No standardised baseline involved
<b>Mandatory sectoral scopes linked to the applied methodologies</b>	Sector scope 1 : Energy industries (renewable - / non-renewable sources)
<b>Conditional sectoral scopes linked to the applied methodologies</b>	Not applicable
<b>Estimated amount of annual average GHG emission reductions or GHG removals by sinks in the next crediting period</b>	7,953 tCO <sub>2</sub> /year
<b>Name and UNFCCC reference number of the DOE</b>	EPIC Sustainability Services Private Limited (E-0062) Report no: ESSPL/CDM/2018/205
<b>Name, position and signature of the approver of the validation report for RCP</b>	R. Vijayaraghavan Lead Auditor  K. Sudheendra Director and Head of operations 

**SECTION A. Executive summary**

&gt;&gt;

The Converging World (hereinafter Project participant or PP) had engaged EPIC to perform validation of renewal of crediting period from 5<sup>th</sup> April 2018 to 4<sup>th</sup> April 2025 (Second crediting period) for the project activity titled "The Converging World Renewable Energy India Wind Farm Phase 1" (UNFCCC no: 4243) (hereinafter called "the project"). The project activity involves implementation of 2 wind turbines of 1.5 MW capacity each in Tamilnadu state, India. The electricity thus generated replacing the National grid (baseline).

The purpose of the validation is to assess the validity of the original baseline and whether the emission reductions are in line with the valid version of the applicable methodology and, applicable standardized baseline if any. The validation consists of checking the project's baseline, the monitoring plan, and the project's compliance with relevant UNFCCC and host country criteria in order to confirm that the project design, baseline, monitoring plan and calculation of emission reductions as documented is sound and reasonable and meets the stated requirements and identified criteria.

This report summarizes the findings of the validation of the project, performed on the basis of UNFCCC criteria for CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to the Kyoto Protocol, the CDM rules and modalities as agreed in the Bonn Agreement, the Marrakech Accords and the CDM Executive Board's decisions. EPIC has employed a risk-based approach in the validation based on the recommendations in the Validation and Verification Standard for project activities version 2.0<sup>1/</sup> (hereinafter referred to as VVS-PA), focusing on validity of applied methodology, baseline, monitoring plan and emission reduction calculations as documented in the updated PDD version 2.0<sup>2/</sup>. The validation is not meant to provide any consulting towards the client. However, the stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

**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/document review	On-site inspection	Interview(s)	Validation findings
1.	Lead Auditor (Team Leader)	IR	Radhamadha van	Vijayaraghavan	Central office of EPIC, Bengaluru	Yes	No	Yes	Yes

**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	D	Siddaramu	Central office of EPIC, Bengaluru
2.	Approver	IR	Krishnachar	Sudheendra	Central office of EPIC, Bengaluru

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

As a first step, the validation team has reviewed the PDD version 1.0<sup>/2/</sup>, registered PDD, initial validation report<sup>/2/</sup>, monitoring reports<sup>/2/</sup> and its corresponding verification reports<sup>/2/</sup> and additional background documents submitted by the project participant. Based on the review, the validation team has issued corrective action requests/ clarification requests. As a result of these findings, the PP has revised the PDD version 2.0<sup>/2/</sup> (hereinafter referred to as updated PDD). The resolution of the findings by the validation is presented in Appendix 4 of this report.

**C.2. On-site inspection**

Duration of on-site inspection: not conducted				
No.	Activity performed on-site	Site location	Date	Team member
1.	<p>The validation requirements for the purpose of validating the renewal of crediting period are specified in Para 400 to 412 of VVS.</p> <p>Note: All information provided in the PDD version 1.0<sup>/2/</sup> was verified during the desk-review phase against credible sources. The PDD applicable for the first crediting period and the PDD version 1.0<sup>/2/</sup> apply the same methodology and applicable tools and include identical project design information. The validation team was able to confirm that all related information transferred to the PDD version 2.0<sup>/2/</sup> is materially the same as that of the PDD applicable for the first crediting period. Details included in the PDD version 2.0<sup>/2/</sup> about project design, construction and implementation phases, operation, meeting of applicability conditions for the applied methodology and applicable tools, GHG calculation approaches and monitoring practice for the project activity were not changed when compared to the PDD applicable for the first crediting period. The baseline scenario information/description was also sufficiently demonstrated not to be changed based on assessment of documented evidences (as assessed in Section D.3). The annual CER for this project is less than 100,000 tCO<sub>2</sub>e per year. By taking into account the above-mentioned aspects, the validation team decided that conducting a physical on-site visit as part of validation assessment was not necessary. This is in conformity with the provisions of paragraphs 402 and 30 &amp; 31 of VVS-PA (version 02.0). The interviews conducted by the validation team were by means of telephone communications, with details about such performed interviews presented in the Section C.3.</p>	-	-	-

**C.3. Interviews**

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	-	Jawahar	Converging world	10 <sup>th</sup> January 2019	As above	Full team

#### C.4. Sampling approach

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No sampling was used.

#### 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	0	0	0
Application and selection of methodologies and standardized baselines	0	0	0
Validity of original baseline or its update	0	1 (CAR 1)	0
Estimated emission reductions or net anthropogenic removals	0	1 (CAR 2)	0
Validity of monitoring plan	0	1 (CAR 3)	0
Crediting period	0	0	0
Project participants	0	0	0
Post-registration changes	0	0	0
Others (please specify)	0	0	0
<b>Total</b>	<b>0</b>	<b>3</b>	<b>0</b>

### SECTION D. Validation findings

#### D.1. Compliance with PDD form

<b>Means of validation</b>	As per the paragraph 403 of VVS-PA <sup>/1/</sup> v1.0, the validation team has checked if PP used a later valid version of the PDD form for the updated PDD. The validation team is to determine whether information transferred to the later valid version of the PDD form is materially the same as that in the registered PDD. The validation team has determined whether PP has updated the PDD updating applicability section as per the latest version of the applied methodology <sup>/3/</sup> , baseline section, calculation of emission reduction section, monitoring section and other relevant sections of the PDD in accordance with the requirements as per Project standard for project activities version 2.0 <sup>/1/</sup> (hereinafter referred to as Project Standard).
<b>Findings</b>	No CAR/CL/FAR raised in this section.
<b>Conclusion</b>	The project design document uses the latest version of the PDD template <sup>/4/</sup> version 10.1 (CDM-PDD-FORM) which is currently applicable and hence acceptable. All relevant sections of the PDD is revised as per the instructions provided in the PDD template.

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

<b>Means of validation</b>	As per paragraph 400 of VVS-PA, the validation team has checked whether PP have used the valid version of the approved methodology <sup>/3/</sup> (AMS.I.D v 18.0) (hereinafter referred to as applied meth) applied in the original PDD and have demonstrated the project to be in line with the applicable conditions specified therein.
<b>Findings</b>	No CAR/CL/FAR raised in this section.
<b>Conclusion</b>	The validation team has concluded that PP has used the valid version of the applied meth and the project to be in line with the applicable conditions specified therein. Refer Appendix 5 of this report for more details.

#### D.3. Validity of original baseline or its update

<b>Means of validation</b>	As per Paragraph 404 of VVS, the validation team assessed the validity of the original baseline or its update through an 1) assessment of impact of new relevant national and/or sectoral policies and circumstances on the original baseline at the
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	time of requesting renewal of crediting period 2) assessment of correctness of the application of the approved methodology and 3) assessment of estimation of emission reductions for the applicable crediting period. The validation has checked whether PP assessed the GHG emission reductions that would have resulted from the baseline scenario.
<b>Findings</b>	No CAR/CL/FAR raised in this section.
<b>Conclusion</b>	Refer Appendix 6 of this report for details.

#### D.4. Estimated emission reductions or net anthropogenic removals

<b>Means of validation</b>	As per the Paragraph 412 a) clause iv of VVS-PA, the validation team has assessed the approach of PP in calculating the estimated GHG emission reductions comply with the applied methodology and other requirements of Project Standard.
<b>Findings</b>	No CAR/CL/FAR raised in this section.
<b>Conclusion</b>	Refer Appendix 7 of this report for details.

#### D.5. Validity of monitoring plan

<b>Means of validation</b>	As per the Paragraph 400 of VVS-PA, the validation team has assessed whether the approach and validity of the monitoring plan indicated in the updated PDD comply with the requirements of the applied methodology and other requirements of Project Standard.
<b>Findings</b>	No CAR/CL/FAR raised in this section.
<b>Conclusion</b>	Refer Appendix 7 of this report for details.

#### D.6. Crediting period

<b>Means of validation</b>	As per the Paragraph 412a clause v of VVS, the validation team has assessed whether the next crediting period of the registered CDM project activity commences on the day immediately after the expiration of the current crediting period and in accordance with paragraph 270 of Project Cycle Procedure version 2.0 <sup>1/</sup> (hereinafter referred to as PCP).
<b>Findings</b>	No CAR/CL/FAR raised in this section.
<b>Conclusion</b>	The validation team has reviewed the notification form <sup>5/</sup> sent by the PP to the CDM Secretariat. The validation team has concluded that the next renewable credit period can start immediately after the expiry of the current crediting period.

#### D.7. Project participants

<b>Means of validation</b>	As per paragraph 412a clause vi of VVS, the validation team has checked whether the names of the PP in the updated PDD are consistent with that in the registered PDD/ project webpage.
<b>Findings</b>	No CAR/CL/FAR raised in this section.
<b>Conclusion</b>	The validation team, after reviewing the updated PDD and project webpage <sup>12/</sup> , has concluded that the names are correctly specified in the updated PDD.

#### 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 or applied standardized baselines	N	NA	NA
Corrections	N	NA	NA
Change to the start date of the crediting period of the project activity	N	NA	NA
Inclusion of a monitoring plan	N	NA	NA
Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other applied standards or tools	N	NA	NA
Changes to the project design	N	NA	NA
Changes specific to afforestation and reforestation project activities	N	NA	NA

**SECTION E. Internal quality control**

&gt;&gt;

After the completion of assessment by the validation team all the relevant documentation is submitted to a qualified, Independent Technical reviewer as part of EPIC' internal quality control system. A Technical reviewer team is appointed to review the draft final validation report (Draft FVR). The comments made by the Technical reviewer team are taken into consideration and incorporated in the final FVR. The technical reviewer team assesses whether all the reporting requirements have been fulfilled and whether all the issues raised were closed satisfactorily by the validation team with justification. The technical review process can also raise issues in this regard which is resolved further by the verification team to the satisfaction of the technical reviewer. The technical reviewer team either accepts or rejects the report made by the validation team. The final report (after resolutions of all findings) is then submitted to the Head-operations for review and approval.

**SECTION F. Validation opinion**

&gt;&gt;

EPIC performed the validation of the renewal of crediting period of the CDM project "The Converging World Renewable Energy India Wind Farm Phase 1" UNFCCC no: 4243. The validation was performed on the basis of the specific criteria as per VVS, PS and PCP and other relevant requirements.

The validation team has concluded that updated PDD uses the valid version of the PDD template and all the necessary instructions are followed in preparing the PDD. The names of the PP are consistent with that specified in the UNFCCC project webpage. The project activity confirms with all the applicable conditions of the valid version of the applied methodology. The baseline and monitoring methodology are applied in accordance with the applicable requirements of PS. The baseline, the estimated GHG emission reductions and the monitoring plan in the updated PDD comply with the applicable requirements in the PS. The next crediting period can commence on the day immediately after the expiration of the current crediting period.

In summary, it is opinion of EPIC that the project meets all relevant UNFCCC requirements for the CDM and is eligible for renewal of crediting period from 5<sup>th</sup> April 2018 to 4<sup>th</sup> April 2025.

Project title:	The Converging World Renewable Energy India Wind Farm Phase 1
UNFCCC ref no:	4243
Crediting period requested for renewal:	5 <sup>th</sup> April 2018 to 4 <sup>th</sup> April 2025 (second crediting period)
Updated PDD	Version 2.0, dated 22 <sup>nd</sup> January 2019
Sector and applied methodology	Sector: 1. Energy industries (renewable - / non-renewable sources)  Grid connected renewable electricity generation AMS-I.D. ver. 18
Estimated CER	7,953 tCO <sub>2</sub> e/year

## Appendix 1. Abbreviations

Abbreviations	Full texts
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
CO <sub>2</sub>	Carbon dioxide
CO <sub>2</sub> e	Carbon dioxide equivalent
CL	Clarification Request
FAR	Forward Action Request
GHG	Green House Gases
GWP	Global Warming Potential
IR	Internal Resource
PDD	Project Design Document
PP	Project Participant
QA/QC	Quality Assurance/Quality Control
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard

## Appendix 2. Competence of team members and technical reviewers

**Mr. R. Vijayaraghavan** holds BE in Mechanical Engineering, M. Tech in Energy Conservation and Management and MBA in Technology Management. He is certified as Energy Auditor by Bureau of Energy Efficiency (BEE), Government of India. He has 12 years of working experience in energy sector including validation / verification of hundred CDM and VCS/GS projects and has undergone extensive training on CDM validation and verification and has been qualified as Lead Auditor with Sectoral Scope 1 and 13.

**Dr. D. Siddaramu** holds a M.Sc., Ph.D in Environmental Science, with over 16 years of experience. A qualified Clean Development Mechanism (CDM) Lead Auditor, successfully registered more than 30 projects with United Nations Framework Convention on Climate Change (UNFCCC) and Verified Carbon Standard registry (VCS) registry; well versed with both National and International legal regime. He has hands-on experience in Environmental Impact Assessment (EIA) studies pertaining to different Ecosystem; monitoring, collection & analyzing environmental samples and conducting socio-economic surveys; data analysis; conducting CDM/VCS audits, preparation of validation protocols and reports. He is qualified for Sector 1 based on CDM accreditation requirements and qualified lead auditor as per EPIC accreditation.

## Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	UNFCCC	Validation and verification standard version 2.0 <a href="https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20181221092105818/Reg_stan06v02.pdf">https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20181221092105818/Reg_stan06v02.pdf</a>  Project Standard for Project activities version 2.0 <a href="https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-">https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-</a>	1	Publicly available

		<a href="https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20181221092046526/Reg_stan04v02.pdf">20181221092046526/Reg_stan04v02.pdf</a> Project Cycle Procedure for Project activities version 2.0 <a href="https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-2018122109204737/PC_proc03v02.pdf">https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-2018122109204737/PC_proc03v02.pdf</a>		
2	PP/DOE	Registered PDD dated 22 <sup>nd</sup> September 2010, corresponding validation report, Monitoring report and its verification report, <a href="https://cdm.unfccc.int/Projects/DB/SGS-UKL1292426197.66/view">https://cdm.unfccc.int/Projects/DB/SGS-UKL1292426197.66/view</a> PDD version 2.0 dated 22 <sup>nd</sup> January 2019	2	Publicly available
3	UNFCCC	AMS.I. D ver. 18.0 - Grid connected renewable electricity generation <a href="https://cdm.unfccc.int/methodologies/DB/W3TINZ7KKWCK7L8WTFXQQOFQ4SBK">https://cdm.unfccc.int/methodologies/DB/W3TINZ7KKWCK7L8WTFXQQOFQ4SBK</a>	3	Publicly available
4	UNFCCC	PDD template version 10.1 <a href="https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20170628103246832/PDD-Form05.pdf">https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20170628103246832/PDD-Form05.pdf</a>	4	Publicly available
5	PP	Notification letter	5	PP
6	PP	Commissioning certificates and power purchase agreements	6	PP
7	UNFCCC	Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period version 3.0.1 <a href="https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-11-v3.0.1.pdf">https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-11-v3.0.1.pdf</a>	7	Publicly available
8	PP	Electrical line diagram	8	PP
9	UNFCCC	Tool to calculate the emission factor for an electricity system version 7.0 <a href="https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf">https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf</a>	9	Publicly available
10	CEA	CEA database v13.0 <a href="http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver13.pdf">http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver13.pdf</a>	10	Publicly available

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

Table 1. CL from this validation

CL ID	xx	Section no.	Date: 17/01/2019
<b>Description of CL</b>			
No CL is raised.			
<b>Project participant response</b>			Date: 22/01/2019
NA			
<b>Documentation provided by project participant</b>			
-			
<b>DOE assessment</b>			Date: 22/01/2019
NA			

Table 2. CAR from this validation

CAR ID	1	Section no.	Date: 17/01/2019
<b>Description of CAR</b>			
Validity of baseline to be demonstrated clearly step by step procedure prescribed by the tool "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period" version 3.0.1. Step 1.1 of the tool is not discussed explicitly in the PDD submitted.			
<b>Project participant response</b>			Date: 22/01/2019
PDD is revised contains all the necessary requirements. Pls. check the email			
<b>Documentation provided by project participant</b>			
Revised PDD			



<b>DOE assessment</b>	<b>Date:</b> 22/01/2019
The validation team reviewed the PDD. Now all the steps are clearly demonstrated including step 1.1 of the tool. Hence closed the issue.	

<b>CAR ID</b>	2	<b>Section no.</b>		<b>Date:</b> 17/01/2019
<b>Description of CAR</b>				
Formula for operating margin is not visible in the CER sheet.				
<b>Project participant response</b>				<b>Date:</b> 22/01/2019
Formula is incorporated in the excel sheet and is submitted herewith				
<b>Documentation provided by project participant</b>				
CER sheet				
<b>DOE assessment</b>				<b>Date:</b> 22/01/2019
The validation team reviewed the CER sheet where formula for OM is correct and valid. Hence accepted the CER sheet.				

<b>CAR ID</b>	3	<b>Section no.</b>		<b>Date:</b> 17/01/2019
<b>Description of CAR</b>				
Electrical line diagram with monitoring parameters is not available in the PDD				
<b>Project participant response</b>				<b>Date:</b> 22/01/2019
Revised the PDD.				
<b>Documentation provided by project participant</b>				
Revised PDD				
<b>DOE assessment</b>				<b>Date:</b> 22/01/2019
The validation team reviewed the PDD and accepted it.				

Table 3. FAR from this validation

<b>FAR ID</b>	xx	<b>Section no.</b>		<b>Date:</b> 17/01/2019
<b>Description of FAR</b>				
No FAR is raised				
<b>Project participant response</b>				<b>Date:</b> 22/01/2019
NA				
<b>Documentation provided by project participant</b>				
-				
<b>DOE assessment</b>				<b>Date:</b> 22/01/2019
NA				

## Appendix 5: Applicable conditions

Applicable conditions	Validation opinion
<p>1.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 (b) Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling.</p>	<p>The validation team has reviewed the commissioning certificate<sup>/6/</sup> and power purchase agreement<sup>/6/</sup> and confirmed that electricity produced from the wind energy (renewable energy source) and is supplied to the national grid. Condition 1a is satisfied.</p>
<p>2.Illustration of respective situations under which each of the methodology (i.e. “AMS-I.D.: Grid connected renewable electricity generation”, “AMS-I.F.: Renewable electricity generation for captive use and mini-grid” and “AMS-I.A.: Electricity generation by the user) applies is included in the appendix (of the applied methodology)</p>	<p>The validation team has reviewed the commissioning certificate<sup>/6/</sup> and power purchase agreement<sup>/6/</sup> and confirmed that electricity produced from the project is supplied to the national grid. Hence AMS.I.D can be applied for this project.</p>
<p>3.This methodology is applicable to project activities that:</p> <p>(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>As per the validated/registered PDD<sup>/2/</sup>, this project is installed in the greenfield where there was no prior power plant existing. The validation team accepted that condition 3a is thus satisfied.</p>
<p>4.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 (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/m<sup>2</sup> (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/m<sup>2</sup>.</p>	<p>The validation team has reviewed the commissioning certificate<sup>/6/</sup> and power purchase agreement<sup>/6/</sup> and confirmed that project is not a hydro power plant.  Condition 4 is not applicable to the project activity.</p>
<p>5. 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>The validation team has reviewed the commissioning certificate<sup>/6/</sup> and confirmed that capacity is 3 MW only.  Condition 5 is satisfied.</p>
<p>6. Combined heat and power (co-generation) systems are not eligible under this category</p>	<p>The validation team has reviewed the commissioning certificate<sup>/6/</sup> and power purchase agreement<sup>/6/</sup> and confirmed that electricity produced from the wind energy. Hence combined heat and power or cogeneration is not involved in this project.  Condition 6 is not applicable to the project.</p>
<p>7. In the case of project activities that involve the capacity addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the</p>	<p>As per the validated/registered PDD, this project is installed in the greenfield where there was no prior power plant existing.  Condition 7 is not applicable to the project.</p>

existing units.	
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 power plant/unit shall not exceed the limit of 15 MW.	As per the validated/registered PDD, this project is installed in the greenfield where there was no prior power plant existing.  Condition 8 is not applicable to the project.
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.	The validation team has reviewed the commissioning certificate <sup>/6/</sup> and power purchase agreement <sup>/6/</sup> and confirmed that electricity produced from the wind energy (renewable energy source).  Condition 9 is not applicable to the project
10. In case biomass is sourced from dedicated plantations, the applicability criteria in the tool "Project emissions from cultivation of biomass" shall apply.	The validation team has reviewed the commissioning certificate <sup>/6/</sup> and power purchase agreement <sup>/6/</sup> and confirmed that electricity produced from the wind energy (renewable energy source). Hence no biomass is involved in the project.  Condition 10 is not applicable to the project
Applicable conditions -Tool to calculate the emission factor for an electricity system v7.0.  11. This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects).	The validation team has reviewed the commissioning certificate <sup>/6/</sup> and power purchase agreement <sup>/6/</sup> and confirmed that electricity produced from the wind energy and is supplied to the national grid replacing grid electricity.  Hence project can apply this tool to estimate the OM, BM and CM.  Condition 11 is satisfied.
12. Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants. In the latter case, two sub-options under the step 2 of the tool are available to the project participants, i.e. option IIa and option IIb. If option IIa is chosen, the conditions specified in "Appendix 1: Procedures related to off-grid power generation" should be met. Namely, the total capacity of off-grid power plants (in MW) should be at least 10 per cent of the total capacity of grid power plants in the electricity system; or the total electricity generation by off-grid power plants (in MWh) should be at least 10 per cent of the total electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity.	PP opted for grid power plants only while estimating emission factor (as validated in Appendix 7 of this report).  Condition 12 is satisfied.
13. In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country.	The validation team has reviewed the commissioning certificate <sup>/6/</sup> and power purchase agreement <sup>/6/</sup> and confirmed that project is located in India which is not an Annex I country.  Condition 13 is satisfied.
14. Under this tool, the value applied to the CO2 emission factor of biofuels is zero.	For wind project, biofuels is not involved.  Hence condition 14 is not applicable.

## Appendix 6: Baseline assessment

Conditions	Validation opinion
<p>Step 1: Assessment of validity of the current baseline for the next crediting period</p> <p>Current baseline as per the previous PDD:</p> <p>Electricity: Electricity would be generated in the National grid (PP would not invest in another power plant but that power would be generated from the electricity grid)</p>	<p>PP undertaken the steps as per the Tool on "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period"<sup>77</sup> version 3.0.1 (hereinafter referred to as baseline validity tool) to evaluate the current baseline scenario. This step involves assessment of validity of the current baseline of the proposed project for the second crediting period as well. As per the previous PDD, the current baseline being electricity would be taken from the grid. This step consists of step 1.1 to step 1.4. The validation of the same is detailed below.</p>
<p>Step 1.1: Assessment of compliance of the current baseline with relevant mandatory national and/ or sectoral policies</p>	<p>As the generation of electricity of 3 MW using wind energy source was a voluntary investment which intends to replace equivalent amount of electricity at the national grid. PP was not bound by any current national requirements to incur this investment. Hence in the absence of this investment does not lead to any continued baseline practice for PP within their scope whereas the continued operation of the project activity would continue to replace equivalent amount of electricity at the grid.</p> <p>The validation team reviewed the Electricity Act, 2003 which enables to development of energy from wind generation, transmission, distribution, trading and use of electricity. There is no national requirement prescribed by the Act to invest in the generation of electricity. The validation team has confirmed that there is no new national rules came into effect after validation of the project (5<sup>th</sup> April 2011) and the existing Act still valid at the time of requesting renewal of the project.</p>
<p>Step 1.2: Assessment of the impact of circumstances on current baseline emissions</p>	<p>The project activity was thus regarded as a voluntary investment which intends to replace equivalent amount of electricity at the national grid from renewable source. PP was not bound to incur this investment; hence absence of project activity (i.e. the investment) does not lead to any continued baseline practice for PP within their scope whereas the continued operation of the project activity would continue to replace equivalent amount of electricity at grid. Hence, the same baseline as identified in the previous crediting period is still valid for the project. Hence the validation team has concluded that assessment of the impact of circumstances on current baseline emissions is not required.</p>
<p>Step 1.3: Assessment of whether the continuation of use of current baseline equipments or an investment is the most likely scenario for the crediting period for which renewal is requested.</p>	<p>As the baseline scenario was the electricity would be generated in the grid, this condition is not applicable.</p>
<p>Step 1.4: Assessment of the validity of the data and parameters</p>	<p>PP has assessed the GHG emission reductions that would have resulted from the baseline scenario. The validation of estimation of emission reductions for the applicable crediting period including the updation of ex-ante parameters which is used for the original baseline emissions is detailed in Appendix 7 of this report. The assessment of the validity of the data and parameters that were only determined at the start of the crediting period and not monitored during the crediting period is also detailed in Appendix 7 of this report.</p>
<p>Step 2: Update the current baseline and the data and parameters</p>	<p>Since the application of Steps 1.1, 1.2 and 1.3 confirmed that the current baseline is still valid for the second crediting</p>

Baseline applicable electricity applicable for this crediting period:	period, then the current baseline can be used for the renewed crediting period as well, and hence step 2 is skipped. However, validation of validity of the data and parameters as per step 1.4 is assessed in Appendix 7 of this report. Based on the above findings, the validation team has concluded that the current baseline holds valid for this crediting period as well and the data and parameters used for baseline emissions to be updated as per the applied methodology.
Current baseline	

## Appendix 7: Emission reduction calculation

Parameters	Validation opinion
Emission reduction of the project ( $ER_y$ )	<p>As per para 43 and equation 9 of the applied methodology<sup>/3/</sup>, emission reductions are calculated as follows.</p> $ER_y = BE_y - PE_y - LE_y$ <p>Where  <math>BE_y</math>-Baseline emissions in a year  <math>PE_y</math>-Project emissions in a year  <math>LE_y</math>-Leakage emissions in a year</p> <p>The validation of the same is detailed below.</p>
Baseline emissions in a year ( $BE_y$ )	<p>As per para 22 and equation 1 of the applied methodology<sup>/3/</sup>, 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.</p> $BE_y = EG_{PJ,y} \times EF_{grid,y}$ <p>Where  <math>EG_{PJ,y}</math> -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  <math>EF_{grid,y}</math> -Combined margin CO2 emission factor for grid connected power generation in year y</p> <p>The validation of the same is detailed below.</p>
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 ( $EG_{PJ,y}$ )	<p>As per para 25 and 26 of the applied methodology<sup>/3/</sup>, as the project is the installation of a greenfield power plant (as demonstrated in appendix 4 of this report),</p> $EG_{PJ,y} = EG_{facility,y}$ <p>Where  <math>EG_{facility,y}</math> -Quantity of net electricity generation supplied by the project plant/unit to the grid in year y</p> <p>The validation of the same is detailed below.</p>
Quantity of net electricity generation supplied by the project plant/unit to the grid in year y ( $EG_{facility,y}$ )	<p>As per the PDD, <math>EG_{facility,y}</math> is calculated as follows.</p> $EG_{facility,y} = EG_{\_Generation, y} - EG_{\_consumption,y}$ <p>Where  <math>EG_{\_Generation, y}</math> - Quantity of electricity supplied to the grid by the project in year (gross)</p> <p><math>EG_{\_consumption,y}</math> - Quantity of electricity imported from the grid by the project in year</p>

	The validation of the same is detailed below.
Quantity of electricity supplied to the grid by the project in year (gross) ( $EG_{\text{Generation},y}$ ) = 8,614 MWh per year  (monitored parameter)	<p>Ex-ante estimation:</p> <p>During validation, this parameter is calculated as follows.  <math>EG_{\text{Generation}, y} = \text{Installed capacity per turbine} \times \text{No of turbines} \times \text{PLF} \times 8760</math></p> <p>Where  Installed capacity per turbine = 1.5 MW (as per the commissioning certificate)  No of wind turbines = 2 (as per the commissioning certificate)</p> <p>PLF = 32.78% (as per the registered PDD)</p> <p>During monitoring in the crediting period:  As per the PDD<sup>2/</sup>, this parameter is metered continuously by bidirectional main meter kept at the TNEB side and recorded every month. The validation team has reviewed the electrical line diagram<sup>8/</sup> and accepted the same as correct. The meters are of 0.5% accuracy. The validation team accepted the robustness of the monitoring plan.</p> <p>QA/QC procedure:  The metered value can be crosschecked with the monthly sale receipts. The main meter is calibrated once in every two years as per industrial practice. Hence accepted.</p>
Quantity of electricity imported from the grid by the project in year ( $EG_{\text{consumption},y}$ ) = 215 MWh per year  (monitored parameter)	<p>Ex-ante estimation:</p> <p>During validation, this parameter is calculated as follows.  <math>EG_{\text{consumption}, y} = \text{Loss} \times EG_{\text{Generation},y}</math></p> <p>Where  Loss = 2.5 % (as per registered PDD)</p> <p>During monitoring in the crediting period:  As per the PDD, this parameter is metered continuously by the same main meter kept at the TNEB side and recorded every month. The validation team has reviewed the electrical line diagram and accepted the same as correct. The meters are of 0.5% accuracy. The validation team accepted the robustness of the monitoring plan.</p> <p>QA/QC procedure:  The metered value can be crosschecked with the monthly sale receipts. The main meter is calibrated once in every two years as per industrial practice. Hence accepted.</p>
Quantity of net electricity generation supplied by the project plant/unit to the grid in year y ( $EG_{\text{facility},y}$ ) = 8,399 MWh per year  (monitored parameter)	<p>As per the PDD, <math>EG_{\text{facility},y}</math> is calculated as follows.  <math>EG_{\text{facility},y} = EG_{\text{Generation}, y} - EG_{\text{consumption},y}</math></p>
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 ( $EG_{P,J,y}$ ) = 8,399 MWh per year  (calculated)	<p>As per para 25 and 26 of the applied methodology, as the project is the installation of a greenfield power plant (as demonstrated in appendix 4 of this report),  <math>EG_{P,J,y} = EG_{\text{facility},y}</math></p>
Combined margin CO2 emission factor for grid connected power generation in year y	<p>As per para 23 of the applied methodology, the emission factor shall be calculated in a transparent and conservative manner as follows:</p>

	<p>(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" <sup>/9/</sup> (version 7.0 being the latest); or</p> <p>(b) The weighted average emissions of the current generation mix.</p> <p>PP has opted for option A. The validation of the same is detailed below.</p>
<p>Step 1 of Tool to calculate the emission factor for an electricity system</p> <p>Relevant electricity system: National Grid of India</p> <p>Source: CEA database v13.0</p>	<p>The validation of the combined margin is calculated using the "Tool to calculate the emission factor for an electricity system" <sup>/9/</sup> version 7.0 (hereinafter referred to as emission factor tool). This is demonstrated as follows.</p> <p>As per CEA database <sup>/10/</sup> v13.0, in order to facilitate adoption of authentic baseline emissions data and also to ensure uniformity in the calculations of CO2 emission reductions by CDM project developers, Central Electricity Authority (CEA) has compiled a database containing the necessary data on CO2 emissions for all grid-connected power stations in India. All regional grids have been integrated as a single Indian Grid covering all the states in December 2013. Small power exchanges also take place with the neighbouring countries Bhutan, Nepal, Bangladesh and Myanmar. For the unified national grid, the main emission factors are calculated in accordance with the applied methodology.</p> <p>By default, PP has considered National grid as the relevant electricity system which is in line with CEA database <sup>/10/</sup> v13.0. The countries of electricity import also do not fall under Annex I category. Based on this, the validation team has accepted the electricity system as correct as it is line with the emission factor tool.</p>
Step 2: Choose whether to include off-grid power plants in the project electricity system: option 1	PP has opted for option 1 that includes only grid power plants to calculate the operating margin and build margin. The validation team has accepted as reasonable.
<p>Step 3: Select a method to determine the operating margin: Simple OM method (option a)</p> <p>Data vintage for calculating operating margin: ex-ante option</p>	<p>Option A has been selected as the required disaggregated data is available in India. The simple operating margin is the weighted average emissions rate of all generation sources except so-called low-cost or must-run sources. In India, hydro and nuclear stations qualify as low-cost/must-run sources and are excluded. The operating margin, therefore, can be calculated by dividing the grid's total CO2 emissions by the net generation of all thermal stations.</p> <p>PP has opted for ex-ante option for the calculation of operating margin. Since ex-ante option is chosen, PP has mentioned in the PDD that emission factor need not be monitored during the crediting period. PP also used 3-year generation-weighted average, based on the most recent data for grid power plants. The validation team has accepted as it is in line with the emission factor tool <sup>/9/</sup>. The data vintage 2018 is not available at the time of submission of PDD to the DOE for renewal of crediting period. The validated team has reviewed the PDD and found that data vintage is also well documented in the revised PDD.</p>
<p>Step 4: Calculate the operating margin emission factor according to the selected method:</p> <p>Ex ante Operating margin= 0.99, 0.97, 0.96</p>	The simple OM emission factor is sourced from the CEA database <sup>/10/</sup> . Hence the validation team accepted the calculation approach.

tCO <sub>2</sub> /MWh for the year 2014-15, 2015-16 and 2016-17 respectively	
Source: CEA	
<p>Step 5: Calculate the build margin (BM) emission factor</p> <p>Data vintage: Ex-ante option- Most recent year 2016-17 available at the time of PDD submission</p> <p>Build margin = 0.87 tCO<sub>2</sub>/MWh</p> <p>Source: CEA database v13.0</p>	<p>As per the CEA database v13.0, the build margin is calculated in this database as the average emissions intensity of the 20% most recent capacity additions in the grid based on net generation. The build margin covers units commissioned in the last five years. Hence accepted.</p> <p>PP has opted for ex-ante option to calculate the build margin which is accepted by the validation team. This option does not require monitoring the emission factor during the crediting period which is in line with the emission tool. . The validation team has reviewed the PDD and found that data vintage is also well documented in the revised PDD.</p>
<p>Step 6: Calculate the combined margin emissions factor (EF<sub>grid,y</sub>)</p> <p>Weighted average CM (option a)</p> <p>Combined margin = 0.947 tCO<sub>2</sub>/MWh wOM = 75% wBM = 25%</p> <p>Source: Calculated</p>	<p>PP has opted for weighted average combined margin method (option a) which the validation team has accepted as it is the preferred option as per the emission factor tool. Default weightage of operating margin and build margin also falls in line with the applied tool.</p>
Baseline emissions in a year (BE <sub>y</sub> ) = 7,953 tCO <sub>2</sub> e/year	<p>As per para 22 and equation 1 of the applied methodology, baseline emissions include only CO<sub>2</sub> 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.</p> $BE_y = EG_{PJ,y} \times EF_{grid,y}$
Project emissions (PE <sub>y</sub> ) = 0 tCO <sub>2</sub> e per year	<p>As per para 39, 40 and 41 of the applied methodology, for most renewable power generation project activities, PE<sub>y</sub> = 0. However, some project activities may involve project emissions that can be significant. These emissions shall be accounted for, by using the following equation:</p> $PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y}$ <p>where</p> <p>PE<sub>FF,y</sub> - Project emissions from fossil fuel consumption in year y</p> <p>PE<sub>GP,y</sub> - Project emissions from the operation of geothermal power plants due to the release of non-condensable gases in year y</p> <p>PE<sub>HP,y</sub> - Project emissions from reservoirs of hydro power plants in year y</p> <p>Since there is no fossil fuel consumed in the project, project emission from fossil fuel consumption is zero. Project emissions from the operation of geothermal power plants and project emissions from reservoirs of hydro power plants is also zero as it is wind power plant.</p>
Leakage emissions (LE <sub>y</sub> ) = 0 tCO <sub>2</sub> e per year	<p>As per para 42 of the applied methodology, general guidance on leakage in biomass project activities shall be followed to quantify leakages pertaining to the use of biomass residues. Since there is no biomass involved in the wind power plant, leakage emission is zero.</p>
Emission reduction of the project (ER <sub>y</sub> ) = 7,953 tCO <sub>2</sub> e per year	<p>As per para 43 and equation 9 of the applied methodology, emission reductions are calculated as follows.</p> $ER_y = BE_y - PE_y - LE_y$



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