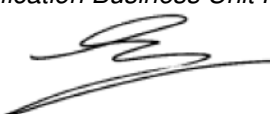




**Validation report form for renewal of crediting period for  
CDM project activities  
(Version 03.0)**

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

**BASIC INFORMATION**

<b>Title and UNFCCC reference number of the project activity</b>	Biomass based power project in Punjab, India (UNFCCC number-3232 <sup>1</sup> )
<b>Number and duration of the next crediting period</b>	2 <sup>nd</sup> renewable crediting period 08/06/2017 to 07/06/2024 (Inclusive both days)
<b>Version number of the validation report</b>	01
<b>Completion date of the validation report</b>	05/09/2020
<b>Version number of PDD to which this report applies</b>	07
<b>Project participants</b>	Dee Development Engineers Pvt. Ltd.
<b>Host Party</b>	India
<b>Applied methodologies and standardized baselines</b>	AMS-I.D.- Grid connected renewable electricity generation, Version 18
<b>Mandatory sectoral scopes</b>	01
<b>Conditional sectoral scopes, if applicable</b>	NA
<b>Estimated amount of annual average GHG emission reductions or GHG removals by sinks in the next crediting period</b>	47,821 tCO <sub>2</sub> e
<b>Name and UNFCCC reference number of the DOE</b>	LGAI Technological Center, S.A. (Applus+ Certification) UNFCCC Ref. No.: E-0032
<b>Name, position and signature of the approver of the validation report</b>	Mr. Juan Sendín Caballero Applus+ Certification Business Unit Managing Director Signature: 

<sup>1</sup> <https://cdm.unfccc.int/Projects/DB/TUEV-SUED1261390865.65/view>

## SECTION A. Executive summary

Dee Development Engineers Pvt. Ltd., herein after referred to as, “project participant (PP)” has established a 8.0 MW independent biomass based power plant at Village Gaddadhob, Ferozepur district in Punjab. The project activity has one 33 TPH capacity boiler with outlet parameters of 465°C temperature and 66 kg/cm<sup>2</sup> pressure and one bleed cum condensing steam turbine of nominal capacity of 8.0 MW. The steam pressure and temperature at the inlet of turbine will be 64 kg/cm<sup>2</sup> and 475 ± 5°C respectively. Electricity generated is supplied to the grid.

Being renewable, project activity aims to contribute towards reduction of Green House Gas emissions. The project activity is also utilize surplus biomass available in the region for effective generation of electricity for supply to the grid to meet the increasing demand for energy in the region.

The project activity was successfully synchronized with grid on 05/02/2009 Memo no -9073 dated 06/02/2009.

**Validation Scope:** Dee Development Engineers Pvt. Ltd. has contracted Applus+ Certification to conduct the validation of the renewal of the crediting period of the project activity. The scope is defined as an independent and objective review of the project design document (PDD) for the renewal of the crediting period. The PDD is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords and the relevant decisions by the CDM Executive Board, including the approved baseline and monitoring methodology “AMS-I.D.- Grid connected renewable electricity generation, Version 18”. The validation of the renewal of the crediting period was based on the requirements in the CDM validation and verification standard for project activities, version 02.0 and renewal of crediting period in accordance with requirements of CDM methodological tool “TOOL11 – 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.

The validation is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design document.

**Validation Process:** The project assessment is based on the “CDM validation and verification standard for project activities, version 02.0 and is conducted using standard auditing techniques to assess the correctness of the information provided by the project participants. Before the assessment begins, members of the team covering the technical scope(s), sectoral scope(s), and relevant host country experience for evaluating the CDM project activity are appointed.

Once the project is made available for the global stakeholder consultation process, the members of the assessment team carried out:

- I A desk review of the project design documentation for renewal of crediting period;
- II Follow-up interviews with project stakeholders;
- III The resolution of outstanding issues and the issuance of the final validation report and opinion.

The prepared validation report and other supporting documents then undergo an internal quality control at the HQ (Accredited office) before being submitted to the CDM-EB.

In order to ensure transparency, assumptions must be clear and stated explicitly and background material must also be referenced. Applus+ Certification has developed a specific Checklist customized for the project. The checklist demonstrates, in a transparent manner, the project criteria (requirements), discussion on each criterion by the assessment team, and the results from validating the identified criteria.

### **Appointment of the assessment team**

According to the sectoral scope / technical area and experience in the sectoral or national business environment, Applus+ Certification has composed a project assessment team in accordance with the appointment rules in the internal Quality Management System of Applus+ Certification.

The composition of audit team shall be approved by Applus+ Certification ensuring that the required skills are covered by the team.

The four qualification levels for team members that are assigned by formal appointment rules are as presented below:

- Lead Auditor (LA).
- Auditor (A) / Auditor in Training (AiT).
- Technical Expert (TE).
- Technical Reviewer (TR).

The sectoral scope / technical area knowledge linked to the applied methodology/ies shall be covered by the assessment team.

Name	Role	SS Coverage	TA Coverage	Financial aspect	Host country experience
Dr. Atul Takarkhede	LA/TE	YES	YES	YES	YES
Simon Shen	TR	YES	YES	YES	NA

The complete list of CVs is included as Appendix 2 of this report.

### **Document review**

The Project Design Document submitted by the Client was reviewed against the approved methodology and other relevant criteria to verify the correctness, credibility, and interpretation of the presented information. Furthermore, a cross-check between information provided and information from other sources like 3<sup>rd</sup> party Government documents has been done. A complete list of all documents and evidence material reviewed is included in Appendix 3 of this report.

### **Follow-up interviews**

A site visit is conducted by Applus+ Certification performed interviews, telephone conferences, and physical site inspection with project stakeholders to confirm selected information and to resolve issues identified in the document review. The detail is provided in section C.2 and C.3 of this report.

### **Resolution of Clarification and Corrective Action Request**

The objective of this phase of the validation was to resolve the requests for corrective actions and clarification and any other outstanding issues which need to be clarified for Applus+ Certification positive conclusion on the project design. The Corrective Action Requests and Clarification Requests raised by Applus+ Certification were resolved during communications between the Client and Applus+ Certification to guarantee the transparency of the validation process, the concerns raised and responses given are summarized in Appendix 4 below.

The final PDD version 07 submitted by PP on 31/08/2020 serves as the basis for the final assessment presented. Additional changes to the project during the validation process are not considered to be significant with respect to the main CDM objectives. The two CDM main objectives are the reduction of anthropogenic GHG emissions and the contribution of sustainable development to the host country.

### **Internal quality control**

As final step of a validation of the final documentation including the validation report and the checklist have to undergo an internal quality control by the technical review committee, i.e. each report has to be finally approved either by the head of the technical review committee or the deputy. In case one of these two persons is part of the assessment team approval can only be given by the other one to avoid any conflict of interest.

After confirmation of the PP the validation opinion and relevant documents are submitted to the EB through the UNFCCC web-platform.

## **Conclusion**

Applus+ Certification has performed a validation of the renewal of the crediting period of the “Biomass based power project in Punjab, India”. The validation was performed on the basis of UNFCCC criteria and host country criteria, as well as criteria, e.g. “AMS-I.D.- Grid connected renewable electricity generation, Version 18”, given to provide for consistent project operations, monitoring and reporting.

The review of the project design documentation for the renewal of the crediting period and the subsequent follow-up interviews have provided Applus+ Certification with sufficient evidence to determine the fulfillment of stated criteria. In our opinion, the project meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria. The project will hence be recommended by Applus+ Certification for the renewal of the crediting period with the UNFCCC.

Applus+ Certification has received a confirmation from the host Party that the project activity assists it in achieving sustainable development.

By displacing fossil fuel-based electricity with electricity generated from a renewable source, the project results in reductions of CO<sub>2</sub> emissions that are real, measurable and give long-term benefits to the mitigation of climate change. An analysis of the positive list of renewable project demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is implemented as designed, the project is likely to achieve the estimated amount of annual emission reductions of 47,821 tCO<sub>2</sub>e.

The validation has been performed following the requirements of the latest version of the CDM validation and verification standard for project activities, version 02.0 and on the basis of the contractual agreement. The single purpose of this report is its use during the registration process as part of the CDM/ UNFCCC project cycle.

## **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/ Technical Expert	OR	Takarkehede	Atul	True Quality Certifications Private Limited- Outsourced entity	YES	YES	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	EI	Shen	Simon	Applus+ Certification
2.	Approver	IR	Sendín Caballero	Juan	Applus+ Certification

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

The details of the document observed during desk review /validation process are listed below in Appendix 3 of this report.

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

Duration of on-site inspection: 06/12/2018 & 07/12/2018				
No.	Activity performed on-site	Site location	Date	Team member
1.	Assessment team checked the implementation of the project, Baseline emission, Emission reduction calculation, technical description of the project and Monitoring.	Village: Gaddadhob, Firozepur District, Punjab, India	06/12/2018 & 07/12/2018	Dr. Atul Takarkhede

**C.3. Interviews**

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Mr. Narang	Gaurav	PP representative	06/12/2018 & 07/12/2018	As explained in section C.2	Dr. Atul Takarkhede
2.	Mr. Singh	K.	Plant Engineer			

**C.4. Sampling approach**

The assessment team did not apply any sampling approach for the project activity. The site visit was conducted for complete power plant implemented in the locations as mentioned in the PDD.

**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	00	02	00
Application and selection of methodologies and standardized baselines	00	01	00
Validity of original baseline or its update	00	01	00
Estimated emission reductions or net anthropogenic removals	00	01	00
Validity of monitoring plan	00	01	00
Crediting period	00	00	00
Project participants	00	01	00
Post-registration changes	00	00	00
Others (please specify)	00	00	00
<b>Total</b>	<b>00</b>	<b>07</b>	<b>00</b>

**SECTION D. Validation findings****D.1. Compliance with PDD form**

<b>Means of validation</b>	Assessment team checked the PDD version 11.0 forms supplied by the project participant and found that the latest form applicable in the UNFCCC web site is used for the presentation of the PDD.
<b>Findings</b>	CAR 01 & CAR 02 was raised during the validation process and closed successfully. Please refer Appendix 4 for the detail closure of the CAR
<b>Conclusion</b>	<p>The PDD mentions all the criteria as detailed out in PDD form version 11.0 properly and found correct by the assessment team.</p> <p>Assessment team also checked the commissioning details and found the same to be correct. The biomass based power plant of 8.0 MW capacity was commissioned on 05/02/2009 as confirmed from Letter dated 06/02/2009 from the Deputy Chief Engineer, Muktsar of Punjab State Electricity Board (PSEB) and found to be accurate.</p>

	<p>The technical details for the renewal of Crediting period were checked by the assessment team from the details available from the manufacturers and also during the onsite visit. The details are as below:</p> <p>The project activity has one 33 TPH capacity boiler with outlet parameters of 465°C temperature and 66 kg/cm<sup>2</sup> pressure and one bleed cum condensing steam turbine of nominal capacity of 8.0 MW. The steam pressure and temperature at the inlet of turbine will be 64 kg/cm<sup>2</sup> and 475 ± 5°C respectively. Electricity generated is supplied to the grid.</p> <p>The project started commercial operation on 05/02/2009. The fuel used in the project activity is biomass and its availability in the region in plenty has been demonstrated in the updated PDD (for second CP). The technical details of major equipments in the power plant are as follows:</p> <p><b>Boiler:</b>  Capacity: 33 TPH  Type: Fluidized based combustion boiler  Steam design parameters: Pressure 66 ata and Temperature 4650C (at boiler outlet).  Serial No: PI4430  Supplier: Thermax Limited, Pune</p> <p><b>Turbine:</b>  Capacity: 8.0 MW  Type: Bleed cum condensing  Serial No: TB0340065  Supplier: M/s Triveni Engineering &amp; Industries Ltd, Bangalore</p> <p><b>Generator:</b>  Capacity: 8.0 MW  Type: Brushless Synchronous  Serial No.: 2K802628-01  Supplier: Bharat Heavy Electricals Ltd.</p> <p>Assessment team checked the geographical coordinate of the project activity with GPS meter and found that same were correct. The latitude and longitude as mentioned in the registered PDD for 1<sup>st</sup> crediting period are 30° 13' 59" N and 74° 21' 08" E and are also confirmed during site visit for 2<sup>nd</sup> crediting period.</p> <p>No post registration changes is envisaged for the 2<sup>nd</sup> CP as the project is implemented as per the registered PDD of 1<sup>st</sup> CP and in continuous operation apart from scheduled maintenance (as per manufacturer specification) and thus there is no scenario observed which can alter the requirement of the methodology. The project activity complies with the applicability criteria of the small scale CDM Project activity category. The capacity of the proposed project is 8.0 MW, which is lower than the maximum qualifying Type I capacity of 15 MW. Thus the project qualifies as small scale project. There is no change in installed capacity of the project as mentioned in registered PDD for 1<sup>st</sup> CP. The same is checked by the assessment team during onsite visit and found correct.</p>
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## D.2. Application and selection of methodologies and standardized baselines

<b>Means of validation</b>	<p>The assessment team has validated the documentation referred to in the revised PDD for renewable of crediting period and verified the documentation content for verifying the justification of the applicability of the methodology "AMS-I.D.- Grid connected renewable electricity generation, Version 18" and confirmed that the documentation referred to in the PDD is correctly quoted and interpreted. The assessment team has also cross-checked the information provided in the registered PDD of 1<sup>st</sup> CP with the documentation other than from the PDD based on the local and sectoral knowledge of the assessment team.</p> <p>Following documentation has been reviewed by the assessment team:</p>
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	<ul style="list-style-type: none"> <li>- Site visit</li> <li>- Interview with the concerned person mentioned in this report</li> <li>- Technical detail analysis of the power plant from the documents submitted by the manufacturer.</li> <li>- Commissioning certificates of the turbines</li> </ul> <p>The assessment of the project's compliance with the applicability criteria of "AMS-I.D.- Grid connected renewable electricity generation, Version 18" are documented in detail in section B.2 of the PDD.</p>										
<b>Findings</b>	CAR 03 was raised during the validation process and closed successfully. Please refer Appendix 4 for the detail closure of the CAR.										
<b>Conclusion</b>	<p>The applied baseline methodology is justified as it has been demonstrated that the proposed project activity is:</p> <table border="1"> <thead> <tr> <th>Applicability conditions</th><th>Justification</th></tr> </thead> <tbody> <tr> <td> <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</p> <p>(b) Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling.</p> </td><td>The project activity is a installation of a green-field biomass based power plant hence fulfil the criteria.</td></tr> <tr> <td>2. Illustration of respective situations under which each of the methodology (i.e. AMS- I.D., AMS-I.F and AMS- I.A) applies is included in Table 2.</td><td>The project activity supplying electricity to the Now Indian Grid, hence fulfil the criteria.</td></tr> <tr> <td>3. This methodology is applicable to project activities that (a) install a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity (Greenfield plant); (b) involve a capacity addition; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s).</td><td>The project activity is a installation of a green-field biomass based power plant hence fulfil the criteria.</td></tr> <tr> <td> <p>4. Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology:</p> <ul style="list-style-type: none"> <li>• The project activity is implemented in an existing reservoir with no change in the volume of reservoir.</li> <li>• 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 4W/m<sup>2</sup>;</li> <li>• 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</li> </ul> </td><td>The project activity is a installation of a green-field biomass based power plant hence not applicable.</td></tr> </tbody> </table>	Applicability conditions	Justification	<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</p> <p>(b) Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling.</p>	The project activity is a installation of a green-field biomass based power plant hence fulfil the criteria.	2. Illustration of respective situations under which each of the methodology (i.e. AMS- I.D., AMS-I.F and AMS- I.A) applies is included in Table 2.	The project activity supplying electricity to the Now Indian Grid, hence fulfil the criteria.	3. This methodology is applicable to project activities that (a) install a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity (Greenfield plant); (b) involve a capacity addition; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s).	The project activity is a installation of a green-field biomass based power plant hence fulfil the criteria.	<p>4. Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology:</p> <ul style="list-style-type: none"> <li>• The project activity is implemented in an existing reservoir with no change in the volume of reservoir.</li> <li>• 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 4W/m<sup>2</sup>;</li> <li>• 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</li> </ul>	The project activity is a installation of a green-field biomass based power plant hence not applicable.
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	greater than 4 W/m <sup>2</sup> .	
	5. If the new unit has both renewable and nonrenewable 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.	The project does not contain any non-renewable components and involves only renewable biomass based power generation of 8 MW capacity. Hence meet criteria.
	6. Combined heat and power (co-generation) systems are not eligible under this category.	The project activity does not involve cogeneration and hence fulfil the criteria.
	7. In the case of project activities that involve the addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units.	This condition is not applicable to the project activity hence fulfil the criteria.
	8. In the case of retrofit or replacement, to qualify as a small-scale project, the total output of the modified or retrofitted unit shall not exceed the limit of 15 MW	This condition is not applicable to the project activity hence fulfil the criteria.
<p>(Applus+ Certification) confirms that the application of the baseline methodology is transparent and conservative and confirms that the chosen baseline and monitoring methodology i.e. AMS-I.D.- Grid connected renewable electricity generation, Version 18 is applicable to the project activity.</p> <p>The capacity of the proposed project is 8.0 MW, which is less than the maximum qualifying Type I capacity of 15 MW. Thus the project qualifies as small scale project. There is no change in installed capacity of the project as mentioned in registered PDD for 1<sup>st</sup> CP. As there is no change in design of the plant; the project activity will remain under small scale project activity during every year of 2<sup>nd</sup> crediting period.</p>		

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

<b>Means of validation</b>	The baseline scenario as depicted in the PDD version 07 is checked during the validation site visit and also during the interview with the plant official.
<b>Findings</b>	The baseline is selected as per the requirement of the approved methodology AMS-I.D.- Grid connected renewable electricity generation, Version 18 for the present Crediting period. However, CAR 04 was raised during the validation process and closed successfully. Please refer Appendix 4 for the detail closure of the CAR.
<b>Conclusion</b>	<p>Assessment team referred "Methodological tool (EB 66, Annex 47) "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)" and CDM validation and verification standard for project activities, version 02.0" to check the originality of the baseline. Following are the observation of the assessment team regarding selected baseline for the project activity in this present 2<sup>nd</sup> renewable crediting period:</p> <p><u>Step 1.1 (EB 66, Annex 47): Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies</u></p> <p>The baseline for the project activity is the electricity delivered to the grid by the project activity which would have otherwise been generated by the operation of grid</p>



connected power plants and by the addition of new generation sources into the grid. The project activity is claiming the emission reductions from the net exported electricity to the grid only. In absence of project activity this quantity of electricity would have been generated from the electricity grid mix (mainly fossil fuel). The Government of India enacted the Electricity Act in the year 2003 to harmonize and rationalize the provisions in the then existing laws. The Act consolidated the laws relating to generation, transmission, distribution, trading and use of electricity. With the Enactment of the act, the then existing laws viz, The Indian Electricity Act 1910, The Electricity Supply Act, 1948 and The Electricity Regulatory Commissions Act, 1998 were repealed. The Electricity Act 2003 was in force at the time of the completion of the baseline study during first crediting period.

The baseline remains unchanged for the present (2<sup>nd</sup>) crediting period since there is no policy been revised and/or is currently in force as well, therefore the baseline scenario is still in compliance with all the relevant mandatory national and/or sectoral policies.

Step 1.2 (EB 66, Annex 47) : Assess the impact of circumstances

There are no new circumstances that can impact the original baseline. The baseline emission factor value is however updated based on the current data available for the grid.

Step 1.3 (EB 66, Annex 47): Assess whether the continuation of the use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which renewal is requested

As per the "Tool to determine the remaining lifetime of equipment", the remaining lifetime of the equipment is the time for which the existing equipment can continue to operate before it has to be replaced/discarded. As per this Tool, Project participant can use one of the following options to determine the remaining lifetime of the equipment:

- (a) Use manufacturer's information on the technical lifetime of equipment and compare to the date of first commissioning;
- (b) Obtain an expert evaluation;
- (c) Use default value

The project activity is commissioned on 05/02/2009 and since commissioning, the project activity is running satisfactorily. As per Manufacturer specification and Registered PDD, the technical lifetime of power plant is 25 years (As per 1<sup>st</sup> CP). Thus the remaining lifetime of equipment's exceeds the crediting period for which renewal is requested. Thus as per manufacturers information, the remaining lifetime of equipment exceeds crediting period as per option 1 of Tool to determine the remaining lifetime of the Equipment.

The below conditions are fulfilled. (i) The equipment has been operated and maintained according to the recommendations of the equipment supplier; (ii) There are no periodic replacement schedules or scheduled replacement practices specific to the industrial facility, that require early replacement of equipment before the expiry of the technical lifetime; and (iii) The equipment has no design fault or defect and did not have any industrial accident due to which the equipment cannot operate at rated performance levels.

An per option (a), evaluating the remaining lifetime for the type of equipment has been approached and requested to determine the remaining lifetime of the

equipment. The assessment of remaining life time of the equipment's had been done and confirmed that the remaining technical lifetime of the equipment of the project activity exceeds the crediting period for which renewal is requested. As the remaining technical lifetime of the equipment is not less than the end of the crediting period or which renewal is requested, the current baseline holds good for this crediting period too.

Step 1.4(EB 66, Annex 47): Assessment of the validity of the data and parameters

This step stipulates that "Where emission factors, values or emission benchmarks are used and determined only once for the crediting period, they should be updated, except if the emission factors, values or emission benchmarks are based on the historical situation at the site of the project activity prior to the implementation of the project and cannot be updated because the historical situation does not exist anymore as a result of the CDM project activity."

The project chosen **ex-ante default value i.e. Emission Factor**. As per the Guidance given in Tool the emission factor is updated as follows:

1. The operating margin is calculated as per the latest version of CEA CO<sub>2</sub> baseline database (Version 15) available to the project participant. The operating margin calculation is checked by the assessment team and found correct.
2. The build margin is considered from CEA database Version 15 as per "Tool to calculate the emission factor for electricity system" version 07. The value considered is checked by the assessment team and found correct
3. The Combined margin calculation is carried out as per "Tool to calculate the emission factor for electricity system" version 07. The value considered is checked by the assessment team and found correct

The emission factor is fixed ex-ante and thus will be used for the complete 2<sup>nd</sup> renewable crediting period and for entire verification conducted under 2<sup>nd</sup> renewable crediting period.

**Application of Steps 1.1, 1.2, 1.3 and 1.4 confirmed that the current baseline is valid for the Second crediting period but data and parameters needs to be updated. Therefore step 2 is used**

**Step 2.1: Update the current baseline**

This step is applicable since the Steps 1.1, 1.2, 1.3 and/or 1.4 showed that the current baseline needs to be updated. As evident from the explanation provided above the baseline scenario remains unchanged.

Updated the baseline emissions based on the latest approved version of the methodology applicable to the project activity for the subsequent crediting period, without reassessing the baseline scenario.

**Step 2.2: Update the data and parameters**

The updated Data and/or parameter are followed for estimating the baseline emissions

Hence as per AMS-I.D.- Grid connected renewable electricity generation, Version 18 (latest Methodology), para 19 the baseline of the project is as follows:

	<p><i>"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."</i></p> <p>The above selected baseline is correct and thus applicable to the project activity and in line with approved methodology for the applied renewable of crediting period.</p>
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#### D.4. Estimated emission reductions or net anthropogenic removals

<b>Means of validation</b>	The emission reduction sheet, CEA database Version 15.0 (Latest applicable) and PDD version 07 is checked by the assessment team.
<b>Findings</b>	CAR 05 was raised during the validation process and closed successfully. Please refer Appendix 4 for the detail closure of the CAR.
<b>Conclusion</b>	<p>The baseline emissions as discussed in section B.6.1 will include emissions that would have occurred in the absence of the project activity. The emission reduction calculation has been done as per the AMS-I.D.- Grid connected renewable electricity generation, Version 18 (Para 22):</p> <p><b><u>Baseline Emission (BE<sub>y</sub>):</u></b></p> $BE_y = EG_{PJ,y} \times EF_{grid,y}$ <p>Where,</p> <p>BE<sub>y</sub> = Baseline Emissions in year y, t CO<sub>2</sub></p> <p>EG<sub>PJ,y</sub> = 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)</p> <p>EF<sub>grid,y</sub> = Combined margin CO<sub>2</sub> 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" (t CO<sub>2</sub>/MWh)</p> <p>Calculation of EG<sub>PJ,y</sub></p> <p>As proposed project activity is a greenfield project, in accordance with para 26 of applied methodology EG<sub>PJ,y</sub> = EG<sub>PJ, facility,y</sub></p> <p>Where,</p> <p>EG<sub>PJ, facility,y</sub> = Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh)</p> <p>EF<sub>grid,CM,y</sub> = EF<sub>grid,y</sub> = Baseline emission factor = 0.9013 tCO<sub>2</sub>/MWh</p> <p>BE<sub>y</sub> = 53058.24 × 0.9013 = 47,821 tCO<sub>2</sub> (round down value)</p> <p>Baseline emission factor is calculated as combined margin, consisting of a combination of operating margin (OM) and build margin (BM) factors according to the procedure prescribed in the "Tool to calculate the emission factor for an electricity system" version 07.0 which is sourced from CEA Version 15.0, Govt. of India and forms the part of emission reduction calculation. The baseline emission factor calculation is checked by the validation team and found that the calculation is transparent and conservative.</p> <p>Hence, BE<sub>y</sub> = 47,821 tCO<sub>2e</sub></p>

**Project Emissions:****Project Emissions (PE<sub>y</sub>)**

As per para 40, Project emissions from on-site consumption of fossil fuels due to the project activity shall be calculated using the latest version of the “Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion”.

The proposed project activity envisages the use of Coal along with biomass for the electricity generation. Therefore, the project emission arising due to use of coal is calculated as mentioned below:

$$PE_y = \sum_i FC_{i,j,y} \times COEF_{i,y}$$

Where:

$PE_{FC,j,y}$  = Are the CO<sub>2</sub> emissions from fossil fuel combustion in process j during the year y (tCO<sub>2</sub>/yr)

$FC_{i,j,y}$  = Is the quantity of fuel type i combusted in process j during the year y (mass or volume unit/yr)

$COEF_{i,y}$  = Is the CO<sub>2</sub> emission coefficient of fuel type i in year y (tCO<sub>2</sub>/mass or volume unit)

$i$  = Are the fuel types combusted in process j during the year y

As per para 7 of “Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion” version 03.0, there are two options to calculate CO<sub>2</sub> emission coefficient ; here option (b) is followed.

In this option, the CO<sub>2</sub> emission coefficient  $COEF_{i,y}$  is calculated based on net calorific value and CO<sub>2</sub> emission factor of the fuel type i, as follows:

$$COEF_{i,y} = NCV_{i,y} \times EF_{CO2,i,y}$$

Where:

$NCV_{i,y}$  = Is the weighted average net calorific value of the fuel type i in year y (GJ/mass or volume /unit)

$EF_{CO2,i,y}$  = Is the weighted average CO<sub>2</sub> emission factor of fuel type i in year y (tCO<sub>2</sub>/GJ)

$i$  = Are the fuel types combusted in process j during the year y

**Project and leakage emissions from biomass :**

As per the methodology AMS-I.D. version 18.0, in addition to fossil fuel consumption, there may be cases of project emissions in biomass projects and that is calculated by the tool “Project and leakage emissions from biomass” version 04.0; it may happen in two instances - project emissions resulting from cultivation of biomass in a dedicated plantation and project emissions resulting from utilization of biomass residues. The proposed project activity will use biomass residues i.e. agricultural residues which are procured by the project proponent.

Project emissions resulting from utilization of biomass residues are estimated as follows:  $PE_{BU,y} = PE_{EC,y} + PE_{TR,y}$

Where:

$PE_{BU,y}$  = Emissions resulting from utilization of biomass residues, in year y (t CO<sub>2</sub>e)

$PE_{EC,y}$  = Emissions resulting from energy consumption, in year y (t CO<sub>2</sub>e)

$PE_{TR,y}$  = Emissions resulting from transport of biomass, in year y (t CO<sub>2</sub>e)

For small-scale project activities where transportation distance of biomass is less than 200 km. both these emissions are ignored. Hence, in this project activity, project emissions from biomass are neglected .

**Leakage Emissions:**

As per 78 of the methodology, in cases where the collection, processing and transportation of biomass residues is outside the project boundary and due to the implementation of the project activity biomass residues are transported over a distance of 200 kilometres CO<sub>2</sub> emissions from the collection, processing and transportation of biomass residues to the project site shall be taken into account as leakage using with the latest version of tool “Project and leakage emissions from transportation of freight”.

Hence, as per TOOL12;

Methodological tool: Project and leakage emissions from transportation of freight Version 01.1.0<sup>2</sup> the parameter  $D_{f,m}$  (Return trip distance between the origin and destination of freight transportation activity  $f$  in monitoring period  $m$ ) in km will be monitored ex post during verification of the project activity. The source of data will be the Vendor certificates and or logbooks showing the distance travelled by the origin and destination of the freight transported and the road (or rail line) distance between the origin and the destination ( $D_{f,m}$ ). Assessment team checked the ex-post parameter for provision of determination of the distance of the biomass procurement and found inline with the methodology requirements.

Thus, the only source of GHG emissions which are attributable to the project activity lying outside the project boundary (as per the paragraph 42 of methodology) will be the emissions arising during the transportation of biomass. This will be monitored ex post and the distance travelled by the origin and destination of the freight transported and the road (or rail line) distance between the origin and the destination ( $D_{f,m}$ ) has been assumed as within 200 km for ex ante calculations. Thus, Leakage Emissions from project activity can be neglected as per the methodology.

As per Table 1 of the general guidance on leakage in biomass project activities, TOOL 22 - Leakage in biomass small-scale project activities Version 04.0<sup>3</sup> emission sources for biomass residues or wastes consists only of the emissions from “competing use of biomass”. Accordingly, emissions from shift of pre-project activities and emissions from biomass generation/cultivation are not applicable to the project activity as the project involves use of biomass residues (rice husk).

<sup>2</sup> <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-12-v1.1.0.pdf>

<sup>3</sup> <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-22-v1.pdf>

Table 1. Emission source per type of biomass

Biomass type	Activity / source	Shift of pre-project activities	Emissions from biomass generation / cultivation	Competing use of biomass
Biomass from forests	Existing forests	-	-	X
	New forests	X	X	-
Biomass from croplands or grasslands (woody or non-woody)	In the absence of the project the land would be used as cropland / wetland	X	X	-
	In the absence of the project the land would be abandoned	-	X	-
Biomass residues or wastes	Biomass residues or wastes are collected and used	-	-	X

As per para 18 of the guidance, the project participant shall evaluate ex-ante if there is a surplus biomass in the region of the project activity, which is not utilized. Survey for the availability of the biomass was conducted to ascertain the quantity of biomass available to the project. As per survey report, the availability of biomass is more than 25% the requirement. The survey report was also submitted to the Punjab Energy Development Agency (PEDA). As per the report, the surplus biomass works out to be 643,255 MT/annum as against a total availability of 2,382,424 MT and consumption of 1,739,169 MT/annum in the study area. Thus availability of biomass is more than 25% than the requirement.

The availability of biomass would again be monitored ex post at the beginning of the next crediting periods through similar surveys conducted by the project participant. Hence, as per the guidance, this source of leakage has been neglected for ex ante calculations.

Biomass assessment has been carried out by PP shows that more than 25% surplus biomass is available for PP; hence biomass leakages can be neglected.

#### **Emission Reductions:**

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y - LE_y$$

$$ER_y = 47,821 - 0 - 0 \text{ t CO}_{2e}$$

$$ER_y = 47,821 \text{ t CO}_{2e} \text{ (Rounded Down)}$$

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

<b>Means of validation</b>	Assessment team checked the monitoring practice onsite and also checked the requirement of AMS-I.D.- Grid connected renewable electricity generation, Version 18 and procedure mentioned in the registered PDD of 1 <sup>st</sup> CP.
<b>Findings</b>	CAR 06 was raised during the validation process and closed successfully. Please refer Appendix 4 for the complete closure of the CAR.

Conclusion	<p><b>Parameters determined ex-ante:</b></p> <ol style="list-style-type: none"> <li>1. <b><math>EF_{grid,OM,y} = (0.9622 \text{ tCO}_2/\text{MWh})</math></b> = Operating Margin emissions factor for grid connected power generation in year y calculated using the latest version of "Tool to calculate the emission factor for an electricity system version 07." <math>EF_{grid,OM,y}</math> is computed using the Simple Operating margin CO<sub>2</sub> emission factor. Simple Operating margin CO<sub>2</sub> emission factor is calculated from 3-year generation weighted average using data for the years 2016-2017, 2017-2018 &amp; 2018-2019 CO<sub>2</sub> emissions per unit net electricity generation of all power plants serving the system, not including low-cost / must-run. This is in agreement with the guidance provided in the Tool to calculate the emission factor for an electricity system. <b>The value is considered from CEA CO<sub>2</sub> bseline database Version 15.</b> The value is fixed ex-ante for the entire duration of 2<sup>nd</sup> crediting period. As the value is sourced from CEA (publicly available document) no further analysis is required</li> <li>2. <b><math>EF_{grid,BM,y} = (0.8811 \text{ tCO}_2/\text{MWh})</math></b> Build Margin emissions factor for grid connected power generation in year y calculated using the latest version of "Tool to calculate the emission factor version 07 for an electricity system. Build margin emission factor is the generation-weighted average emission factor of all power plants <i>m</i> during the most recent year y for which generation data is available. <b>The value is considered from CEA CO<sub>2</sub> bseline database Version 15.</b> The value is fixed ex-ante for the entire duration of 2<sup>nd</sup> crediting period. As the value is sourced from CEA (publicly available document) no further analysis is required</li> <li>3. <b><math>EF_{grid,CM,y} = (0.9013 \text{ tCO}_2/\text{MWh})</math></b> Combined Margin emissions factor for grid connected power generation in year y calculated using the latest version of "Tool to calculate the emission factor for an electricity system version 07." Combined Margin is computed using the official data sources and is in-line with the guidance provided in the tool. <b>The value is considered from CEA CO<sub>2</sub> bseline database Version 15.</b> The combined margin emissions factor is calculated as follows:   <math display="block">EF_{grid,CM,y} = EF_{grid,y} = EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}</math> Where:  <math>EF_{grid,BM,y}</math> = Build margin CO<sub>2</sub> emission factor in year y (tCO<sub>2</sub>/MWh)  <math>EF_{grid,OM,y}</math> = Operating margin CO<sub>2</sub> emission factor in year y (tCO<sub>2</sub>/MWh)  <math>W_{OM}</math> = Weighting of operating margin emissions factor (%) = 25%  <math>W_{BM}</math> = Weighting of build margin emissions factor (%) = 75%   The above weighing is as per "Tool to calculate the emission factor for an electricity system", version 07.0.0 for other projects (Hydro in this case) and for second crediting period. The value is fixed ex-ante for the entire duration of 2<sup>nd</sup> crediting period. As the value is sourced from CEA (publicly available document) no further analysis is required.</li> <li>4. <b><math>SFC_{Biomass}</math></b> = Specific fuel consumption of biomass fuel types envisaged to be utilized in the project activity. The station heat rate (SHR) of the plant (4200 kcal/kWh) and the GCV values of the fuel types envisaged to be used in the project activity have been sourced from the Detailed Project report. The values of different biomass type have be checked with registered PDD and found correct.</li> <li>5. <b><math>SF_{CFF} = (1.119 \text{ Kg/kWh Coal})</math></b> Specific fuel consumption of fossil fuel (e.g. coal) used in the project activity during exigencies. The GCV of coal sourced from CEA CO<sub>2</sub> baseline database and is taken as 3755 kcal/kg and the SHR sourced from the Detailed Project Report has been taken as 200 kcal/kWh. The value found inline with the registred PDD and hence accepted.</li> </ol> <p><b>Parameters determined ex-post:</b></p> <p><b><math>EG_{export,y}</math></b> = Electricity exported by DDEPL (kWh)  Electricity exported recorded every month jointly by representative officials of DDEPL and the grid/licensee and JMR is issued. The values is monitored by the</p>
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main meter installed at the interconnection point using installed 0.2s accuracy class bi-directional energy meters. The monitoring procedure is found inline with the site practice.. The monitoring procedure is found inline with the site practice.

**EG<sub>import,y</sub>** = Electricity imported by DDEPL (KWh)

Electricity imported recorded every month jointly by representative officials of DDEPL and the grid/licensee and JMR is issued. The values is monitored by the main meter installed at the interconnection point using installed 0.2s accuracy class bi-directional energy meters. The monitoring procedure is found inline with the site practice.

**EG<sub>net,y</sub>** = Net electricity exported by DDEPL (KWh)

Quantity of electricity supplied to grid by project activity is calculated as the difference between the electricity exported and imported; i.e. = Export – Import. The export & import is monitored continuously through the energy meters at the power plant and recorded in the plant logbook daily. The meters bi-directional with 0.2s class accuracy. The meters will be calibrated at least once a year. The practice is as per the 1<sup>st</sup> CP registered PDD and approved methodology.

**EG<sub>gross,y</sub>** = Gross electricity generated by the biomass power plant (KWh)

Gross electricity produced is monitored continuously by electronic energy meter (0.5s accuracy class) at the plant location. The recording frequency is for every hour and the readings are consolidated at the end of each shift (8 hours) by the personnel in charge. The shift attendant records data and signs it, which is later cross-verified and signed by shift-incharge and Manager Electrical.

Daily readings are aggregated into weekly & then into monthly readings. The Electrical Managers ensure that the data is properly archived. The Finance Dept. cross checks the data provided by the plant managers. Daily, weekly and monthly readings are maintained in manual sheets and archived electronically in excel sheets. The monitoring procedure is found inline with the site practice.

**EG<sub>aux,y</sub>** = Power consumed by the power plant and its auxiliaries (KWh)

Auxiliary electricity produced is monitored continuously by electronic energy meter (0.5s accuracy class) at the plant location. The recording frequency is for every hour and the readings are consolidated at the end of each shift (8 hours) by the personnel in charge. The shift attendant records data and signs it, which is later cross-verified and signed by shift-incharge and Manager Electrical.

Daily readings are aggregated into weekly & then into monthly readings. The Electrical Managers ensure that the data is properly archived. The Finance Dept. cross checks the data provided by the plant managers. Daily, weekly and monthly readings are maintained in manual sheets and archived electronically in excel sheets. The monitoring procedure is found inline with the site practice.

**FC<sub>biomass,i,y</sub>** = Quantity of biomass fuel used to generate electricity (tonnes)

The quantity of biomass combusted in the project plant is measured continuously using conveyer belt load cells. The frequency of the calibration of the conveyer belt load cells is annual.

Moreover, as quantity of biomass combusted in the project boiler does not form the basis to calculate the emission reductions from the project activity it would not have affected the emission reduction calculations.

**FC<sub>FF,y</sub>** = Quantity of fossil fuels (e.g. coal) consumed in the project activity in year y (tonnes)

The quantity of coal combusted in the project plant will be measured through conveyer belt load cells. The frequency of the calibration of the conveyer belt load cells is annual. The monitoring procedure is found inline with onsite practice and meth requirement.

**NCV<sub>Biomass</sub>** = The calorific value of biomass (NCV<sub>CS</sub>, NCV<sub>PW</sub>, NCV<sub>MH</sub>, NCV<sub>WS</sub>) used to generate electricity (kcal/kg)

Biomass samples are tested by an external certified agency annually and also in the plant lab as and when biomass is received. The calorific value is obtained



	<p>through sample testing using bomb calorimeter available at site. bomb calorimeter is calibrated as per the India Standards, IS 1350. The practice is inline with the national standards.</p> <p><b>EF<sub>CO<sub>2</sub>,y</sub></b> = CO<sub>2</sub> emission factor of fossil fuel (e.g. coal) in year y (tCO<sub>2</sub>/GJ)  The emission factor is sourced from the Baseline Carbon Dioxide Emission Database, version 15 that has been prepared by CEA, Govt. of India, which is a statutory organisation under Ministry of Power, India.  In case a particular fossil fuel is used whose emission factor is not available in the CEA database, then the IPCC default values at the upper limit of the uncertainty at a 95% confidence interval will be used. As value sourced from CEA/IPCC no further assessment required.</p> <p><b>Surplus Biomass Availability</b> = Surplus biomass residue availability in the region</p> <p>The biomass assessment report carried out by external agency, M.CJ Energy Engineers Pvt. Ltd. to assess the surplus availability of the biomass residue in the region shows that more than 25% of surplus biomass is available in the region.</p> <p>Biomass procured will not be transported over a distance of 200 kilometres. Parameter value will be sourced from the Vendor Certificates provided by the biomass vendors of the Project Participant.</p> <p>The data will be archived electronically for a minimum of two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.</p>
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#### D.6. Crediting period

<b>Means of validation</b>	The crediting period is checked as per UN home page (reference number : 3232 and discussion with Client.
<b>Findings</b>	No findings raised on the section.
<b>Conclusion</b>	This is 2 <sup>nd</sup> renewable crediting period and the duration is 7-year renewable (2 <sup>nd</sup> CP duration: (08/06/2017 to 07/06/2024).

#### D.7. Project participants

Means of validation	The project participant names were checked from UN homepage <a href="https://cdm.unfccc.int/Projects/DB/DNV-CUK1280209384.47/view">https://cdm.unfccc.int/Projects/DB/DNV-CUK1280209384.47/view</a>								
Findings	CAR 07 was raised and closed succesfully. Please refer Appendix 4 for the complete closure of the CAR.								
Conclusion	<p>Following are the details of PP (host country) and Annex 1 country. The same is correct and in line with PDD registered under 1<sup>st</sup> Crediting period as well as revised MOC is submitted by PP. The details are true for the 2<sup>nd</sup> Crediting period as well. The PP has also obtained the new Host Country Approval letter from the DNA-India vide Letter No. 4/27/2008-CCC dated 27/01/2009. The updated MoC from UNFCCC web site is checked and assessment team confirm that the PP is reflected in the updated MoC dated 06/04/2018. There is no change in the MOC during this RCP as informed by PP.</p> <p>The detail of the PP is as follows:</p> <table><tr><th>Parties involved</th><th>Project participants</th><th>Indicate if the Party involved wishes to be considered as project participant (Yes/No)</th></tr><tr><td>India (Host)</td><td>Dee Development Engineers Pvt. Ltd.</td><td>No</td></tr></table>			Parties involved	Project participants	Indicate if the Party involved wishes to be considered as project participant (Yes/No)	India (Host)	Dee Development Engineers Pvt. Ltd.	No
Parties involved	Project participants	Indicate if the Party involved wishes to be considered as project participant (Yes/No)							
India (Host)	Dee Development Engineers Pvt. Ltd.	No							

**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 <sup>4</sup>	N	NA	NA
Corrections	N	NA	NA
Change to the start date of the crediting period	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 methodological regulatory documents	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**

As final step of a validation of the final documentation including the Renewable crediting period validation report and the checklist have to undergo an internal quality control by the technical review committee, i.e. each report has to be finally approved either by the head of the technical review committee or the deputy. In case one of these two persons is part of the assessment team approval can only be given by the other one to avoid any conflict of Interest.

**SECTION F. Validation opinion**

Applus+ Certification has performed validation of the renewal of the crediting period of the project activity "Biomass based power project in Punjab, India". The validation of the renewal of the crediting period was performed on the basis of UNFCCC criteria and host country criteria, as well as criteria, e.g. AMS-I.D.- Grid connected renewable electricity generation, Version 18, given to provide for consistent project operations, monitoring and reporting.

The review of the project design documentation for renewal of crediting period and the subsequent follow-up interviews have provided Applus+ Certification with sufficient evidence to determine the fulfillment of stated criteria. In our opinion, the project meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria. The project will hence be recommended by Applus+ Certification for the renewal of the crediting period with the UNFCCC.

Applus+ Certification has received a confirmation from the host Party that the project activity assists it in achieving sustainable development.

By displacing fossil fuel-based electricity with electricity generated from a renewable source, the project results in reductions of CO<sub>2</sub> emissions that are real, measurable and give long-term benefits to the mitigation of climate change. An analysis of the positive list of renewable project demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is implemented as designed, the project is likely to achieve the estimated amount of annual emission reductions of 47,821 tCO<sub>2</sub>e.

The validation of the renewal of the crediting period has been performed following the requirements of the latest version of the CDM validation and verification standard for project activities, version 02.0 and on the basis of the contractual agreement. The single purpose of this report is its use during the registration process for Renewal of Crediting Period as part of the CDM/UNFCCC project cycle.

<sup>4</sup> 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).

## Appendix 1. Abbreviations

Abbreviations	Full texts
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction(s)
CEA	Central Electricity Authority
CL	Clarification request
CMS	Central Monitoring system
CP	Crediting period
CM	Combined Margin
CMS	Central Monitoring system
CO <sub>2</sub>	Carbon dioxide
CO <sub>2</sub> e	Carbon dioxide equivalent
DDEPL	Dee Development Engineers Pvt. Ltd.
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
EF	Emission Factor
ER	External Resource
EIA	Environmental Impact Assessment
ER	Emission Reductions
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GWP	Global Warming potential
IR	Internal Resource
IS	Indian Standard
OR	Outside resource
OEM	Original Equipment manufacturer
OM	Operating Margin
PP	Project Participant
PSEB	Punjab State Electricity Board

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

1. Dr. Atul Takarkhede counts with 9 years of experience in field of Environmental Auditing, consulting and accreditation. He is an Expert in ISO 9001-14001, CO2/GHG Reporting, Carbon Foot Print, Energy, Water and Waste Management Reporting for organizations environmental performance. His professional portfolio is mainly related with carrying out EIA, conducting QA/QC of EIA Reports; Conducting Environmental/water Audits; NABET requirements appliance. Furthermore, he counts with solid experience on CDM-VCS-GS consultancy and auditing. He has Ph.D. (Environmental Science) from Institute of Science, RTM Nagpur University, Nagpur, and he has already published different technical reports related to environmental science
2. Mr Simon Shen (Master Degree in Thermal Energy Engineering, Bachelor Degree in Environmental Engineering) is a Lead Auditor appointed by Applus+ LGAI for the GHG project assessment. He is based in Shanghai. He has several years of work experience in environmental protection field. Before he joined Applus+ LGAI, he had been worked for TÜV SÜD as a GHG Validator/Assessment team and ISO 9001/14001 Lead Auditor for 3.5 years.

## Appendix 3 Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1.	NA	Contract of the project participant with the DOE	Contract document signed between PP and DOE	Project participant
2.	NA	Technical specifications of biomass power plant and other equipments	Manufacturer technical specifications	Project participant
3.	NA	CDM Registered PDD (CP1) Version 05  Updated PDD for RCP- Version 06  Revised PDD - Version 07	03/06/2010  28/11/2018  31/08/2020	Project participant
4.	NA	Estimated Emission reduction calculation sheet- version 01  Estimated Emission reduction calculation sheet- version 02	28/11/2018  31/08/2020	Project participant
5.	NA	Validation Report (CP1) Revision 04	07/06/2010	Project Participant
6.	NA	AMS-I.D.- Grid connected renewable electricity generation, Version 18	UNFCCC CDM web site	UNFCCC
7.	NA	Ministry of Environment and forest: <a href="http://www.envfor.nic.in">www.envfor.nic.in</a>  UNFCCC <a href="http://www.cdm.unfccc.int">www.cdm.unfccc.int</a>  CEA: Central electricity authority <a href="http://www.cea.nic.in">www.cea.nic.in</a>	Reference link is provided.	Independent Search
8.	NA	Tools/ guidelines used in the project activity: <ul style="list-style-type: none"> <li>Clarification on national and/or sectoral policies Para 27 EB 55.</li> <li>Tool to determine the remaining lifetime of the project activity in line with Annex 15 EB 50.</li> <li>Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion, Version</li> </ul>	UNFCCC CDM web site	UNFCCC

No.	Author	Title	References to the document	Provider
		3. <ul style="list-style-type: none"> <li>• Tool to calculate the emission factor for an electricity system version 07.</li> <li>• 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).</li> </ul>		
9.	NA	Grid synchronization on 05/02/2009 vide Memo no -9073 dated 06/02/2009, issued by Deputy Chief Engineer, PSEB, Muktsar	05/02/2009	Project participant
10.	NA	Sample JMR copies for the power plant	Logbooks	Project Participant
11.	NA	Surplus Biomass Assessment Study report for the project activity	July 2017	Project Participant

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

**Table 1. Remaining FAR from validation and/or previous verification**

<b>FAR ID</b>	XX	<b>Section no.</b>	D.1	<b>Date</b> : 15/11/2019
<b>Description of FAR</b>				
There is no FAR from the validation/previous verifications of the project activity				
<b>Project participant response</b>				<b>Date</b> : DD/MM/YYYY
NA				
<b>Documentation provided by project participant</b>				
NA				
<b>DOE assessment</b>				<b>Date</b> : DD/MM/YYYY
NA				

**Table 2. CL from this verification**

<b>CL ID</b>	XX	<b>Section no.</b>	D.1	<b>Date</b> : 15/11/2019
<b>Description of CL</b>				
NA				
<b>Project participant response</b>				<b>Date</b> : DD/MM/YYYY
<b>Documentation provided by project participant</b>				
<b>DOE assessment</b>				<b>Date</b> : DD/MM/YYYY

**Table 3. CAR from this verification**

<b>CAR ID</b>	01	<b>Section no.</b>	D.1	<b>Date</b> : 15/11/2019
<b>Description of CAR</b>				
Updation of the registered PDD for renewal of crediting period is not inline with the guidelines of CDM project standard for project activities, version 02; para 278-291. Updations carried out in track changes not traceable with registered PDD. Corrections requested.				
<b>Project participant response</b>				<b>Date</b> : 31/08/2020
Corrected				
<b>Documentation provided by project participant</b>				
PDD Version				
<b>DOE assessment</b>				<b>Date</b> : 04/09/2020
PP have submitted th revised PDD along with track-change mode and clean copy inline with the of CDM project standard for project activities, version 02 applicable for renewal of crediting period. CAR closed.				

<b>CAR ID</b>	02	<b>Section no.</b>	D.2	<b>Date</b> : 15/11/2019
<b>Description of CAR</b>				
PP requested to submit Sample JMRs, logbooks etc. for all parameters required to be monitored inline with the meth requirements for the project activity.				
<b>Project participant response</b>				<b>Date</b> : 31/08/2020
Supporting documents have been provided				
<b>Documentation provided by project participant</b>				
PP have submitted Sample JMRs, Invoices and logbooks Sample JMRs, logbooks etc. for all parameters required to be monitored inline with the meth requirements for the project activity. Information in the PDD found inline with the records submitted. CAR closed.				
<b>DOE assessment</b>				<b>Date</b> : 04/09/2020

PP have submitted Sample JMRs, logbooks etc. for all parameters required to be monitored inline with the meth requirements for the project activity and found inline with the information provided in the PDD. CAR closed.

<b>CAR ID</b>	03	<b>Section no.</b>	D.2	<b>Date :</b> 15/11/2019
<b>Description of CAR</b>				
PP requested to review meth applicability condition No. 4 with respect to type of project activity.				
<b>Project participant response</b>				<b>Date :</b> 31/08/2020
The applicability condition no. 4 of the methodology has been revised in the PDD section B.2.				
<b>Documentation provided by project participant</b>				
PDD Version				
<b>DOE assessment</b>				<b>Date:</b> 04/09/2020
PP have now applied latest version i.e. version 18 of the applicable methodology AMS I.D. appropriately. CAR closed.				

<b>CAR ID</b>	04	<b>Section no.</b>	D.3	<b>Date :</b> 15/11/2019
<b>Description of CAR</b>				
Demonstration of the validity of the original baseline is missing in the updated PDD for renewal of crediting period. Corrections requested.				
<b>Project participant response</b>				<b>Date :</b> 31/08/2020
Establishment of baseline scenario i.e. demonstration of original baseline has been included in the revised PDD				
<b>Documentation provided by project participant</b>				
PDD Version				
<b>DOE assessment</b>				<b>Date:</b> 04/09/2020
PP have submitted revised PDD with demonstration of the validity of the original baseline and same was found correct. CAR closed.				

<b>CAR ID</b>	05	<b>Section no.</b>	D.4	<b>Date :</b> 15/11/2019
<b>Description of CAR</b>				
Methodological choices and formules for Baseline, Project and Leakage emissions are not inline with the applied methodology in the updated PDD. Corrections requested.				
<b>Project participant response</b>				<b>Date :</b> 31/08/2020
Methodological choices and formules for Baseline, Project and Leakage emissions are now revised inline with the applied methodology.				
<b>Documentation provided by project participant</b>				
Revised PDD				
<b>DOE assessment</b>				<b>Date:</b> 04/09/2020
PP have submitted revised PDD and found that methodological choices and formules for Baseline, Project and Leakage emissions are inline with the applied methodology. CAR thus closed.				

<b>CAR ID</b>	06	<b>Section no.</b>	D.5	<b>Date :</b> 15/11/2019
<b>Description of CAR</b>				
PP requested to update monitoring plan inline with the registered PDD and new version of the applied methodology.				
<b>Project participant response</b>				<b>Date :</b> 31/08/2020
Monitoring plan updated				
<b>Documentation provided by project participant</b>				
PDD Version				
<b>DOE assessment</b>				<b>Date:</b> 04/09/2020
Monitoring plan is now updated inline with the registered PDD and new version of the applied methodology. Same is also inline with the onsite practices. CAR closed.				



<b>CAR ID</b>	07	<b>Section no.</b>	D.7	<b>Date :</b> 15/11/2019
<b>Description of CAR</b>				
PP requested to submit updated MOC for the project activity if applicable.				
<b>Project participant response</b>				<b>Date :</b> 31/08/2020
There is no change in MOC.				
<b>Documentation provided by project participant</b>				
NA				
<b>DOE assessment</b>				<b>Date:</b> 04/09/2020
There is no change in MOC and the MOC available on UN webpage is still valid. Hence CAR closed				

**Table 3. FAR from this validation**

<b>FAR ID</b>	00	<b>Section No.</b>		<b>Date :</b> DD/MM/YYYY
<b>Description of FAR</b>				
There is no FAR from this validation				
<b>Project participant response</b>				<b>Date :</b> DD/MM/YYYY
NA				
<b>Documentation provided by project participant</b>				
NA				
<b>DOE assessment</b>				<b>Date:</b> DD/MM/YYYY
NA				

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**Document information**

<i>Version</i>	<i>Date</i>	<i>Description</i>
03.0	31 May 2019	Revision to: <ul style="list-style-type: none"> <li>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);</li> <li>Make editorial improvements.</li> </ul>
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.
Decision Class: Regulatory		
Document Type: Form		
Business Function: Renewal of crediting period		
Keywords: crediting period, project activities, validation report		