




**Verification and certification report form for
CDM project activities
(Version 03.0)**

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

BASIC INFORMATION

Title and UNFCCC reference number of the project activity	Potrero Hydropower Plant, Peru UNFCCC Reference Number: 8414
Scale of the project activity	<input checked="" type="checkbox"/> Large-scale <input type="checkbox"/> Small-scale
Version number of the verification and certification report	2
Completion date of the verification and certification report	18/12/2020
Monitoring period number and duration of this monitoring period	1 st monitoring 01/06/2016 to 31/12/2019 (both days included)
Version number of the monitoring report to which this report applies	04
Crediting period of the project activity corresponding to this monitoring period	01 June 2016 – 31 May 2023 (Renewable)
Project participants	Empresa Eléctrica Agua Azul S.A
Host Party	Peru
Applied methodologies and standardized baselines	ACM0002 (version 12.3.0) - Consolidated baseline methodology for grid-connected electricity generation from renewable sources
Mandatory sectoral scopes	Sectoral scope 01: Energy industries (renewable - / non-renewable sources)
Conditional sectoral scopes, if applicable	NA
Estimated amount of GHG emission reductions or GHG removals for this monitoring duration in the registered PDD	246,840 tCO _{2e}
Certified amount of GHG emission reductions or GHG removals for this monitoring period	159,388 tCO _{2e}
Name and UNFCCC reference number of the DOE	Carbon Check (India) Private Ltd. (E-0052)
Name, position and signature of the approver of the verification and certification report	Amit Anand, CEO 

SECTION A. Executive summary

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Introduction:

The Project Participant, Empresa Eléctrica Agua Azul S.A, has appointed the DOE, Carbon Check (India) Private Ltd. (CC IPL) to perform an independent verification of the CDM Project Activity “Potrero Hydropower Plant, Peru” (Registration Ref No. 8414) in Peru (hereafter referred to as “Project Activity”). The project activity is generating renewable electricity by using water from the Crisnejas River, who receives its water from two main river basins, Cajamarca River basin (111.9 km of length) and Condebamba River basin (92.7 km of length). This energy is supplied to the National Interconnected Electricity Grid (SEIN). The reduction of baseline emissions results from the displacement of electricity generated by power plants within the SEIN, which include fossil/fuel power plants emitting CO₂.

This report summarises the findings of the verification of the project, performed on the basis of paragraph 62 of the CDM Modalities & Procedures, as well as criteria given to provide for consistent project operations, monitoring and reporting and the subsequent decisions by the CDM Executive Board. Verification is required for all registered CDM project activities intending to confirm their achieved emission reductions and proceed with request for issuance of CERs. This report contains the findings and resolutions from the verification and a certification statement for the certified emission reductions.

Objective:

Verification is the periodic independent review and ex-post determination of both quantitative and qualitative information by a Designated Operational Entity (DOE) of the monitored reductions in GHG emissions that have occurred as a result of the registered CDM project activity during a defined monitoring period.

Certification is the written assurance by a DOE that, during a specific period in time, a project activity achieved the emission reductions as verified.

The objective of this verification was to verify and certify emission reductions reported for the project activity for the period from 01/06/2016 to 31/12/2019 (including both the days).

The purpose of verification is to review the monitoring results and verify that the monitoring methodology was implemented according to the monitoring plan and monitoring data and used to confirm the reductions in anthropogenic emissions by sources, is sufficient, definitive and presented in a concise and transparent manner. CC IPL's objective is to perform a thorough, independent assessment of the registered project activity.

In particular, the monitoring plan, monitoring report and the project's compliance with relevant UNFCCC and host Party criteria are verified in order to confirm that the component project/s has/have been implemented in accordance with the previously registered/included project design and conservative assumptions, as documented. It is also confirmed if the monitoring-plan is in compliance with the registered PDD/B05/ and the approved monitoring methodology.

Scope:

The scope of the verification is:

- To verify the project implementation and operation with respect to the registered PDD/B05/
- To verify the implemented monitoring plan with the registered PDD and applied baseline and monitoring methodology.
- To verify that the actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan.

- To evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement.
- To verify that reported GHG emission data is sufficiently supported by evidence.

The verification shall ensure that the reported emission reductions are complete and accurate in order to be certified.

The verification comprises a review of the monitoring report /02/ over the monitoring period from 01/06/2016 to 31/12/2019 and based on the approved revised PDD /B05/ in part of the monitoring parameters and monitoring plan, emission reduction calculation spreadsheet, monitoring methodology and all related evidence provided by project participant.

Remote interviews were also performed as part of the verification process.

The verification team assigned by the DOE concludes that the approved revised PDD /B05/ and the Monitoring report /02/, meets all relevant requirements of the UNFCCC for CDM project activities including article 12 of the Kyoto Protocol and paragraph 62 of CDM M& P, the modalities and procedures for CDM (Marrakesh Accords) and the subsequent decisions by the COP/MOP and CDM Executive Board. The verification has been conducted in-line with the CDM VVS for project activities, version 02.0 /B01-1/.

The project activity was correctly implemented according to selected monitoring methodology, monitoring plan and the approved revised PDD /B05/. The monitoring system was installed, maintained in a proper manner, while collected monitoring data allowed for the verification of the amount of achieved GHG emission reductions. Through the review of documents and remote audit the verification team confirms that the project activity has resulted in the 159,388 tCO₂e emission reductions during the first monitoring period.

CC IPL as a DOE is therefore pleased to issue a positive verification opinion expressed in the attached Certification statement. To be filled in final verification Report.

Two (02) clarification and Five (05) Corrective Action Requests (CAR) has been raised and closed satisfactorily.

SECTION B. Verification team, technical reviewer and approver

B.1. Verification 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	Interviews	Verification findings
1.	Team Leader	IR	Singh	Vikash Kumar	CC IPL	X	X	X	X

B.2. Technical reviewer and approver of the verification and certification report

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	Anand	Amit	CC IPL

2.	Final Approval	IR	Anand	Amit	CCIPL
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SECTION C. Application of materiality

C.1. Consideration of materiality in planning the verification

The Project is a large-scale CDM project activity achieving total emission reductions of less than 300,000 tons of CO₂e per year; as such, a 2 per cent materiality threshold is applied /B03/. Accordingly, the materiality threshold is 3187 i.e., 2 % of 159,388 tons of CO₂e. The materiality thresholds have been calculated in accordance with the § 326 (c) of CDM VVS for project activities, version 02.0 /B01-1/.

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	Human Error: Recording and reporting of the information in the ER spreadsheet.	Low	ER spreadsheet data as per the registered monitoring plan. This includes all the parameters to be monitored ex-post as per the PDD	Verification team of CCIPL has focused on assessment of the following: <ul style="list-style-type: none"> • Procedure of raw data collection/ Monitoring procedures. • Data & information flow with a special focus on any material mistake • Calculation spreadsheets. • Procedures/QA/QC established to detect and correct any error or omission in monitoring parameters. • Quality control for monitored parameters and metering systems. Complete verification (100 % data) of all the monitoring records (measurement records, invoices and the calibration certificates) was done by the verification team and compared with the values indicated in the emission reduction spread sheet. No risk identified.
2.	Information System: Use of spreadsheets without adequate controls related to data changes/updates, version tracking, traceability, security	Low	The data is recorded in the spreadsheets based on the raw data collected. The access to the spreadsheets for calculation of ERs, GEF calculation sheet.	The identified risk was mitigated by reviewing the management of access to the records. It was confirmed through interviews that the data will be provided by COES and the operator will process the data. Monthly report for the energy and power provided to the grid gets prepared, all the monthly data get filled into spreadsheets and monthly report get issued. This is done by the trained personnel, the daily reports serve as back-up and are archived at the project site. All the data will be kept

				for at least for 2 years after the end of the last crediting period. Furthermore, quality control for monitored parameters and metering systems was also checked during site visit.
3.	Accuracy of the measuring equipment	Low	Check the calibration records for the electricity meter	The identified risk was mitigated by checking the calibration certificates of the energy meters

C.2. Consideration of materiality in conducting the verification

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In line with Guidelines for Application of materiality in verifications /B03/, a reasonable level of assurance is defined for the verification of the project by complete verification of all the monitoring records (measurement records and the calibration certificates) was done by the verification team and compared with the values indicated in the emission reduction spread sheet.

Some mistakes were identified and subsequently finding was raised. The identified mistakes as listed in findings in Appendix 4 to this report have been determined to be immaterial. And thus, it is confirmed that there are no material errors, omissions or misstatements and a reasonable level of assurance is established.

SECTION D. Means of verification

D.1. Desk/document review

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The verification was performed primarily based on the review of the Monitoring report /2/ and the supporting documentation. This process included review of data and information presented to verify their completeness and review of the monitoring plan and monitoring methodology. Documents reviewed or referenced during the verification are listed in Appendix 3 below.

D.2. On-site inspection

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N/A, since no on-site inspection has been conducted for the verification of project activity.

On site visit exclusion justification:

Carbon Check has not conducted an on-site inspection, which is in conformity with CDM Executive Board's recommendation to avoid site visit due to COVID-19 outbreak (https://cdm.unfccc.int/newsroom/latestnews/releases/2020/01041_index.html).

The on-site inspection can-not be postponed due to timeline agreed between the Project Participant and the DOE.

Duration of on-site inspection: DD/MM/YYYY to DD/MM/YYYY				
No.	Activity performed on-site	Site location	Date	Team member
1.				
...				

D.3. Interviews

Verification team has carried out remote interviews (through Skype) in order to assess the information included in the MR. During the desk review, the relevant records in consistent with the MR checked, comparing the relevant evidence and interview with the PP representative through remote interviews.

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Soria	Camila	Empresa Eléctrica Agua Azul S.A	14/05/2020	Project technical specification and operation including metering and QA/QC	Vikash Kumar Singh
2.	Wolfgang	Brueckner	Carbonbay GmbH & Co. KG	14/05/2020	Project operation, CER calculation and completeness of monitoring report, Quality Assurance – Management and operating system, compliance of monitoring plan with monitoring methodology and PDD.	Vikash Kumar Singh
3.		Marco	Empresa Eléctrica Agua Azul S.A	14/05/2020	Project technical specification and operation including metering and QA/QC	Vikash Kumar Singh
4		Jovanip	Empresa Eléctrica Agua Azul S.A	14/05/2020	Project technical specification and operation including metering and QA/QC	Vikash Kumar Singh

D.4. Sampling approach

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N/A

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

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
Compliance of the monitoring report with the monitoring report form	--	--	--
Compliance of the project implementation and operation with the registered PDD	--	CAR 01	--
Post-registration changes	--	--	--
Compliance of the registered monitoring plan with the	--	--	--

methodologies including applicable tools and standardized baselines			
Compliance of monitoring activities with the registered monitoring plan	CL01	CAR 04 CAR 05	--
Compliance with the calibration frequency requirements for measuring instruments	CL 02	CAR 02 CAR 03	--
Assessment of data and calculation of emission reductions or net removals	CL 01	--	--
Assessment of reported sustainable development co-benefits	--	--	--
Global stakeholder consultation	--	--	--
Others (please specify)	--	--	--
Total	CL 02	CAR 05	00

SECTION E. Verification findings

E.1. Compliance of the monitoring report with the monitoring report form

Means of verification	Document Review, Skype Interview
Findings	--
Conclusion	<p>CCiPL had made the version 1, dated 04/03/2020 of the Monitoring report /01/, covering the monitoring period from 01/06/2016 to 31/12/2019 (both days inclusive) publicly available on 19/03/2020 through its dedicated interface on the UNFCCC website /B05/.</p> <p>The MR /02/ uses the latest form available at UNFCCC website. The MR /01/ is complete and meets all requirements of the Instructions for filling out the monitoring report form version 07.0 /B06/ and CDM project standard version 02.0 /B01/.</p> <p>This confirms compliance with the §350 §352 and §353 of CDM VVS for project activities, version 02.0 /B01-1/.</p>

E.2. Remaining forward action requests from validation and/or previous verifications

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Not applicable as this is the first verification.

E.3. Compliance of the project implementation and operation with the registered project design document

Means of verification	Document Review, Skype Interview
Findings	CAR-01 has been raised and closed successfully, please refer appendix 4 for detailed assessment.
Conclusion	<p>As verified during the skype interview and document review /02/, /03/, /05/, the project activity involves generation of renewable electricity by using water from the Crisnejas River, who receives its water from two main river basins, Cajamarca River basin (111.9 km of length) and Condebamba River basin (92.7 km of length). This energy is supplied to the National Interconnected Electricity Grid (SEIN). The reduction of baseline emissions results from the displacement of electricity generated by power plants within the SEIN, which include fossil/fuel power plants emitting CO₂. The spatial extent of the Project boundary is the SEIN.</p> <p>The project activity involves the construction of a substation located in the left margin of Crisnejas River, called Potrero substation (less than 200 meters away from powerhouse), it comprises of 2 horizontal Francis turbines of individual capacity 10.228 MW /05/. There are two generators of individual capacity of 11,590 KVA with a power factor of 0.9 and thus individual capacity of generator is 10.431 MW and thus totalling to 20.86 MW. The details of turbine and generators were cross checked from the name plate details of them /05/.</p> <p>The electricity is generated at 10,000 volt which is then stepped up to 60, 000 volt through a step-up transformer. At each of the generator line there is a meter installed at 10,000 volt before step-up transformer. This electricity meter for the</p>

	<p>measurement of gross generation is of a 0.2 accuracy class /04/ which continuously measures and records the electricity exported and imported. There is an auxiliary meter of 0.4 accuracy class which monitors the auxiliary load of both turbine and generators.</p> <p>The electricity generated from the project after the 60kV step up transformer is transmitted to a COES sub-station (Aguas Calientes substation) situated 4.97 km away. The net electricity generated from the project is gross electricity generation minus the auxiliary consummation and transformer/transmission losses. The transmission losses are calculated on yearly basis by the COES and provided to the PO for adjustment.</p> <p>The project activity was under normal operation and maintenance during current monitoring period i.e., 01/06/2016 to 31/12/2019. There were no shut down during current monitoring period.</p> <p>The PO has signed a 20 year Power Purchase Agreement with the Ministry of mining and water. As per the signed PPA, the generated electricity would be supplied to COES electricity system. During the reported monitoring period, the project has supplied 237,435.69 MWh of electricity to grid /07/ which has resulted emission reduction of 159,388 tCO₂e.</p> <p>The project has been implemented as described in the approved revised PDD /B05/ as well as in section B.1 of the monitoring report. No deviations thereof have been identified in the course of this verification. The verification team took cognizance of §354 (a), §355, and §356 of CDM VVS for project activities, version 02.0 /B01-1/.</p> <ul style="list-style-type: none"> • The implementation status and equipment installation of the Project are consistent with the approved revised PDD /B05/; • The actual operation of the Project is as per the approved revised PDD /B05/; • Information (data and variables) provided in the monitoring report is in accordance with that stated in the approved revised PDD /B05/.
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E.4. Post-registration changes

E.4.1. Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents¹

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N/A

E.4.2. Corrections

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The following corrections were submitted via prior approval track during post registration changes and the changes were made as per the latest PDD template and same was approved on 06/12/2020 by UNFCCC please refer revised PDD (version 11.0; dated: 01/11/2020) and corresponding validation report (version 02; dated: 02/11/2020) /B05/:

1. Editorial changes as per PDD Template version 11.0
2. Revised general description of the project activity in Section A.1 in order to justify the changes occurred during project implementation stage
3. Change in the statement regarding Letter of Approval (LoA) from host country in Section F

E.4.3. Changes to the start date of the crediting period

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N/A

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

E.4.4. Inclusion of a monitoring plan

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N/A

E.4.5. Permanent changes from registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines or other methodological regulatory documents

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The following permanent changes were submitted via prior approval track in registered monitoring plan which was approved on 06/12/2020 by UNFCCC please refer revised PDD (version 11.0; dated: 01/11/2020) and corresponding validation report (version 02; dated: 02/11/2020) /B05/:

1. Inclusion of Monitoring Parameter $EG_{Gross,y}$ and $EG_{Aux,y}$ in Section B.7.1 of revised PDD in accordance with the change in monitoring plan. Change in the description of the parameter (measurement methods and procedures) $EG_{facility,y}$ as $EG_{facility,y}$ is difference of $EG_{Gross,y}$ and $EG_{Aux,y}$.
2. For Gross Electricity meter which is self-calibrated and hence no any calibration records required. Calibration frequency for Gross Electricity meter is mentioned as Meter self-calibrates every 10 seconds.
3. For Auxiliary electricity meter, calibration frequency is mentioned as 24 months as per Manufacturers recommendation.
4. The cross checking source for gross energy is revised from invoices to records of sold electricity as invoices do not mention electricity quantity

PP has also requested two other Post Registration Changes (under issuance track) related to monitoring plan along with this verification. And the changes are requested as per the §247 (b) and appendix 1 (c) (Indicative list of post-registration changes that may be suitable for approval under the issuance track) of “CDM project standard for project activities” version 02.0 these corrections are being submitted under issuance track.

1. The description of Measurement methods and procedures and QA/QC procedures for parameter $EG_{Aux,y}$ i.e. Quantity of Auxiliary Electricity Consumption has been revised in section B.7.1 – the accuracy class is in accordance with the manufacturer’s specification (i.e. 0.4).
2. QA/QC procedures of the parameter Auxiliary Electricity Consumption has been revised in section B.7.1 of PDD.

Please refer to the revised PDD /15/ and validation report for post-registration changes (being submitted along with the verification report in issuance track) for further details. /16/

E.4.6. Changes to the project design

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The following changes in project design for project activity during this monitoring period were submitted via prior approval track and got approved on 06/12/2020 by UNFCCC please refer revised PDD (version 11.0; dated: 01/11/2020) and corresponding validation report (version 02; dated: 02/11/2020) /B05/:

1. The project activity installed capacity has increased from 19.9 MW to 20.86 MW because of change of each turbine nominal capacity from 9.95 MW to 10.228 MW. Besides, there has been an addition of generator capacity as 11590 KVA and change of total installed capacity from 19.9 MW to 20.86 MW. Turbine speed corrected as 600 RPM.
2. Revised description of establishment of project additionality in Section B.5. in accordance with changes in financial indicators for the project.
3. Revision in Section B.6.3 and B.6.4 due to change in $EG_{PJ,y}$ and $B_{PJ,y}$ in accordance with the change in project design.

E.4.7. Changes specific to afforestation and reforestation project activities

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N/A

E.5. Compliance of the registered monitoring plan with applied methodologies, applied standardized baselines, and other applied methodological regulatory documents

Means of verification	Document Review, Skype Interview
Findings	Subject to closure of CAR-05 has been raised and closed successfully, please refer appendix 4 for detailed assessment.
Conclusion	<p>The verification team has checked the actual monitoring plan against the latest approved monitoring plan and monitoring methodology /B02/ and applicable tools. Furthermore, the verification team has checked monitoring system during the remote interview by means of comparison with the information given in the monitoring plan and monitoring methodology. The monitoring plan is completely in accordance with the approved methodology applied by the approved revised PDD /B05/.</p> <p>All the parameters need to be monitored and corresponding monitoring approach have been discussed in the monitoring plan in the approved revised PDD /B05/ and QA/QC procedure has been stipulated.</p> <p>The verification team confirms that the monitoring plan complies with the applied methodologies and the other applied methodological regulatory documents and all applied procedures are completely in compliance to the latest approved monitoring plan and the methodology ACM0002 version 12.0 /B02/.</p> <p>The verification team took cognizance of §357, §357 and §358 of CDM VVS for project activities, version 02.0 /B01-1/.</p>

E.6. Compliance of monitoring activities with the registered monitoring plan**E.6.1. Data and parameters fixed ex ante or at renewal of crediting period**

Means of verification	Document Review, Skype Interview
Findings	--
Conclusion	<p>The Project does not have any ex-ante parameters.</p> <p>The verification team took cognizance of §360 of CDM VVS for project activities, version 02.0/B01-1/</p>

E.6.2. Data and parameters monitored

Means of verification	Document Review, Skype Interview			
Findings	CL 01, CAR-04, CAR -05 has been raised and closed successfully, please refer appendix 4 for detailed assessment.			
Conclusion	All relevant monitoring parameters (as listed in section B. 7.1 of the approved revised PDD /B05/ and D.2 of the MR /02/) have been verified with regard to the appropriateness of the applied measurement / determination method, frequency, the correctness of the values applied for ER calculation, the accuracy, and applied QA/QC measures Referring to §367 of CDM VVS for project activities, version 02.0 /B01-1/, the verification team has reviewed all the monitoring parameters as listed below and verified the information flow for these parameters including the values in the monitoring report.			
	Parameter	Value	Unit	Assessment
	EG _{Gross,y} (Gross electricity supplied by the project to the grid in year y)	237,851.48	MWh	This parameter is monitored by a bidirectional meter /05/ and the electricity supplied to the grid is monitored through this meter. Therefore, the electricity supplied to the grid is

				<p>measured continuously and recorded at least each hour. The electricity supplied is net electricity exported to the grid. The project electricity meter has a precision class of 0.2. As confirmed during the remote interview the meters are located at the power plant substation and it is confirmed that the proportion of data monitored is 100% and the data is archived electronically.</p> <p>Meter details are given below:</p> <p>Meter 1: Serial Number: 00000000194632530 Type: Tri-vector Meter Make: Electro Industries Accuracy class: 0.2</p> <p>Meter 2: Serial Number: 00000000194634633 Type: Tri-vector Meter Make: Electro Industries Accuracy class: 0.2</p> <p>Both the meters were installed at the time of commissioning and were working till the end of monitoring period. The meters are factory calibrated on 07/05/2017 and self-calibrating (self-calibrates in every 10 seconds) as per manufacturer's specification. Verification team confirms that it is in line with COES requirements. The meter readings are cross-checked with records of electricity sold as available from official reports (COES statistics). This is in compliance with the registered monitoring plan and the applied methodology.</p>
	<p>EG_{Aux,y}</p> <p>(The quantity of auxiliary electricity consumption in the CDM project activity in year y)</p>	415.79	MWh	<p>This parameter is measured by electricity meter /05/ that measures auxiliary electricity consumption in the project activity. The auxiliary electricity consumption is measured continuously and recorded at every 15 minutes.</p>

				<p>As per the review of Auxiliary meter manual it is confirmed that the precision class of the meter is 0.4. During the remote interview it was confirmed that the meter is located at the power plant substation which archives data electronically.</p> <p>Details of the Meter are given below: Make: WEG Accuracy class: 0.4 Serial no. 0041722</p> <p>The meter was installed at the time of commissioning and was working till end of monitoring period. The meter, in accordance with the manufacturer's specification is factory calibrated. However, the last date of calibration is 01/09/2020. PP has applied a delayed calibration approach and applied a factor of 0.4% to adjust the values of quantity of auxiliary electricity consumption for the period 03/06/2017 to 31/12/2019 i.e., for the entire monitoring period.</p>								
	EG _{facility,y} (Net electricity supplied by the project to the grid)	237,435.69	MWh	<p>This parameter is calculated by subtracting auxiliary electricity consumption from gross electricity supplied to the grid.</p>								
	EF _{grid,CM,y} (CO ₂ emission factor of the grid electricity in year y)	<table><tr><th>Year</th><th>EF_{grid,CM,y}</th></tr><tr><td>2017</td><td>0.67141</td></tr><tr><td>2018</td><td>0.67201</td></tr><tr><td>2019</td><td>0.67066</td></tr></table>	Year	EF _{grid,CM,y}	2017	0.67141	2018	0.67201	2019	0.67066	tCO ₂ e/MWh	<p>The parameter has been calculated in accordance with applied methodological tool: Tool to calculate the emission factor for an electricity system. (version 7.0) /B04/ and found to be in compliance.</p> <p>The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The value was checked from Emission factor calculation sheet /03/</p>
	Year	EF _{grid,CM,y}										
2017	0.67141											
2018	0.67201											
2019	0.67066											
EG _{PJ,h} (Electricity	As per the Grid Emission Factor calculation sheet	MWh	<p>The parameter has been monitored appropriately, in accordance with the</p>									

	displaced by the project activity in hour h of year y)			registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The value was checked from Emission factor calculation sheet /03/.
	$EG_{n,h}$ (Electricity generated and delivered to the grid by power units n in hour h)	As per the Grid Emission Factor calculation sheet	MWh	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The value was checked from Emission factor calculation sheet /03/.
	$EG_{m,y}$ (Net quantity of electricity generated and delivered to the grid by power unit m in year y)	As per the Grid Emission Factor calculation sheet	MWh	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The value was checked from Emission factor calculation sheet /03/.
	$\eta_{m,y}$ (Average net energy conversion efficiency of power unit m in year y (ratio))	As per the Grid Emission Factor calculation sheet	--	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The value was checked from Emission factor calculation sheet /03/.
	$EF_{CO_2,m,I,y}$ (Average CO ₂ emission factor of fuel type I used in power unit m in year y)	As per the Grid Emission Factor calculation sheet	tCO ₂ /GJ	The parameter is taken as default on the basis of data provided by IPCC in Guidelines on National GHG Inventories 2006.

	<p>The verification team took cognizance of §361 (d), §363 of CDM VVS for project activities, version 02.0 /B01-1/.</p> <p>The monitoring has been carried out in accordance with the monitoring plan in the approved revised PDD/B05/.</p>
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E.6.3. Implementation of sampling plan

Means of verification	Document Review, Skype Interview
Findings	
Conclusion	The PDD does not have any provision of sampling.

E.7. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	Document Review, Skype Interview																		
Findings	CL 02, CAR-02, CAR 03 has been raised and closed successfully, please refer appendix 4 for detailed assessment.																		
Conclusion	The verification team has checked the relevant monitoring equipment to verify the fulfilment of the calibration requirements, especially if calibration frequency and accuracy levels are in line with the requirements of the approved revised PDD /B05/ and/or the applicable calibration standards. During this monitoring period, the installed measuring instruments have been operating correctly and were duly maintained/calibrated beyond the reported monitoring period.																		
	<table><tr><th>Meter</th><th>EG_{Gross,y} 1</th><th>EG_{Gross,y} 2</th><th>EG_{Aux,y}</th></tr><tr><td>Serial Number</td><td>00000000194632530</td><td>00000000194634633</td><td>00417221464</td></tr><tr><td>Make</td><td>Electro Industries</td><td>Electro Industries</td><td>WEG</td></tr><tr><td>Accuracy class</td><td>0.2</td><td>0.2</td><td>0.4</td></tr></table>			Meter	EG _{Gross,y} 1	EG _{Gross,y} 2	EG _{Aux,y}	Serial Number	00000000194632530	00000000194634633	00417221464	Make	Electro Industries	Electro Industries	WEG	Accuracy class	0.2	0.2	0.4
	Meter	EG _{Gross,y} 1	EG _{Gross,y} 2	EG _{Aux,y}															
	Serial Number	00000000194632530	00000000194634633	00417221464															
	Make	Electro Industries	Electro Industries	WEG															
	Accuracy class	0.2	0.2	0.4															
The auxiliary meter (EG_{Aux,y}) was installed at the time of commissioning and was working till end of monitoring period. The meter, in accordance with the manufacturer's specification is factory calibrated. However, the last date of calibration is 01/09/2020. PP has applied a delayed calibration approach and applied a factor of 0.4% to adjust the values of quantity of auxiliary electricity consumption for the period 03/06/2017 to 31/12/2019 i.e., for the entire monitoring period.																			
Verification team found that the accuracy of monitoring equipment's is as per the requirements. The verification team took cognizance of §365 of CDM VVS for project activities, version 02.0 /B01-1/.																			

E.8. Assessment of data and calculation of emission reductions or net removals

E.8.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

Means of verification	Document Review, Skype Interview
Findings	CL 01, has been raised please refer appendix 4 for details.
Conclusion	<p>The verification team has performed the following activities to assess the data and calculations of GHG emission reductions achieved by the Project as per the methodology ACM0002 version 12.0 /B02/:</p> <ul style="list-style-type: none"> • Verification team based on desk review and remote interview confirms that a complete set of data for the specified monitoring period is available. • Review of the calculations of baseline GHG emissions have been carried out in accordance with the formula and methods described in the monitoring plan in the approved revised PDD /B05/ and applied methodology. • Crosscheck of the calculated emission reductions with the provisions as per the Monitoring Plan with the actual practice during the monitoring period. • Review of the emission factor of the grid (Efy) and other reference values as per the approved revised PDD /B05/. <p>Baseline emissions:</p>

The baseline emissions are calculated based on the given formula:

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

Where:

$EG_{facility,y}$	=	Net electricity supplied to grid by the project activity
$EF_{CO_2,grid,y}$	=	CO ₂ emission factor of the grid

Net electricity supplied to the grid by the Project during current monitoring period i.e. 01/06/2016 to 31/12/2019 = **237,435.69MWh**

Year-wise calculation of Baseline Emissions:

Year	EG _{BL,y} (MWh)	EF _{CO₂, grid, y} (tCO ₂ /MWh)	BE _y (tCO ₂)
03/06/2017 ² to 31/12/2017	23,312.59	0.67141	15,652.31
01/01/2018 to 31/12/2018	97,955.49	0.67201	65,827.07
01/01/2019 to 31/12/2019	116,167.61	0.67066	77,908.97
Total	237,435.69		159,388

Total Baseline Emissions (BE_y) = 159,388 tCO₂e

The verification team confirms that the calculation of baseline emission and emission reductions are in accordance with the applied methodological equation and approved revised PDD /B05/. Calculations have been checked and confirmed from the ER spread sheet /03/.

The verification took cognizance of § 375 of CDM VVS for project activities, version 02.0) /B01-1/.

E.8.2. Calculation of project GHG emissions or actual net anthropogenic GHG removals by sinks

Means of verification	Document Review, Skype Interview
Findings	--
Conclusion	As per applied methodology ACM0002 (Version 12.0), as the project activity is a run-of-the-river project, it does not lead to any GHG emissions; therefore, project emissions are considered equal to zero. Therefore, PE _y = 0 tCO ₂ e The verification took cognizance of § 374 of CDM VVS for project activities, version 02.0) /B01-1/.

E.8.3. Calculation of leakage GHG emissions

Means of verification	Document Review, Skype Interview
Findings	--
Conclusion	As per applied methodology ACM0002 (Version 12.0), no leakage emissions are considered. The main emissions potentially giving rise to leakage in the context of electric sector projects are emissions arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, and transportation). Therefore, LE _y = 0 tCO ₂ e

² Though the crediting period starts from 01/06/2016 but the plant was commissioned on 29/04/2017; The energy meters installed in the project when it was commissioned on 29/04/2017 were not in accordance with COES requirements (in particular those meters not able to give COES a real time access), hence the meters were replaced and the new meters installed on 03/06/2017 (these meters are still existing till the end of monitoring period) and were functional from 03/06/2017, hence electricity generation before that date has been assumed as 0(zero) and electricity data from 03/06/2017 onwards is considered for ER calculations.

E.8.4. Summary calculation of GHG emission reductions or net anthropogenic GHG removals by sinks

Means of verification	Document Review, Skype Interview
Findings	--
Conclusion	<p>The verification team has checked if the MR includes a summary table of the emission reductions calculation specifying separately:</p> <ul style="list-style-type: none"> a) Total baseline emissions b) Total Project emissions c) Total emission reductions. <p>The emission reductions during the monitoring period 01/06/2016 to 31/12/2019 are calculated as:</p> $ER_y = BE_y - PE_y - LE_y$ $ER_y = 159,388 - 0 - 0 = \mathbf{159,388 \text{ tCO}_2e}$ <p>According to § 374 of CDM VVS for project activities, version 02.0 /B01-1/ the verification team confirms that:</p> <ul style="list-style-type: none"> • A complete set of data for the monitoring period is available. • Information provided in the monitoring report has been cross-checked with other sources, electricity sales receipts. • Calculations of baseline emissions and emission reduction has been carried out in accordance with the formulae and methods described in the monitoring plan and the applied methodology. • Appropriate/correct emission factor value has been applied

E.8.5. Comparison of actual GHG emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD

Means of verification	Document Review, Skype Interview
Findings	--
Conclusion	<p>The comparison of actual GHG emission reductions with estimates in approved revised PDD /B05/ has been checked by the verification team. Based on the above assessment, the emission reduction during the monitoring period 01/06/2016 to 31/12/2019 is verified as 159,388 tCO₂e. Verification team noted that the verified emission reductions are less than the estimated value in the monitoring period.</p> <p>According to §374 of CDM VVS for project activities, version 02.0 /B01-1/ the verification team confirms that:</p> <p>A comparison of actual GHG emission reductions or net anthropogenic GHG removal of the project activity achieved during this monitoring period with the estimates in the registered PDD has been provided.</p> <p>The verification team considers the calculation of the comparison is correct.</p>

E.8.6. Remarks on difference from estimated value in registered PDD

Means of verification	Document Review, Skype Interview
Findings	--
Conclusion	Not applicable since the actual GHG emission reductions are lower than the estimates in the approved revised PDD /B05/.

E.8.7. Actual GHG emission reductions or net anthropogenic GHG removals by sinks during the first commitment period and the period from 1 January 2013 onwards

Means of verification	Document Review, Skype Interview
Findings	--
Conclusion	The verification team has checked section E.4 of the MR and the ER calculation spreadsheet. The MR in section E.4 includes a summary table of the ER

	breakdown which states that the GHG emission reductions have completely been generated from 1 January 2013 onwards. Actual GHG emission reductions have been generated from 1 January 2013 onwards. CERs achieved upto 31 st Dec 2012 = 0 tCO ₂ e. CERs achieved from 1 st Jan 2013 = 159,388 tCO ₂ e
--	---

E.9. Assessment of reported sustainable development co-benefits

Means of verification	Document Review, Skype Interview
Findings	--
Conclusion	N/A

E.10. Global stakeholder consultation

Means of verification	Document Review, Skype Interview
Findings	--
Conclusion	Not applicable (this is not first MP)

SECTION F. Internal quality control

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The verification report passed a technical review before being submitted to the UNFCCC Executive Board. The technical review is performed by a technical reviewer qualified in accordance with CCIPL's qualification scheme for CDM validation and verification.

SECTION G. Verification opinion

>>

Carbon Check (India) Private Ltd. (CCIPL) has performed the first (01st) verification of the registered CDM Project Activity "Potrero Hydropower Plant, Peru" having UNFCCC reference number as 8414. The project activity generates renewable electricity by using water from the Crisnejas River. This energy is supplied to the National Interconnected Electricity Grid (SEIN). The reduction of baseline emissions results from the displacement of electricity generated by power plants within the SEIN, which include fossil/fuel power plants emitting CO₂. The spatial extent of the Project boundary is the SEIN.

The verification team assigned by the DOE concludes that the project activity as described in the approved revised PDD /B05/ and the Monitoring report /02/, meets all relevant requirements of the UNFCCC for CDM project activities including article 12 of the Kyoto Protocol and paragraph 62 of CDM Modalities & Procedures, the modalities and procedures for CDM (Marrakesh Accords) and the subsequent decisions by the COP/MOP and CDM Executive Board. The verification has been conducted in-line with the CDM VVS requirements for project activities, version 02.0 /B01-1/.

Verification methodology and process

The Verification team confirms the contractual relationship signed on 31/03/2020 between Carbon Check (India) Private Ltd. (DoE) and Empresa Eléctrica Agua Azul S.A (project participant). The team assigned to the verification meets the CCIPL's internal procedures including the UNFCCC requirements for the team composition and competence. The verification team has conducted a thorough contract review as per UNFCCC and CCIPL's procedures and requirements.

The verification has been performed as per the requirements described in the CDM VVS for project activities, version 02.0 and constitutes the review and completion of the following steps:

- Reviewing the approved revised PDD /B05/ including the monitoring plan and the corresponding validation report /B05/;
- Publication of the MR (version 1, 04/03/2020) /1/ on the UNFCCC website on 19/03/2020
- Desk review of the validation report, MR and other relevant documents including documents related to the projects activities in emission reductions

- Review of the applied monitoring methodology (ACM0002 version 12.0) /B02/;
- Review of any CMP and EB decisions, clarifications and guidance /B05/;
- Off-site interview (14/05/2020)
- Resolution of CARs and CLs raised during verification
- Issuance of Verification Report

The project activity was correctly implemented according to selected monitoring methodology, monitoring plan and the registered PDD. The monitoring system was installed, maintained in a proper manner, while collected monitoring data allowed for the verification of the amount of achieved GHG emission reductions. Through the review and off-site visit, the verification team confirms that the project activity has resulted in the 159,388 tCO₂e emission reductions during the first monitoring period.

The break-up of emission reduction up-to 01/01/2016 to 31/12/219 onwards as verified during the course of verification are as below:

Item	Emission reductions up to 31 December 2012	Emission reductions from 1 January 2013 onwards
Emission reductions (t CO ₂ e)	0	159,388

SECTION H. Certification statement

>>

Carbon Check (India) Private Ltd. (the DOE) has performed the first (01st) verification of the registered project activity "Potrero Hydropower Plant, Peru" having UNFCCC reference number as 8414.

The PP is responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions. It is DOE's responsibility to express an independent verification statement on the reported GHG emission reductions from the project activity. The DOE does not express any opinion on the selected baseline scenario or on the validated and approved revised PDD. The verification is carried out in-line with the requirements of CDM VVS for project activities, version 02.0 /B01-1/.

The verification was performed to identify the compliance with implementation and monitoring requirements, and to verify the actual amount of achieved emission reductions, by obtaining evidence and information through remote interview included:

- checking whether the provisions of the monitoring methodology and the monitoring plan were consistently and appropriately applied; and
- the collection of evidence supporting the reported data.

The verification is based on:

- Approved revised PDD version 12 dated 17/12/2020 and the corresponding validation report /B05/;
- Approved monitoring methodology ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", version 12.0; /B02/
- Monitoring reports version 04 dated 17/12/2020 /01-a/

This statement covers verification period from 01/01/2016 to 31/12/2019 (including both the dates).

The DOE has raised 02 clarifications and 05 corrective action request all of which have been successfully resolved by the project participant.

The DOE considers necessary to give reasonable assurance that reported GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring

methodology and the monitoring plan contained in the approved revised PDD /B05/ are fairly stated.

The DOE, hereby certifies that the project activity, achieved emission reductions by sources of GHG equal to 159,388 tCO₂e and all monitoring requirements have been fulfilled and is substantiated by an audit trail that contains evidence and records.


The break-up of emission reduction up-to 31/12/2012 and 01/01/2013 onwards as verified during the course of verification are as below:

Item	Emission reductions up to 31 December 2012	Emission reductions from 1 January 2013 onwards
Emission reductions (t CO ₂ e)	0	159,388

Appendix 1. Abbreviations

Abbreviations	Full texts
CAR	Corrective action request
CCIPL	Carbon Check (India) Private Ltd.
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CL	Clarification request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide Equivalent
DNA	Designated National Authority
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse gas(es)
MoV	Means of verification
MP	Monitoring Plan
MR	Monitoring Report
PDD	Project Design Document
PP	Project Participant
UNFCCC	United Nations Framework Convention for Climate Change
VVS	Validation and Verification Standard

Appendix 2. Competence of team members and technical reviewers



Carbon Check (India) Private Ltd.

Vikash Kumar Singh

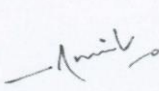
has been qualified as per CCIPL's internal qualification procedures, in accordance with requirements of Accreditation Standard (version 07.0):

For following functions:

Validator	<input checked="" type="checkbox"/>	Team Leader	<input checked="" type="checkbox"/>	Technical reviewer	<input checked="" type="checkbox"/>
Verifier	<input checked="" type="checkbox"/>	Technical Expert	<input checked="" type="checkbox"/>	Local Assessor ¹	<input checked="" type="checkbox"/>

In the following Technical Areas:

TA 1.1	<input checked="" type="checkbox"/>	TA 3.1	<input checked="" type="checkbox"/>	TA 5.2	<input type="checkbox"/>	TA 9.2	<input type="checkbox"/>	TA 13.2	<input checked="" type="checkbox"/>
TA 1.2	<input checked="" type="checkbox"/>	TA 4.1	<input checked="" type="checkbox"/>	TA 8.1	<input type="checkbox"/>	TA 10.1	<input type="checkbox"/>	TA 14.1	<input type="checkbox"/>
TA 2.1	<input type="checkbox"/>	TA 5.1	<input type="checkbox"/>	TA 9.1	<input type="checkbox"/>	TA 13.1	<input checked="" type="checkbox"/>		



Mr. Amit Anand
CEO

Date of Approval
24/12/2020

Valid Till
24/12/2021

Revision History of the Document

26/12/2014	Initial Adoption
24/12/2015	Annual Revision
20/01/2016	Interim Revision for office address change
23/12/2017	Annual Revision
24/12/2017	Annual Revision
24/12/2018	Annual Revision
24/12/2019	Annual Revision
01/03/2020	Interim Revision for office address change
01/09/2020	Interim Revision for CCIPL logo change
24/12/2020	Annual Revision

¹ India, South Africa

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Carbon Check (India) Private Ltd.

Amit Anand

has been qualified as per CCIPL's internal qualification procedures, in accordance with requirements of Accreditation Standard (version 07.0):

For following functions:

Validator ☒ Team Leader ☒ Technical reviewer ☒
 Verifier ☒ Technical Expert ☒ Local Assessor¹ ☒

In the following Technical Areas:

TA 1.1 ☒ TA 3.1 ☒ TA 5.2 ☐ TA 9.2 ☐ TA 13.2 ☐
 TA 1.2 ☒ TA 4.1 ☐ TA 8.1 ☒ TA 10.1 ☐ TA 14.1 ☒
 TA 2.1 ☐ TA 5.1 ☐ TA 9.1 ☐ TA 13.1 ☒

Vikash K. Singh

Mr. Vikash Kumar Singh
Compliance Officer

Date of Approval
24/12/2020

Valid Till
24/12/2021

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24/12/2017	Annual Revision
24/12/2018	Annual Revision
24/12/2019	Annual Revision
01/03/2020	Interim Revision for office address change
01/09/2020	Interim Revision for CCIPL logo change
24/12/2020	Annual Revision

¹ India and South Africa

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Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
/01/	PP	<ul style="list-style-type: none"> Webhosted Monitoring Report Interim versions of monitoring report 	Version 1; Dated: 04/03/2020 Version 2; Dated: 17/07/2020 Version 3; Dated: 23/11/2020	PP
/02/	PP	Final monitoring report	Version 4; Dated: 17/12/2020	PP
/03/	PP	Emission reduction calculation sheet corresponding to /02/	Dated: 17/12/2020	PP
/04/	PP	Evidence for the commissioning of the hydro project	Dated: 28/04/2017	PP
/05/	PP	<p>Evidence for the technical specifications and/or calibration requirements of the electricity meter</p> <ol style="list-style-type: none"> Gross electricity meters <ul style="list-style-type: none"> Manufacturer's specification https://electroind.com/products/Nexus_1500+/pdf/brochures/Nexus-1500+-Meter-Brochure_E154718.pdf Auxiliary electricity meter <ul style="list-style-type: none"> https://electroind.com/products/Nexus_1500+/pdf/brochures/Nexus-1500+-Meter-Brochure_E154718.pdf Manual of auxiliary meter (Make: WEG, model: MMW02) Calibration records: 01/09/2020 	--	PP
/06/	PP	RECORDS OF METERS IN GENERATION TERMINALS EVERY 15 MINUTES OF ACTIVE POWER (MW) and AUXILIARY SERVICES (MW)) for all the months in the monitoring period i.e. June 2017 to December 2019	--	
/07/	PP	Cross-check meter readings with records of electricity sold as available on official reports (COES statistics) https://www.coes.org.pe/Portal/Publicaciones/Estadisticas/	--	
/08/	PP	Evidence for the technical specifications of the project equipment –photograph of the project equipments (Turbine, generator, grid interconnection point and other components of the project).	--	PP
/09/	PP	Power Purchase Agreement Signed between Empresa Eléctrica Agua Azul S.A and National Interconnected Electricity Grid (SEIN)	Dated: 30/10/2013	PP
/10/	PP	Record of the data of electricity supplied (export and import) of the project for the monitoring period.	--	PP

CDM-VCR-FORM

/11/	PP	a) Layout plan of electricity transmission line b) Diagram showing the electricity generation, transmission, evacuation and metering system.	--	PP
/12/	PP	a) Spread sheet with detailed calculation of grid emission factor (OM, BM and CM) calculated ex-post for the reported monitoring period. b) Evidence of the data (from COES) used for the calculation of Operating margin and Build Margin	--	PP
/13/	PP	Statutory clearances for the operation of the hydro-power project	--	PP
/14/	Empresa Eléctrica Agua Azul S.A & CCIPL	Verification Contract between Empresa Eléctrica Agua Azul S.A & CCIPL	Dated: 31/03/2020	CC IPL
/15/	PP	Revised PDD in response to issuance track PRC.	Version 12; Dated: 17/12/2020	PP
/16/	CC IPL	Issuance track validation opinion corresponding to /15/	Version 01; Dated: 18/12/2020	CC IPL
/B01/	UNFCCC	1. CDM Validation and Verification Standard version for project activities 02.0 2. CDM Project Standard for project activities version 02.0	https://cdm.unfccc.int/	Others
/B02/	UNFCCC	ACM0002 (version 12.3.0) - Consolidated baseline methodology for grid-connected electricity generation from renewable sources	https://cdm.unfccc.int/	Others
/B03/	UNFCCC	Guideline: Application of materiality in verifications version 02.0	https://cdm.unfccc.int/	Others
/B04/	UNFCCC	<ul style="list-style-type: none"> • Tool to calculate the Emission Factor for an electricity system Version 02.2.1 • Tool for demonstration and assessment of additionality Version 06.1.0 	https://cdm.unfccc.int/	Others
/B05/	UNFCCC	Approved PDD version 11.0 dated 01/11/2012 and the corresponding validation opinion Validation Report at the time of registration	https://cdm.unfccc.int/	Others
/B06/	UNFCCC	Attachment. Instructions for filling out the monitoring report form version 07.0	https://cdm.unfccc.int/	Others

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

Table 1. Remaining FAR from validation and/or previous verifications

FAR ID	xx	Section no.	--	Date: DD/MM/YYYY
Description of FAR				
Project participant response				Date: DD/MM/YYYY
Documentation provided by project participant				
DOE assessment				Date: DD/MM/YYYY

Table 2. CL from this verification

CL ID	01	Section no.	E.6.2, E.8.1	Date: 03/06/2020
Description of CL				
As per paragraph 364 of VVS for project activities, version 02.0, <i>"The DOE shall list each parameter required by the registered monitoring plan and state how it verified the information flow (from data generation, aggregation, to recording, calculation and reporting) for these parameters including the values in the monitoring report."</i>				
PP is requested to provide ER calculation spread sheet of the project. Furthermore, the value of the parameter "EF _{grid,CM,y} " in Monitoring report is inconsistent with the calculation spread sheet provided for each year of the monitoring period.				
Project participant response				Date: 15/07/2020
1. ER calculation sheet has been provided for reference 2. The value of combined margin emission factor (EF _{grid,CM,y}) has been corrected in monitoring report				
Documentation provided by project participant				
1. ER calculation sheet 2. CDM Monitoring Report Version 02				
DOE assessment				Date: 27/07/2020
1. ER calculation sheet has been provided by the PP. CL is closed 2. Based on review of revised MR, DOE confirms that the value of combined margin emission factor (EF _{grid,CM,y}) has been corrected and consistent in monitoring report. CL is closed.				

CL ID	02	Section no.	E.7	Date: 03/06/2020
Description of CL				
As per paragraph 365 of VVS for project activities, version 02.0, <i>"The DOE shall determine whether the calibration of the measuring equipment that has an impact on the claimed GHG emission reductions or net anthropogenic GHG removals is conducted by the project participants at the frequency specified in the applied methodologies, the applied standardized baselines, the other applied methodological regulatory documents or the registered monitoring plan."</i>				
During the remote interviews, it was clarified that a meter at the time of commissioning of the project was installed at the project site. This was later replaced by the meter installed at present during the end of the monitoring period. The replacement records has been provided to the verification team however no records of calibration of the previous meter including its details has been made available to the verification team.				
Project participant response				Date: 15/07/2020
The energy meters installed in the project when it was commissioned on 29/04/2017 were not in accordance with COES requirements (in particular those meters not able to give COES a real time access), hence the meters were replaced and the new meters installed on 03/06/2017 (these meters are still existing till the end of monitoring period) and were functional from 03/06/2017, hence electricity generation before that date has				

been assumed as 0 (zero) and electricity data from 03/06/2017 onwards is considered for ER calculations.	
Documentation provided by project participant	
CDM Monitoring Period Version 02	
DOE assessment	Date: 27/07/2020
Based on the review of revised MR and ER sheet it is evident that the meters were replaced on 03/06/2017 and electricity generation before that date has been assumed as 0 (zero) and the period from 03/06/2017 is being considered for the emission reduction calculation and the same is deemed to be appropriate and a conservative assumption .	
Based on above assessment, the CL is closed.	

Table 3. CAR from this verification

CAR ID	01	Section no.	E.3	Date: 03/06/2020
Description of CAR				
As per paragraph 317 of VVS for project activities, version 02.0, <i>"The DOE shall assess and determine whether the implementation and operation of the registered CDM project activity, and the steps taken to report GHG emission reductions or net anthropogenic GHG removals comply with the relevant modalities and procedure for the CDM and the relevant guidance provided by the Board."</i>				
As per the registered PDD "There will be 2 turbines with a nominal capacity of 9.95 MW each, which totalizes a 19.9 MW capacity of Potrero Hydropower plant".				
Verification team during the remote interviews and inspection (through video call) and review of name plate data of the project confirms that the project involves two Francis turbine of individual capacity 10.228 MW each and thus totaling to 20.456 MW. Also, the capacity of the generator has not been provided in the PDD.				
Project participant response				Date: 15/07/2020
1. A revised PDD for Post Registration Changes and supportive documents have been provided mentioning the changes				
2. The capacity of the generator has not been provided in the PDD.				
Documentation provided by project participant				
Revised PDD specifying the Post Registration Changes				
DOE assessment				Date: 27/07/2020
PP has provided the revised clean and track changed PDD and capacity of each turbine has been revised from 9.95 MW each to 10.228 MW along with two generator each with rated power : 11590 kVA , and power factor : 0.90 that implies total real power $11590 \times 0.9 = 10431$ kW i.e. 10.431 MW and for two generators and total installed capacity is $10.431 \times 2 = 20.86$ MW.				
The changes in the PDD is acceptable, except the summary of change in appendix 7, which should categorically mention the type of changes under the proposed PRC. Furthermore, the changes are not appropriately referenced in relevant sections in B.2 of the MR. Hence, CAR is open.				
Project participant response				Date: 29/08/2020
The summary of the changes in PDD have been mentioned categorically (i.e. with the type of changes and description of the particular change) in APPENDIX 7 of the document.				
The changes have been referenced in Section B.2. of the MR.				
Documentation provided by project participant				
Revised PDD				
DOE assessment				Date: 03/12/2020
Based on review of section B.2 of the revised MR, verification team has identified that the changes in the monitoring plan and to the project design are inconsistent with the revised PDD.				
CAR is open				
Project participant response				Date: 15/12/2020
Section B.2 of MR has been revised in line with revised PDD (v12) for changes in monitoring plan and project design.				
Documentation provided by project participant				
CDM MR v04				
DOE assessment				Date: 17/12/2020

Based on the review of revised MR, verification team confirms that the changes in the monitoring plan and project design are consistent with the revised PDD.
CAR is closed

CAR ID	02	Section no.	E.7	Date: 03/06/2020
Description of CAR				
As per paragraph 365 of VVS for project activities, version 02.0, <i>"The DOE shall determine whether the calibration of the measuring equipment that has an impact on the claimed GHG emission reductions or net anthropogenic GHG removals is conducted by the project participants at the frequency specified in the applied methodologies, the applied standardized baselines, the other applied methodological regulatory documents or the registered monitoring plan."</i>				
As per the PDD for the parameter "EGfacility,y", it is required that <i>"Measuring equipment will be verified with calibrated pattern or calibrated according to relevant industry standards or national regulation <u>but at least every two years.</u>"</i>				
The meters at the project site are operational since 03/06/2017 after their replacement. These meters were factory calibrated on 07/05/2017. The latest calibration records of the meter as per the requirement above has not been provided to the verification team.				
Project participant response				Date: 15/07/2020
The meters are operational since 03/06/2017 after their installation; the documents regarding factory calibration of the meters on 07/05/2017 are available; the meters installed are auto-calibrating and the same has been confirmed from technical brochure of the meters. The weblink for the technical brochure has been given below: https://electroind.com/products/Nexus_1500+/pdf/brochures/Nexus-1500+-Meter-Brochure_E154718.pdf				
The meters the meter self-calibrates in every 10 seconds; hence no meter calibration records are required or the meter does not to be calibrated by any external agency. The same has also been provided in MR V02				
Documentation provided by project participant				
1. Monitoring Report Version 02 2. Technical product brochure of meters Nexus 1500+-D2-60hz-2-VI-X-X-X-X				
DOE assessment				Date: 27/07/2020
PP has provided the brochure of the installed meter, and it confirmed through the review of the document that the meter for the parameter "EG Gross" is auto calibrating and also there is no such requirement from the COES regarding the calibration frequency of the meters. Hence changes in the PDD, with reference to meter calibration of gross generation is deemed to be appropriate.				
However, validation team has noted that for the newly added parameter "EGaux,y", PP has mentioned the below description for the QA/QC of the meters: "the technical specification of energy meter by manufacturer says that the meter is factory calibrated. <u>The next calibration's date is automatically filled based on the last calibration and periodicity</u> ".				
Review of the meter manual "WEG-manual-MMW02-es_Manual MEDIDOR SSAA.pdf" reveals that for the auxiliary meter, the interval between two calibrations is suggested by the manufacturer as 24 months. The calibration frequency of the meter is unclear from the above statement.				
CAR is still open.				
Project participant response				Date: 25/11/2020
The Calibration frequency for Auxiliary meter is revised as 24 months (2 Years). The Section B.7.1 PDD is revised accordingly. PP do not have initial calibration of Auxiliary meter. The latest calibration for auxiliary meter is on 01/09/2020 and delayed calibration result is within permissible limit. Hence delay in calibration guidance is followed as a conservative approach in ER calculation and same has been mentioned in section D.2 in MR.				
Documentation provided by project participant				
1. Revised PDD 2. Revised Monitoring Report 3. Ex-post ER calculation sheet v02				
DOE assessment				Date: 03/12/2020

<p>PP has provided calibration certificate (dated 01/09/2020) of auxiliary meter and the same has reviewed by the verification team. As per the conclusion of the calibration certificate, <i>"De las mediciones realizadas se concluye que el equipo se encuentra calibrado, los valores medidos se encuentran dentro del rango normal de operación."</i> And thus it is concluded that the values measured are within the normal operating range and hence it is confirmed that meter is calibrated and operating satisfactorily with normal operating range.</p> <p>PP has applied an approach and applied a factor of 0.2% to adjust the values of quantity of auxiliary electricity consumption for the period 03/06/2017 to 31/12/2019. Verification team confirms that the ER sheet has been revised accordingly and is acceptable to verification team.</p> <p>However, PP is requested to provide evidence for the accuracy class of the auxiliary meter, which is applied for the adjustment. CAR is open.</p>	
Project participant response	Date: 15/12/2020
<p>Auxiliary meter manual (Make: WEG, model: MMW02) as the documentary evidence for accuracy class of auxiliary meter has been provided as the evidence for accuracy class 0.4 of Auxiliary meter. The same has been updated in section B.7.1 and Appendix 7 of PDD along with section B.2.5 of MR.</p> <p>Few other changes have also been done in QA/QC procedures of the monitored parameter "quantity of auxiliary electricity consumption" in section B.7.1 of PDD and the same has been updated in section B.2.5 of MR.</p>	
Documentation provided by project participant	
<p>1. Manual of auxiliary meter (Make: WEG, model: MMW02)</p> <p>2. MR v04</p> <p>3. PDD v12</p>	
DOE assessment	Date: 17/12/2020
<p>Based on the review of Auxiliary meter manual, verification team confirms that the accuracy class of Auxiliary meter is 0.4. The same has been updated in section B.2.5 of MR and PP has also updated the same in section B.7.1 and Appendix 7 of PDD. PP has also corrected the QA/QC procedure of monitored parameter "quantity of auxiliary electricity consumption" in section B.7.1 of PDD and section B.2.5 of MR.</p> <p>Verification team has found that the proposed changes are in accordance with the Appendix 1 Indicative list of post-registration changes that may be suitable for approval under the issuance track (c) of Standard: CDM project standard for project activities Version 02.0 /B02-2/ and confirms that the proposed change in the monitoring plan have no impact on the applicability of the applied methodologies or the other applied methodological regulatory documents, or the accuracy and completeness of the monitoring since the auxiliary electricity constitute around 0.2 % of the gross electricity supplied to grid by the CDM project. Furthermore, the applied version of monitoring methodology requires the records of measurement cross checked with the records of electricity sold (which is EG gross) and do not have such requirement for the auxiliary consummation of the project. Adding further, COES does not have any requirement either for the accuracy class or for the meter for auxiliary consummation and it also does not approve any records for auxiliary consummation of the plan. Hence the required changes are correct and actual condition at the plant site also does not reduce the accuracy and completeness of the monitoring plan. The changes are therefore can be submitted through issuance track as per Project standard version 02.0.</p> <p>CAR is closed.</p>	

CAR ID	03	Section no.	E.7	Date:	03/06/2020
Description of CAR					
<p>As per paragraph 352 of VVS for project activities, version 02.0, <i>"The DOE shall determine whether the monitoring report was completed using the valid version of the applicable monitoring report form."</i></p> <p>As per the requirements of Instructions for completing monitoring form section D.2 of the Monitoring Report does not provide following information for the row "Monitoring equipment",</p> <p>Type, accuracy class, calibration frequency, date of last calibration and validity.</p>					
Project participant response					Date:
Energy meter details (type, accuracy class, calibration frequency and last calibration date have been provided in Section D.2. of MR					
Documentation provided by project participant					
Monitoring Report Version 02					

DOE assessment	Date: 27/07/2020
Based on review of the revised MR it is confirmed that the details of the Energy meter (type, accuracy class, calibration frequency and last calibration date have been provided in Section D.2. of MR.	
Subject to closure of CAR-02.	
Project participant response	Date: 15/12/2020
Meter type, accuracy class, calibration frequency and last calibration date of meters (for gross electricity generation as well as for auxiliary electricity consumption) has been provided in section D.2 of MR.	
Documentation provided by project participant	
CDM MR v04	
DOE assessment	Date: 17/12/2020
Based on the review of section D.2 of the MR verification team confirms that the meter type, accuracy class, calibration frequency and last calibration date of meters (for gross electricity generation as well as for auxiliary electricity consumption) has been provided.	
CAR is closed.	

CAR ID	04	Section no.	E.6.2	Date: 03/06/2020
Description of CAR				
As per paragraph 364 of VVS for project activities, version 02.0, <i>"The DOE shall list each parameter required by the registered monitoring plan and state how it verified the information flow (from data generation, aggregation, to recording, calculation and reporting) for these parameters including the values in the monitoring report."</i>				
Review of records provided for the parameter "EGfacility,y" reveals that the value provided in the monitoring report is incorrect. For e.g., for the month of June 2017, as per MR and the document "2. Producción anual de energía.xlsx", the net generation is 9,842.34 MWh, which is found inconsistent with the document "06. Junio_Transferencias_2017.xlsx".				
Project participant response				Date: 15/07/2020
ER calculation sheet has been revised with correct value; the same has also been updated in MR Section D.2				
Documentation provided by project participant				
1. ER calculation sheet 2. Monitoring Report Version 02				
DOE assessment				Date: 24/07/2020
Based on review of revised MR and ER sheet it is confirmed that the value of parameter "EGfacility,y" has been cross checked from the records of electricity "Producción anual de energía.xlsx". Verification team confirms that the values has been corrected.				
CAR is closed.				

CAR ID	05	Section no.	E.6.2	Date: 03/06/2020
Description of CAR				
As per paragraph 360 of VVS for project activities, version 02.0 <i>"The DOE shall determine whether the monitoring of parameters related to GHG emission reductions or net anthropogenic GHG removals in the registered PDD has been implemented in accordance with the registered monitoring plan"</i>				
As per paragraph 357 of VVS for project activities, version 02.0 <i>"The DOE shall determine whether the registered monitoring plan is in accordance with the applied methodologies, the applied standardized baselines and the other applied methodological regulatory documents."</i>				
As per the registered PDD for the parameter "EGfacility,y", it is required that "The meter readings may be cross-checked with available internal and/or external information, such as electricity invoices or official reports.". Furthermore, the applied methodology requires "Cross check measurement results with records for sold electricity"				
In above background PP is requested to substantiate as how the measured electricity from the project can be cross checked, while doing so, evidence for such cross check is required to be provided.				
Project participant response				Date: 07/07/2020
Electricity sales invoices have been provided for cross checking				

Documentation provided by project participant	
Electricity sales invoices	
DOE assessment	Date: 27/07/2020
<p>The monitoring plan and the methodology requires, PP to cross check net electricity supplied by using sales records such as invoices. From the provided sales invoice, verification team was unable to cross verify the generation. It is also unclear how the electricity generation figure or the amount in Soles can be cross checked from the provided COES reports.</p> <p>CAR is still open.</p>	
Project participant response	Date: 29/08/2020
<p>For Gross Electricity, RECORDS OF METERS IN GENERATION TERMINALS EVERY 15 MINUTES OF ACTIVE POWER (MW) are used. The meter readings are cross-checked with records of electricity sold as available on official reports (COES statistics)</p> <p>https://www.coes.org.pe/Portal/Publicaciones/Estadisticas/ (for sample sheet - Estadisticas Anuales - 2017 - 01 EXCEL - 08 - PRODUCCION CON ENERGÍAS RENOVABLES EN EL SEIN - 8.4 A</p> <p>For Auxiliary electricity - RECORDS OF METERS IN GENERATION TERMINALS EVERY 15 MINUTES OF THE AUXILIARY SERVICES (MW)</p> <p>PDD is updated to reflect this Post Registration changes.</p> <p>The reference to cross check of gross electricity generation is provided in section D.2 along with weblink of COES statistics.</p> <p>The description of cross checking of auxiliary electricity consumption is also provided in section D.2 of MR</p>	
Documentation provided by project participant	
<ol style="list-style-type: none"> 1. Revised PDD 2. Revised MR 	
DOE assessment	Date: 03/12/2020
<p>Verification team has cross checked the value of electricity supplied by the project as available on COES website. This review reveals few discrepancies in the data for e.g. the value of G1 for October 2017 which is 0.0 as per the COES website, whereas the value of the same in the ER sheet is 1357.713 MWh.</p> <p>Furthermore, verification team has also reviewed real time data of gross generation and auxiliary consumption from the raw data “ <i>Electricity Generation(Gross & auxiliary) real time data</i>” and cross checked it with ER sheet. During this review, VT has identified few inconsistencies in the values of gross generation for e.g. June 2017.</p> <p>CAR is open</p>	
Project participant response	Date: 10/12/2020
<ol style="list-style-type: none"> 1. Ex-post ER sheet has been revised in accordance with Electricity Generation(Gross & auxiliary) real time data (Transferencias i.e. RECORDS OF METERS IN GENERATION TERMINALS EVERY 15 MINUTES OF ACTIVE POWER (MW) and AUXILIARY SERVICES (MW)) for October 2017 and COES statistics (for cross check) 2. Ex-post ER sheet has been revised in line with Electricity Generation(Gross & auxiliary) real time data (Transferencias i.e. RECORDS OF METERS IN GENERATION TERMINALS EVERY 15 MINUTES OF ACTIVE POWER (MW) and AUXILIARY SERVICES (MW)) for June 2017 and October 2018 and cross checking for all months have been done for both June (entire month) 2017 and October 2018. The difference between gross generation for June 2017 in ER sheet and COES statistics is attributed to the fact that the value mentioned in ER sheet is for the period 03/06/2017 to 30/06/2017 while that in COES statistics is for period 01/06/2017 to 30/06/2017. For other months in the monitoring period as well the value of gross generation and auxiliary consumption also cross checked with COES statistics 	
Documentation provided by project participant	
<ol style="list-style-type: none"> 1. Revised Ex-post ER sheet 2. Transferencias i.e. RECORDS OF METERS IN GENERATION TERMINALS EVERY 15 MINUTES OF ACTIVE POWER (MW) and AUXILIARY SERVICES (MW)) for all the months in the monitoring period i.e. June 2017 to December 2019 	

DOE assessment	Date: 17/12/2020
<p>Verification team cross checked the revised Ex-post ER sheet with Electricity Generation (Gross & auxiliary) real time data (Transferencias i.e. RECORDS OF METERS IN GENERATION TERMINALS EVERY 15 MINUTES OF ACTIVE POWER (MW) and AUXILIARY SERVICES (MW)) and COES statistics and confirms that the data as correct and verification team was able to cross verify the generation with records of electricity sold to COES as available on COES website. The discrepancy as highlighted in previous round for the month of October 2017 was due to rounding down of the values as converted from GWh to MWh (COES provided the values in GWh).</p> <p>Furthermore, as clarified by the CME in above response and revised Ex-post ER sheet, the difference between gross generation for June 2017 in ER sheet and COES statistics is due to the value mentioned in ER sheet is for the period 03/06/2017 to 30/06/2017 while that in COES statistics is for period 01/06/2017 to 30/06/2017 which was verified by the verification team and found it acceptable.</p> <p>CAR is closed</p>	

Table 4. FAR from this verification

FAR ID	xx	Section No.		Date: DD/MM/YYYY
Description of FAR				
Project participant response				Date: DD/MM/YYYY
Documentation provided by project participant				
DOE assessment				Date: DD/MM/YYYY

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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">• Ensure consistency with version 02.0 of the “CDM validation and verification standard for project activities” (CDM-EB93-A05-STAN);• Make structural and editorial improvements.
02.1	11 January 2018	Editorial revision to correct the numbering of appendices in the instructions.
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: Issuance Keywords: project activities, verifying and certifying		