




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

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

BASIC INFORMATION

Title and UNFCCC reference number of the project activity	Guanaquitas 9.74 MW hydroelectric project UNFCCC ID: 3816 Job: 21/025
Number and duration of the next crediting period	CP-No: 2 7 years, 03/10/2020- 02/10/2027
Version number of the validation report	1.1
Completion date of the validation report	27/09/2021
Version number of PDD to which this report applies	7.0
Project participants	Guanaquitas S.A. E.S.P.
Host Party	Colombia
Applied methodologies and standardized baselines	AMS-I.D.: Grid connected renewable electricity generation, (ver. 18) Standardized baselines: N/A
Mandatory sectoral scopes	Scope: 1 / Technical Area: 1.2
Conditional sectoral scopes, if applicable	N/A
Estimated amount of annual average GHG emission reductions or GHG removals by sinks in the next crediting period	20,494 tCO _{2e}
Name and UNFCCC reference number of the DOE	TÜV NORD CERT GmbH UNFCCC reference number: E-0022
Name, position and signature of the approver of the validation report	 Final Approver Stefan Winter

SECTION A. Executive summary

Guaquitas S.A. E.S.P. has commissioned the TÜV NORD JI/CDM Certification Program to carry out validation of the request for renewal of crediting period (RCP) for the project:

“Guaquitas 9.74 MW hydroelectric project”

with regard to the relevant requirements for CDM project activities.

The project has been registered on 03/10/2013 under the UNFCCC registration No. 3816. The PPs have chosen a 7 year crediting period which is now due for 2nd renewal. .

The objective of this RCP validation is the review by an independent entity whether the project is still compliant with the applicable sections of:

- the CDM project standard^{/PS/},
- the CDM cycle procedure^{/PCP/}
- the updated applied UNFCCC Methodology AMS-I.D. (Ver. 18) ^{/METH/} and
- the methodological tool “Tool to calculate the emission factor for an electricity system” (version 07.0)^{/TOOL07/}
- the methodological tool “Assessment of the validity of the original / current baseline and update of the baseline at the renewal of the crediting period” Version 03.0.1)^{/TOOL11/}.

As per the requirements of the CDM Validation and Verification Standard^{/VVS/} the validation is based on

- the registered and/or latest updated version of the PDD (including revisions of the monitoring plan)^{/PDD/},
- the updated emission reduction calculation spread sheet ^{/XLS/},
- further supporting documents made available to the validator as well as
- information collected through performing interviews and during the on-site assessment.

Furthermore, publicly available information, such as the host country legislation, was considered as far as available and required.

The project reduces GHG emissions due to the use of hydroelectric power to generate renewable electricity to be delivered to the national grid of Colombia.

The project consists of a run of river power plant with capacity of 9.741 MW.

Details of the project location are given in table A-1 below:

Table A-1: Project Location

No.	Project Location
Host Country	Colombia
Region:	Department of Antioquia
Project location address:	113 km from Medellin City, Municipality of Santa Rosa de Osos and Gomez plata.
Latitude:	6°39'35.22"
Longitude:	75°17'27.62

Basic technical details of the project are summarized in table A-2.

Table – A-2: Technical data of the project activity

Parameter	Unit	Value/Description
Manufacturer	-	VATECH HYDRO
Type	-	Francis
Axis	-	Horizontal
Design Flow	m ³ /s	6.5
Max Output	KW	10,044

Parameter	Unit	Value/Description
Speed	rpm	720
Impeller diameter	mm	925
Design head	m (masl)	2,089

Generator

Parameter	Unit	Value/Description
Manufacturer	-	LEROY SOMER
Number of generators	-	LSA 62-90/10p
Rated Output	MVA	11,488
Voltage	V	13,800 +/- 5%
Power factor	-	0.85
Frequency	Hz	60
Speed	rpm	600
Connection	-	Star – Delta
Efficiency 100% of rated output	%	97

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

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk review	On-site inspection	Interview(s)	Verification findings
1.	Team Leader	EI	Oliver	Quireza	TN México	x	x	x	x

A.1. 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/Approver	IR	Rami	Kunal ¹	TÜV NORD CERT
2.	Approver	IR	Winter	Stefan ²	TÜV NORD CERT GmbH

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

During the desk review all documents initially provided by the client and publicly available documents relevant for the validation were reviewed. The main documents are listed below:

- the last revision of the PDD including the monitoring plan^{/PDD/},
- the last revision of the validation report^{/VAL/},
- documentation of previous verifications^{/VER/}
- the monitoring report, including the claimed emission reductions for the project^{/MR/},
- the emission reduction calculation spreadsheet^{/XLS/}.

Other supporting documents, such as publicly available information on the UNFCCC website and

¹ Approver of the initial request

² Approver in response to minor issue raised, due to availability

background information were also reviewed.

C.2. On-site inspection

Duration of on-site inspection: 05/05/2021 to 05/05/2021				
No.	Activity performed on-site	Site location	Date	Team member
1.	Opening meeting	Guanaquitas plant	05/05/2021	Oliver Quireza
2.	Viewing of relevant site points / Plant tour	Guanaquitas plant	05/05/2021	Oliver Quireza
3.	Evidence assessment Discussion of GSC comments received (if any)	Guanaquitas plant	05/05/2021	Oliver Quireza
4.	Preparation of the DVR and corresponding findings	Guanaquitas plant	05/05/2021	Oliver Quireza
5.	Findings summary presentation to the client	Guanaquitas plant	05/05/2021	Oliver Quireza
6.	Closing meeting	Guanaquitas plant	05/05/2021	Oliver Quireza

C.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Ramirez	Sara	LAREIF	05/05/2021	MR/ ER	Oliver Quireza
2.	Mira	Ramiro	Vereda Guanaquitas	05/05/2021	Community	Oliver Quireza
3.	Alvarez	Olivia	Vereda Guanaquitas	05/05/2021	Community	Oliver Quireza
4.	Perez	Andrés	LAREIF	05/05/2021	Plant operations	Oliver Quireza
5.	Charry	Francisco	EBT	05/05/2021	ER calculation/ Equipment	Oliver Quireza
6.	Reutrepo	Samuel	LEREIF	05/05/2021	Environmental	Oliver Quireza
7.	Jaramillo	Hector	Guanaquitas	05/05/2021	Plant operations / Equipment	Oliver Quireza

C.4. Sampling approach

Not applicable

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

Area of validation findings	No. of CL	No. of CAR	No. of FAR
Compliance with PDD form	-	-	-
Application and selection of methodologies and standardized baselines	-	-	-
Validity of original baseline or its update	CL 01 CL 02	CAR 02	-
Estimated emission reductions or net anthropogenic removals	-	CAR 03 CAR 04	-
Validity of monitoring plan	CL 03, CL04, CL05	CAR05	-
Crediting period	-	-	-
Project participants	-	CAR 01	-
Post-registration changes	-	-	-
ER calculation	-	-	-

Other		-	-
Total	5	5	-

SECTION D. Validation findings

D.1. Compliance with PDD form

Means of validation	<p>A draft revised PDD was submitted to the validation team by the project participants. By means of the UNFCCC website it has been checked whether the latest applicable PDD template CDM-PDD-FORM has been used.</p> <p>Further it has been checked whether the latest instructions for filling out the PDD template have been followed. Every section has been checked against the respective guidance.</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /PDD/ • /PDD-T/ • /unfccc/ 		
Findings	<input type="checkbox"/>	The latest reporting template CDM-PDD-FORM as listed on the UNFCCC website has been used for the PDD.	
	<input type="checkbox"/>	The latest instructions for filling out the PDD have been followed. No adverse finding has been identified in the course of this validation.	
	<input checked="" type="checkbox"/>	The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context:	
Conclusion	<input type="checkbox"/>	No CARs/CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.	
	<input checked="" type="checkbox"/>	The raised CARs/CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.	
		After corrections the latest reporting template CDM-PDD-FORM as listed on the UNFCCC website has been used for the PDD.	

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

Means of validation	By means of comparison of the PDD with (i) the applied CDM methodology (ii) all applicable CDM Meth tools and (iii) if applicable, a standardized baseline the verification team has checked whether the updated PDD is in compliance with the requirements of the applied methodology/tools/SB. The following sources of information have been used in this context: <ul style="list-style-type: none">/PDD//METH//TOOL11//TOOL07//unfccc/			
Findings	<input checked="" type="checkbox"/>	The updated PDD is completely in accordance with the approved methodology applicable for the CDM project		
	<input checked="" type="checkbox"/>	The breakdown of PDD accordance of the referenced tools is as follows:		
		1	Title (of the tool)	Tool to calculate the emission factor for an electricity system
			Version	7.0
			MP compliance	<input checked="" type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input type="checkbox"/> N/A (for MP)
		2	Title (of the tool)	Assessment of the validity of the original/current baseline und update of the baseline at the renewal of the crediting period
	Version		03.0.1	
	MP compliance	<input type="checkbox"/> full compliance		

	<input type="checkbox"/>	findings have been raised
	<input type="checkbox"/>	N/A
	<input type="checkbox"/>	The breakdown of PDD accordance of the applicable SB is as follows:
	1	Title (of the SB) -
		Version
		MP compliance
<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised:	
Conclusion	<input checked="" type="checkbox"/>	No CARs/CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.
	<input type="checkbox"/>	The raised CARs/CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	The updated PDD fully complies with the latest version of the approved methodology and applicable tools.	

D.3. Validity of original baseline or its update

Means of validation	<p>In order to check the validity of the original baseline or its updates the validation team has applied the following stepwise approach:</p> <p>The baseline scenario of the project as per the registered project can be described as follows:</p> <p><i>“the baseline scenario is one where the electricity supplied by the project to the grid would have otherwise been generated by the operation of grid connected power plants and by the addition of new generation sources, based on the current trends in the sector”</i></p> <p>As per the project standard, this scenario is not subject to re-assessment and is thus deemed to be applicable for the next crediting period.</p> <p>However, the baseline itself i.e. the calculation of baseline emissions has been checked regarding the continued validity of underlying assumptions and parameter values. The assessment steps are described in the following subsections:</p> <p>As per tool “Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period” the PP has to assess the validity of the baseline. The following steps were reviewed:</p>
Findings	<p><u>Step 1: Assess of the validity of the current baseline for the next crediting period</u></p> <p><u>Step 1.1 Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies:</u></p> <p>The baseline of the registered PDD has been assessed to be compliant with the national legislation and policies applicable for the project activity at the time of validation. During the first crediting period the PP has frequently reviewed the legal requirements and policies relevant for the baseline of the project. On the basis of this the PP has arrived at the conclusion that the baseline is still in line with all applicable legislations and policies.</p> <p>The validation team has independently reviewed the Colombian legislation as well as current policies, such as the following, where detail has been provided for the more relevant:</p> <ol style="list-style-type: none"> 1. Expansion Plan Generation/Transmission 2019-2033, UPME, 2019 2. CMS Expert Guide to Renewable energy law and regulation, 2020: https://cms.law/en/int/expert-guides/cms-expert-guide-to-renewable-energy/colombia 3. Law 1715, 2014 -renewable energy law which creates the Fund for Renewable Energy and Efficient Management of Energy 4. Law 1955, 25/05/2019 <p>✓ modifies Law 1715 of 2014 to increase the benefits of income tax reduction for non-conventional renewable energy generators from five to 15 years;</p> <p>✓ It allocates a budget of COP\$24,600,000,000 (aprox. USD\$6,622,500) for the</p>

development of the renewable energies sector;

5. Resolution UPME 703, 14/12/2018
6. Environmental Resolution 1303, 13/07/2018
7. Environmental Resolution 1283, 08/08/2016
8. Decree 2143, 2015
9. Decree 829 of 2020 – regulates the grant of tax-related incentives for non-conventional renewable energy generation. It also states that UPME (the Colombian Mining and Energy Planning Agency) will be the only authority in charge of evaluating if these benefits are applicable in each case;

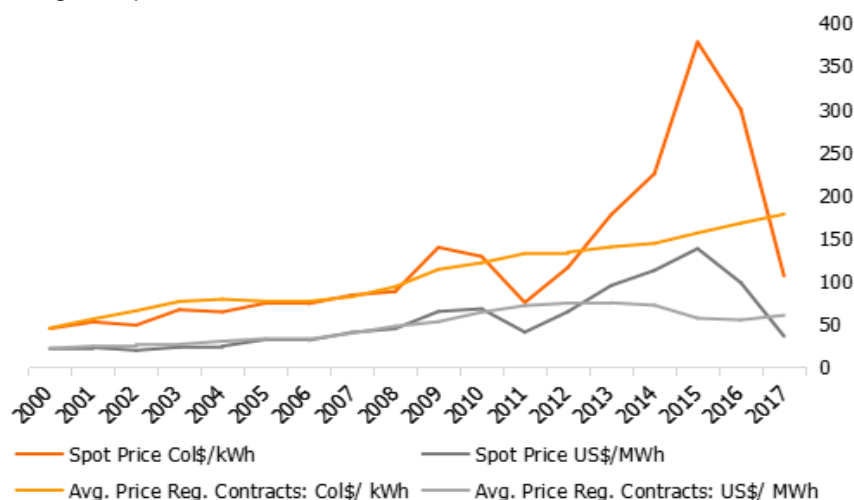
On the basis of this analysis the validation team confirms that the baseline is still in compliance with the currently applicable national legislation and other national and/or sectoral policies. Therefore, the baseline did not need to be adjusted due to changes in this respect.

Step 1.2 Assess the impact of circumstances:

As the baseline scenario might be affected by changed circumstances, e.g. market conditions, market prices etc. the PP has checked the baseline against such changes that have occurred since validation. This is of special importance if the baseline scenario is the continuation of the pre-project scenario.

As the electricity sells is the main income of the project, the electricity spot prices were reviewed.

The historic electricity prices of regulated contracts from the implementation of the project until the actual time were analysed by the VT to see if the those have increased considerably so that the baseline scenario could be changed, but it can be conformed that the prices of regulated contracts didn't have a relevant increase, and in average keep constant.



New regulations that support renewable energy have been issued, such as the Decree 829 of 2020 – regulates the grant of tax-related incentives for non-conventional renewable energy generation and the Law 1955, 25/05/2019 - Modifies Law 1715 of 2014 to increase the benefits of income tax reduction for non-conventional renewable energy generators from five to 15 years, nevertheless the project activity can't benefit from those regulation as such rules support only new developments.

The validation team has independently checked whether there are changes in circumstances, which have an impact on the baseline. No such changes have been identified and thus it is deemed appropriate not to revise the baseline due to changes in circumstances.

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

requested:

If the baseline scenario has been identified as the continuation of the pre-project scenario it is necessary to assess whether an investment and/or exchange of the baseline equipment (e.g. due to expiry of the equipment's lifetime) during the upcoming crediting period is to be deemed the most likely scenario. If so, the baseline needs to be updated.

As the project activity consist of a greenfield project, no baseline equipment is considered.

Furthermore, no other reasons for a possible investment – other than possible legal requirements – have been identified.

Thus, the validation team confirms the conclusion that no changes to the baseline are required due to the likeliness of investments in equipment which impacts the baseline.

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

In line with the TOOL07 "Tool to calculate the emission factor for an electricity system", version 7, the emission factor for the electricity system has to be updated and fixed ex-ante.

Apart of the $EF_{grid,CM,y}$ no other parameters were determined ex ante for the 2nd CP.

Step 2: Assessment of the validity of the data and parameters:Step 2.1: Update the current baseline

The following conclusion provided in page 13 of the updated PDD ...*"the original baseline considering the relation between the energy delivered by the new plant and the emissions factor of the National Interconnected System of Colombia, remains valid for the second crediting period,"*... is in line with the evidence provided^{/BL/LAW/} in step 1.1 above the no need to update the baseline is considered.

Step 2.2: Update the data and parameters

The following parameters were fixed ex-ante at registration:

- ✓ Installed capacity
- ✓ $EG_{m,y}$
- ✓ $EG_{,k,y}$
- ✓ $EF_{EL,mi,y}$
- ✓ $EF_{EL,k,y}$
- ✓ $EF_{grid,OMadj,y}$
- ✓ $EF_{EL,m y}$
- ✓ $EF_{grid,BM,y}$
- ✓ $EF_{CO2,i y}$
- ✓ $EF_{grid,y} / EF_{grid,CM,y}$

Nevertheless in the updated PPD as per newer version of the methodology and applicable tools the following parameters are fixed ex-ante:

- ✓ Cap_{BL} - this parameter is 0 a per pre-project situation
- ✓ $EF_{grid,y} / EF_{grid,CM,y}$ - this parameter is determined as follows:

As provided in Step 1.4 the $EF_{grid,CM,y}$ has to be updated for the 2nd CP. In line with the TOOL07 "Tool to calculate the emission factor for an electricity system", version 7, the $EF_{grid,CM,y}$ is fixed for the 2nd CP. The updated PDD has properly described the $EF_{grid,CM,y}$ updated calculation. Details are described in section D.4 of this report.

The $EF_{grid,CM,y}$ in the registred PDD was calculated based on data from 2006-2008, whereas for the updated PDD the latest public available information is from 2018, so the $EF_{grid,CM,y}$ is calculated with vintage 2016-2018. it si important to notice that the

	EF _{grid,CM,y} was determined by the environmental Colombian authority UPME.		
	The following changes were applied:		
	Parameter	Previous value	Updated value
	EF _{CO2,grid,y} / EF _{grid,CM,y}	0.3415 (2006-2008)	0.369 (2017-2019)
	Reference /XLS/		
These changes have been appropriately considered in the updated PDD.			
Conclusion	<input checked="" type="checkbox"/>	The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context: CL 01, CL 03	
	<input type="checkbox"/>	No CARs/CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.	
	<input checked="" type="checkbox"/>	The raised CARs/CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.	
The validity of the baseline, including the the calculation of baseline emissions has been checked regarding the continued validity of underlying assumptions and parameter values. After corrections is was concluded that the baseline assessment is done as per tool "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period".			

D.4. Estimated emission reductions or net anthropogenic removals

Means of validation	<p>For validation of the estimated GHG emission reductions the client has provided the validation team with the following documentation:</p> <ul style="list-style-type: none"> - Updated PDD/PDD/ - XLS spreadsheet/XLS/ - Official electricity data from the XM <p>Further, the validation team has downloaded from the UNFCCC website the applicable version of the CDM methodology and all referenced methodological tools /unfccc/.</p> <p>The XLS ER calculation has been duly checked. Further it has been checked whether the results have been correctly transferred to the updated PDD for determination of ex-ante ER. The validation team has further checked the updated PDD against the latest version of the applicable methodology incl. the referenced methodological tools for consistency. Special focus was laid on the changes against the previous crediting period.</p>
	<p>(1) Baseline emissions, BE_y</p> <p>According to the applied methodology, baseline emissions include only CO₂ emissions from electricity generation in power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants.</p> <p>Hence:</p> $BE_y = EG_{PJ,y} \times EF_{grid,y} \quad \text{Equation (1)}$ <p>Where:</p> <p>BE_y = Baseline emissions in year y (t CO₂)</p> <p>EG_{PJ,y} = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh)</p> <p>EF_{grid,y} = Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (t CO₂/MWh)</p> <p>As per registered PDD the EF_{CO2,grid,y} is calculated yearly according to "TOOL 07 to calculate the emission factor of an electricity system", nevertheless according to the</p>

Colombian legislation the $EF_{CO_2,grid,y}$ is determined by the UPME (Amin. Unit special of National Order, of the MME, in accordance with the law 143 from 1994, Decree 1258 from 17/06/2013, as per the tool to calculate the CO₂ emission factor of the grid published by UNFCCC.

For years 2017 - 2019 the UPME applied the TOOL07. The calculated $EF_{CO_2,grid,y}$ vintage wise for Hydro projects were:

$EF_{grid,OM, 2017}$	0.623	tCO ₂ /MWh
$EF_{grid,OM, 2018}$	0.578	tCO ₂ /MWh
$EF_{grid,OM, 2019}$	0.694	tCO ₂ /MWh
$EF_{grid,OM (average)}$	0.632	tCO ₂ /MWh

The VT reviewed the $EF_{CO_2,grid,y}$ provided by the UPME and it can be confirmed that it was calculated following the step approach as per TOOL07.

The final $EF_{CO_2,grid,y}$ calculation is calculate as follows:

$EF_{grid,BM,2019}$	0.281	tCO ₂ /MWh
W_{OM}	0.25	-
W_{BM}	0.75	-
$EF_{grid,CM,2018}$	0.369	tCO ₂ /MWh

By checking the public available information in the official web page of the UPME it is confirmed that data is available for each years up to 2019.

The PP updated the electricity generation prognoses for the 2nd CP. The VT reviewed the data applied for the calculation. The calculation was done base on the average electricity generation of the 1st CP. The calculation was found correct as it was done base on the actual data from the plan operation SCADA, which is also consistent with the official data from the the net operator reported by XM. Based on the updated electricity generation and the EF_{grid} , the PP determined the ER. The VT reviewed the ER calculation and it was found correct. A summary is shown below:

From	To	Ex Ante	Ex Ante	BE _y
		EG _y	$EF_{grid,y} / EF_{grid,CM,y}$	
		Renewable energy to be generated by the project activity in the year y	Combined margin emission factor in year y	
		(MWh/year)	(tCO _{2e} /MWh)	
03/10/2020	31/12/2020	13,707	0.369	5,053
01/01/2021	31/12/2021	55,590	0.369	20,494
01/01/2022	31/12/2022	55,590	0.369	20,494
01/01/2023	31/12/2023	55,590	0.369	20,494
01/01/2024	31/12/2024	55,590	0.369	20,494
01/01/2025	31/12/2025	55,590	0.369	20,494
01/01/2026	31/12/2026	55,590	0.369	20,494
01/01/2027	02/10/2027	41,883	0.369	15,440
03/10/2020	02/10/2027	389,127	0.369	143,457

In line with the applied methodology the PE to be considered are emissions from water reservoirs, emissions from electricity consumption in the project site and CO₂ emissions from on-site combustion of fossil fuels calculated as per Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion, so the PP calculated as follows:

In line with the methodology ACM002 ver. 13 the emissions from the reservoir have to be calculated if the Power Density (PD) is lower than 10 W/m².

The PD is calculated as follows:

$$PD = \frac{Cap_{PJ} - Cap_{BL}}{A_{PJ} - A_{BL}} \quad (5)$$

Where:

- PD = Power density of the project activity (W/m²)
- Cap_{PJ} = Installed capacity of the hydro power plant after the implementation of the project activity (W)
- Cap_{BL} = Installed capacity of the hydro power plant before the implementation of the project activity (W). For new hydro power plants, this value is zero
- A_{PJ} = Area of the single or multiple reservoirs measured in the surface of the water, after the implementation of the project activity, when the reservoir is full (m²)
- A_{BL} = Area of the single or multiple reservoirs measured in the surface of the water, before the implementation of the project activity, when the reservoir is full (m²). For new reservoirs, this value is zero

The calculation provided is correct, the PD isn't lower than 10 W/m², so no emissions from reservoir has to be calculated.

As per registered PDD and confirmed by the PP during the on site visit, the project has two fossil fuel based emergency generator, nevertheless at validation stage it was demonstrated that the PE due to diesel consumption is neglected.

Project emissions due to the diesel consumption in the emergency generators are zero. In accordance with the registered PDD the PE are demonstrated in ex-ante calculation to be neglected because those represent less than 0.068% of the ER during the whole crediting period. So that the project emission do the diesel consumption = 0.

In the other hand the Parameter energy imports have to be considered as per section D.2 of the registered PDD. In this regard the PP has monitored such electricity consumption in the last MP, but the PP also demonstrate that such PE represent 5 tCO₂e/year which represent only 0.024 tCO₂e which is very far to reach 1% and therefore neglected.

Finally the ER are calculates as follows:

$$ER_y = BE_y - PE_y - LE_y \quad \text{Equation (9)}$$

Where:

- ER_y = Emission reductions in year y (t CO₂)
- BE_y = Baseline Emissions in year y (t CO₂)
- PE_y = Project emissions in year y (t CO₂)
- LE_y = Leakage emissions in year y (t CO₂)

The estimated amount of GHG emission reductions of the project is 143,457 tCO₂e during the third crediting period (7 years), resulting in estimated average annual emission reductions of 20,494 tCO₂e.

Findings	<input type="checkbox"/>	The calculation of ERs is done as per the applied methodology (AMS-I-D). The calculation in the Excel spreadsheet and the corresponding calculation tables in the PDD have been checked and no mistakes have been identified. The estimation of emission reductions for the 2 nd crediting period is deemed plausible and conservative.
	<input checked="" type="checkbox"/>	The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context:
		CAR 03, CAR 04
Conclusion	<input type="checkbox"/>	No CARs/CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.

	<input checked="" type="checkbox"/>	The raised CARs/CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
		All changes due to the upgraded methodology and the re-assessment of the baseline have been considered appropriately and in line with the CDM PS. The ER calculation is done as per the applied methodology (AMS-I.D). The calculation in the Excel spreadsheet and the corresponding calculation tables in the PDD have been checked, they are traceable and consistent. The estimation of emission reductions for the 2 nd crediting period is deemed plausible and conservative.

D.5. Validity of monitoring plan

Means of validation		<p>The validation team has checked the monitoring plan of the updated PDD against the required changes due to the update of the baseline and other methodological changes. Further, changes due to editorial updates of the applicable templates have been checked.</p> <p>In detail all parameters, ex-ante values and applicable formulae have been checked to determine the required changes for the next crediting period.</p> <p>Besides, based on conducted site-visit and interviews with related personnel the validation team has assessed the feasibility of the required changes.</p> <p>Monitored Parameters</p> <p>In the registered PDD only two parameters were monitored: EGBL,y and Energy Imports. In line with the applied methodology AMS-I.D ver. 18 for the RCP, the only change in this regard was the abbreviation of parameter EGBL,y which changed to EG_{PJ,facility,y}</p> <p>No new parameters are added in to the MP. The VT assessed the updated monitoring parameter versus the applied methodology and TOOLS. The updated parameters are fully in line with the applied methodology and applicable TOOLS.</p> <p>The ex-ante parameters update is assessed in section D.3 of this report.</p>
	<input checked="" type="checkbox"/>	<p>Although the monitoring plan in the PDD has been revised to comply with the latest applicable version of the monitoring methodology (AMS-I.D ver.18). No changes have occurred.</p> <p>The validation team has duly assessed all the required changes due to the upgraded methodological requirements and the re-assessment of the baseline. The validation team has concluded that</p> <ul style="list-style-type: none"> - all necessary changes have been appropriately reflected in the updated PDD, - the monitoring plan in the updated PDD is in compliance with the applied monitoring methodology, - the monitoring arrangements described in the updated PDD can be implemented and are feasible within the project design.
Findings	<input checked="" type="checkbox"/>	<p>The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context:</p> <p>CL04, CL05, CAR05</p>
	<input type="checkbox"/>	No CARs/CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.
Conclusion	<input checked="" type="checkbox"/>	The raised CARs/CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
		The monitoring plan of the updated PDD is fully in line with the methodological changes including the applicable methodological tools.

D.6. Crediting period

Means of validation	The project has been registered on 13/10/2013 under the UNFCCC registration No. 3816. The PP has chosen a 7-year crediting period, which the second crediting period started from 03/10/2020 and will expire on 02/10/2027.
----------------------------	---

	PP selected TÜV NORD to conduct the RCP validation no earlier than 270 days prior to, but no later than one year after the expiry of the 2 nd crediting period, which is confirmed as in line with the EB requirement for the RCP. The following sources of information have been used in this context: <ul style="list-style-type: none"> • /PDD/ • /unfccc/
Findings	<div> <input type="checkbox"/> As the respective requirements are met, the project's 2nd crediting period may start immediately after the expiration of the 1st, given that all other applicable criteria are met. It is further confirmed that the start date (03/10/2020) and the length of the crediting period (7 years) are in compliance with the project standard. However, as the 2nd crediting period starts after the end of the 2nd commitment period of the Kyoto Protocol additional guidance from CMP is required to calculate and process CERs at issuance stage. </div> <div> <input type="checkbox"/> The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context: Currently, guidance from CMP is not available on esp. 2 issues for calculation and processing of CERs post 2020: <ul style="list-style-type: none"> a) Applicable Global Warming Potential for N2O b) Technical modalities of CER issuance (e.g. serial numbers) At issuance stage it has to be ensured that corresponding CMP guidance and related EB decisions are available and duly considered. </div>
Conclusion	<div> <input checked="" type="checkbox"/> No CARs/CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements. </div> <div> <input type="checkbox"/> The raised CARs/CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4. </div> <p>As per UNFCCC Project Cycle Procedure the time period to request the renewal of the crediting period starts 270 days before the expiry of the CP, so, as the 2nd CP ends on 02/10/2020 the request can be done from 06/01/2020 up to 03/10/2021.</p>

D.7. Project participants

Means of validation	The validation team has checked the revised PDD/ ^{/PDD/} and the UNFCCC website/ ^{/unfccc/} esp. the latest version of the Modalities of Communication/ ^{/MOC/} to check whether the listed project participants have duly been authorized and if communication requirements are met.
Findings	<div> <input type="checkbox"/> The names of the project participants as listed in the revised PDD (sections A.4. and appendix 1) are consistent with those listed on the dedicated UNFCCC project website as well as in the last version of the modalities of communication/^{/MOC/}. </div> <div> <input checked="" type="checkbox"/> The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context: CAR 01 </div>
Conclusion	<div> <input type="checkbox"/> No CARs/CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements. </div> <div> <input checked="" type="checkbox"/> The raised CARs/CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4. </div> <p>After corrections, it is confirmed that the reported PP is in line with the PP in the UNFCCC website/^{/unfccc/} esp. the latest version of the Modalities of Communication/^{/MOC/}.</p>

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, monitoring methodology or standardized baseline	N	-	-
Corrections	Y	1.0	22/09/2021
Inclusion of a monitoring plan to a registered project	N	-	-

activity			
Permanent changes from registered monitoring plan, monitoring methodology or standardized baseline	N	-	-
Changes to the project design of a registered project activity	N		
Types of changes specific to afforestation and reforestation project activities	N	-	-

SECTION E. Internal quality control

Before the submission of the final VAL RCP report a technical review of the whole validation procedure was carried out. The technical reviewers are competent GHG auditors being appointed for the scope this project falls under. The technical reviewers are not considered to be part of the validation team and thus not involved in the decision making process up to the technical review.

As a result of the technical review process the validation opinion and the topic specific assessments as prepared by the validation team leader may have been confirmed or revised. Furthermore, reporting improvements might have been achieved.

After the successful technical review an overall (esp. procedural) assessment of the complete validation has been carried out by a senior assessor located in the accredited premises of TÜV NORD.

After this step the submission for requesting the renewal of crediting period is conducted.

SECTION F. Validation opinion

Guanaquitas S.A. E.S.P. has commissioned the TÜV NORD JI/CDM Certification Program to re-validate the project

“Guanaquitas 9.74 MW hydroelectric project”

for the purpose of renewal of the crediting period. The validation is based on the relevant UNFCCC requirements.

The review of the updated project design documentation and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews have provided TÜV NORD JI/CDM Certification Program with sufficient evidence to validate the fulfilment of the stated criteria applicable for RCP.

In detail the conclusions can be summarized as follows:

The current baseline of the project is in line with the national and/or sectoral policies and circumstances at the time of requesting renewal of crediting period.

The monitoring plan is transparent and adequate and in line with the applicable monitoring methodology (AMS-I.D ver. 18).

The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 20,494 tCO_{2e}/year are most likely to be achieved within the third renewable crediting period of 7 years.

The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria currently applicable for the renewal of the crediting period.

Queretaro, 27/09/2021



Oliver Quireza
TÜV NORD JI/CDM Certification Program
Validation Team Leader

Appendix 1. Abbreviations

Abbreviations	Full texts
CL	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CND	National Dispatch Center
CO ₂	Carbon dioxide
CO _{2eq}	Carbon dioxide equivalent
CL	Clarification Request
DOE	Designed Operational Entity
DVerR	Draft Verification Report
ER	Emission Reduction
ERPA	Emission Reduction Purchase Agreement
EF	Emission Factor
FAR	Forward Action Request
GHG	Greenhouse gas(es)
IM	Interview Memo
MEM	Whole Sale Energy Market
MADS	Ministry of Environment and sustainable Development
MME	Ministry of Mines and Energy
MP	Monitoring Plan or Monitoring Period
MR	Monitoring Report
PA	Project Activity
PCP	Project Cycle Procedure
PDD	Project Design Document
PP	Project Participant
PS	Project Standard
QA/QC	Quality Assurance / Quality Control
SIN	National Interconnected System
UNFCCC	United Nations Framework Convention on Climate Change
UPME	Unit of Mining and Energy Planing
VVS	Validation and Verification Standard
VT	Verification Team
XLS	Emission Reduction Calculation Spread Sheet
XM	Operator of SIN (Expert Market)

Appendix 2. Competence of team members and technical reviewers



Statement of Competence

Appointment and authorization according to the procedures of the TUV NORD JRCOM Certification Program

Mr. Oliver Quireza Campos

SCHEME	STATUS	VALID UNTIL
CDM	Lead Assessor (Validation, Verification)	2024-05-28
VCS / ISO 14064-2	Lead Assessor	2024-05-28

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.1	Thermal energy generation
1.2	Renewables
13.1	Solid waste and wastewater
13.2	Manure

337 - Rev. 6, Date: 2021-06-15

337_501-VA005-F20_2021-06-15_rev6

501-VA005-F20 rev3 / 2012-10-25



Statement of Competence

Appointment and authorization according to the procedures of the TUV NORD JRCOM Certification Program

Mr. Kunal Rami

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2023-03-26
VCS / ISO 14064-2	Senior Assessor Technical Reviewer	2023-03-26

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.2	Renewables
2.1	Energy distribution
3.1	Energy demand
6.1	Construction
7.1	Transport
13.1	Solid waste and wastewater

224 - Rev. 9, Date: 2020-12-03

224_501-VA005-F20_2020-12-03_rev9

501-VA005-F20 rev3 / 2012-10-25

Appendix 3. Documents reviewed or referenced

No	Author	Reference	Title	References to the document	Provider
1.	PP	/MOC/	✓ Modalities of Communication	https://cdm.unfccc.int/Projects/DB/DNV-CUK1158743330.88/view?cp=1	UNFCCC
2.	PP	/PDD/	RCP Project Design document "Guaanaitas 9.74 MW hydroelectric project" ✓ Version 1, 03/12/2020 ✓ Version 2, 14/06/2021 ✓ Version 6, 26/08/2021 ✓ Version 7, 21/09/2021	N/A	PP
3.	PP	/PDD-Reg/	Project Design Document for CDM project: Guaanaitas 9.74 MW hydroelectric project version 6, dated 01/08/2018	https://cdm.unfccc.int/Projects/DB/AENOR1356628448.64/view	UNFCCC
4.	PP	/XLS/	Emission reduction calculation spreadsheet V2	N/A	PP
5.	DOE	/CPM/	TÜV NORD JI / CDM Certification Program Manual (incl. procedures and forms)	N/A	TNC
6.	IPCC	/IPCC/	✓ IPCC Good Practice Guidance & Uncertainty Management in National Greenhouse Gas Inventories, 2000 ✓ Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual	https://www.ipcc-nggip.iges.or.jp/public/gp/english/	IPCC
7.	UNFCCC	/KP/	Kyoto Protocol (1997)	https://unfccc.int/kyoto_protocol	UNFCCC
8.	UNFCCC	/MA/	Decision 3/CMP. 1 (Marrakesh – Accords & Annex to decision (17/CP.7))	https://unfccc.int/decisions?search2=marrakesh	UNFCCC
9.	UNFCCC	/METH/	AMS-I.D ver.18- Grid Connected renewable electricity generation	https://cdm.unfccc.int/methodologies/DB/W3TINZ7KKWCK7L8WTXFFQOOFQHQ4SBK	UNFCCC
10.	UNFCCC	/PCP/	CDM project cycle procedure, version 2.0	https://cdm.unfccc.int/Reference/Standards/index.html	UNFCCC
11.	UNFCCC	/PDD-T/	Project Design Document Form (CDM-PDD-FORM) - Version 11.0 including Attachment: Instructions for filling out the project design document form for CDM project activities	https://cdm.unfccc.int/Reference/PDDs_Forms/index.html	UNFCCC
12.	UNFCCC	/PS/	CDM project standard, version 2.0		UNFCCC
13.	UNFCCC	/TOOL11/	Methodological Tool: "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period" version 03.0.1	https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-11-v1.pdf/history_view	UNFCCC
14.	UNFCCC	/TOOL07/	Tool to calculate the emission factor for an electricity system, version 07	https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-07-v1.1.pdf/history_view	UNFCCC
15.	UNFCCC	/TOOL09/	Determining the baseline efficiency of thermal or electric energy generation systems, version 2.0	https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-07-v1.1.pdf/history_view	UNFCCC
16.	UNFCCC	/TOOL10/	Tool to determine the remaining lifetime of equipment, ver. 1	https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-07-v1.1.pdf/history_view	UNFCCC
17.	UNFCCC	/TOOL03/	Tool to calculate project or leakage CO2 emissions from fossil fuel	https://cdm.unfccc.int/methodologies/PAMethodologies/PAMethodologies	UNFCCC

No	Author	Reference	Title	References to the document	Provider
			combustion, ver. 3	ologies/tools/am-tool-07-v1.1.pdf/history_view	
18.	UNFCCC	/TOOL05/	Methodological tool - Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation, ver. 5	https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v1.1.pdf/history_view	UNFCCC
19.	UNFCCC	/VAL/	-Validation Report for registration of the CDM project Guanaquitas 9.74 MW hydroelectric project, submitted by Icontec, 05/04/2012. -Validation report on PRC, Guanaquitas 9.74 MW hydroelectric project, 01/08/2018, EPIC	N/A	UNFCCC
20.	UNFCCC	/VER/	-Verification Report of the 1 st monitoring, Guanaquitas 9.74 MW hydroelectric project, submitted by EPIC, 03/09/2018.	https://cdm.unfccc.int/Projects/DB/ICONTEC1277694039.62/iProcess/EPIC_Sust1522073752.61/view	UNFCCC
21.	UNFCCC	/VVS/	CDM Validation and Verification Standard, Version 2.0	https://cdm.unfccc.int/methodologies/SSCmethodologies/approved	UNFCCC
22.	UPME	/EF/	-Resolution 385, 24/12/2020, EF update of the SIN -2019, for CDM projects -EF calculation Document of SIN 2019 -Resolution 642, 27/12/2019, EF update of the SIN -2018, for CDM projects -EF calculation Document of SIN 2018	https://www1.upme.gov.co/siame/Paginas/calculo-factor-de-emision-de-Co2-del-SIN.aspx	OTHER
23.	MME	/LAW/	<ul style="list-style-type: none"> ✓ Law 1715, 2014 ✓ Law 1955, 25/05/2019 ✓ modifies Law 1715 of 2014 ✓ Resolution UPME 703, 14/12/2018 ✓ Environmental Resolution 1303, 13/07/2018 ✓ Environmental Resolution 1283, 08/08/2016 ✓ Decree 2143, 2015 ✓ Decree 829 of 2020 	https://www.minenergia.gov.co/energias-renovables-no-convencionales	OTHER
24.	UPME CMS	/BL/	- Expansion Plan Generation/Transmission 2019-2033, UPME, 2019 -CMS Expert Guide to Renewable energy law and regulation, 2020:	https://cms.law/en/int/expert-guides/cms-expert-guide-to-renewable-energy/colombia	OTHER
25.	CARCAA MME	/LIC/	<p>Environmental:</p> <ul style="list-style-type: none"> ✓ Resolution 130-TH-6807, 2009 – Local Environmental Authority Corantioquia ✓ Resolution 130-TH-6682, 2008 – Local Environmental Authority Corantioquia ✓ Resolution 130-TH-6712, 2008 – Local Environmental Authority Corantioquia License 028, 2008 - Municipality ✓ Land movement authorization, 2008 – Municipality ✓ Land use certification, 2008 - Municipality <p>GENERATION:</p> <ul style="list-style-type: none"> ✓ Connection Approval, UPME, 06/08/2008 	N/A	PP

No	Author	Reference	Title	References to the document	Provider
26.	PP	/L-B/	Operational Logbook	N/A	PP
27.	SEL	/Meter/	Manual power meters SEL-735, Power Quality and Revenue Meter, 20121005	N/A	PP
28.	TN JI/CDM CP	/COVID/	<p>TUV NORD Covid pandemic guidance and notifications:</p> <ul style="list-style-type: none"> • TN Guidance 20/001 "CORONAVIRUS – GUIDELINE FOR AUDITORS", version 2 • Covid pandemic Announcements along with related EB emails and EB decision via JI/CDM Team SharePoint 20/03/2020, 24/06/2020, 25/02/2021 • Information provided during EEM conducted on 11/11/2020 and 16/12/2020 • Covid-19 pandemic EB decision 	<p>https://extranet.tuev-nord.de/sites/jicdm/default.aspx</p> <p>https://cdm.unfccc.int/newsroom/latestnews/releases/2020/01041_index.html</p>	TN JI/CDM CP
29.	PP	/PIC/	Pictures form Name plates of main equipment		PP

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

Table 3. CL from this validation

CLID	CL 01	Section no.	B.4	Date: 07/04/2021
Description of CAR				
B.4 - Step 1.2				
<p>1. New legislation was issued during the last 7 years which could benefit the project. Please clarify if the new economic benefits or prices have been improved for Guanaquitas.</p> <p>Check for example:</p> <ul style="list-style-type: none"> - Decree 829 of 2020 – regulates the grant of tax-related incentives for non-conventional renewable energy generation. - Law 1955, 25/05/2019 - Modifies Law 1715 of 2014 to increase the benefits of income tax reduction for non-conventional renewable energy generators from five to 15 years; <p>2. Furthermore electricity price is important when re-assessing the actual circumstances of the project, so to show the actual prices and trends analysis is relevant.</p>				
Project participant response				Date: 14/06/2021
<p>Our response to each point as follows:</p> <p>1. In the context of Colombia, it is important to take into account that the new regulations that have been developed in the country on energy matters have been considered to encourage the entry of new energy production from Non-Conventional Renewable Energy Sources (wind, solar, tidal, small hydro, etc). This means that the incentive regime associated with the new regulation (framework derived from Law 1715 of 2014 and its subsequent modifications) mainly considers the application to incentive the design, construction and operation of new power generation plants, providing investment incentives to improve the investment rate of return, such as preferential power tariff and tax exemptions among others. These incentives are not applicable to the existing power generation whose installation regime had different market conditions; this is the case of Guanaquitas power plant, reason why we do not include this analysis in the document updating.</p> <p>2. An analysis of the energy price (evolution for the period 2000 to 2021) has been carried out to determine what the variation has been (in relation to the initial projections) and if this could have affected the expected conditions of the project. This information has been updated on section B.4 of the PDD.</p>				
Documentation provided by project participant				
PDD updated and excel spreadsheet (energy price analysis) have been attached to this document.				
DOE assessment				Date: 29/07/2021
<p>1. The relevant new regulation which support the development of non-conventional energies has been mentioned and discussed in the updated PDD. The statement provided by the PP is correct. The projects which are under operation stage don't benefit from the new regulation as such rules support only new development.</p> <p>2. The historic electricity prices of regulated contracts from the implementation of the project until the actual time were analysed by the VT to see if the those have increased considerably so that the baseline scenario could be changed, but it can be conformed that the prices of regulated contracts didn't have a relevant increase, and in average keep constant.</p> <p>Finding is closed.</p>				

CLID	CL 02	Section no.	B.6.1	Date: 07/04/2021
Description of CAR				
Registered PDD reports two emergency generators whereas the updated PDD reports only one. Clarification is requested				
Project participant response				Date: 14/06/2021

Two small diesel generators are installed at the project site for emergencies, so the PDD (section B.6.1) has been updated to reflect the consideration of both equipment. In addition section A.3 of the PDD has been updated to include specific information of the installed equipment (reference to the diesel generators) such as brand, serial and capacity, among others.

Documentation provided by project participant

PDD updated has been attached to this document.

DOE assessment

Date: 29/07/2021

The data of the two backup generators provided in the PDD is in line with the actual information as per plates and data sheet of the equipment.

Finding is closed.

CLID	CL 03	Section no.	B.6.3	Date: 07/04/2021
-------------	-------	--------------------	-------	-------------------------

Description of CAR

1. EF_{grid,CM} for 2019 is public available by the UPME, clarification is requested on why it was not applied
2. Furthermore and regardless the EF_{grid,CM} UPME publication it has to be clarified whether the information to determine the EF_{grid,CM} is public available for 2020.

Project participant response

Date: 14/06/2021

1. All the information related to EF_{grid,CM} for 2019 (reference to Resolution 385 of 2020) has been issued on December 24 of 2020 by the UPME being now available for the project; considering this information, value for EF_{grid,CM} and emissions reduction calculations were updated in the PDD.
2. In addition, information for calculation of EF_{grid,CM} for 2020 is not fully available.

Documentation provided by project participant

PDD updated and excel spreadsheet have been attached to this document.

DOE assessment

Date: 29/07/2021

1. The PP has used the latest public available information of the EF_{grid,CM} published by the UPME. As per official communication by the UPME the CDM projects located in Colombia have to apply the EF_{grid,CM} provided by the UPME.
 2. In the other hand the needed information to calculate the EF_{grid,CM} is not public available. That can be confirmed in the public information at the XM.
- The VT reviewed the EF_{grid,CM} provided by the local authority UPME, the EF_{grid,CM} is calculated in line with the TOOL07.
- Finding is closed.

CLID	CL 04	Section no.	B.7.1	Date: 07/09/2021
-------------	-------	--------------------	-------	-------------------------

Description of CAR

Parameter EG_{PJ, facility, y} - Source of data Grid reports and operator reports.
How both are applicable? Either it can be the related authority or operator. Moreover why not the invoices of sold electricity to Grid are appropriate source here?
Clarification requested

Project participant response

Date: 21/09/2021

Source of data for energy generated and delivered to the grid, is the public report issued by the operator of the National Interconnected System -NIS- (grid operator); thus indications for parameter EG_y are only applicable to energy generated by the power plant and delivered to the grid (e.g specifications for power meters and procedures for reporting results). This is the data source, since the power meters report by telemetry the energy generated and delivered to the NIS, and it is there where they reconcile the amount received by the national network (official and public information). On the other hand, the energy sales invoices are used to cross-check the energy generated with the information reported by the NIS (this is a QA / QC process).

Documentation provided by project participant

-

DOE assessment

Date: 21/09/2021

The VT reviewed the EG_{PJ, facility, y} monitoring procedure versus the registered PDD. No discrepancies were found. The generation data registered in the PP system is the same than the data reported in the official information of XM. Furthermore the VT reviewed the data in invoices where it could be confirmed that no discrepancies exist.

Finding is closed.

CLID	CL 05	Section no.	B.7.1	Date: 07/09/2021
Description of CAR				
Parameter Energy imports If bidirectional meters are installed at substation why the description and source of data are different than EG _{PJ,facility,y} . Clarification requested				
Project participant response				Date: 14/09/2021
Bidirectional power meters are installed only to measure the energy generated and delivered to the grid by the power plant, complying with the provisions and specifications defined by the power generation regulations; It is important to note that the meters for the energy generated and delivered to the grid (installed in the substation) are different from the meters that record the energy acquired from the local grid for auxiliary and administrative uses (installed by the local energy utility, supplying energy to domestic and commercial users), so the considerations for determining energy values are not the same (one is established for energy generated and delivered, while the other is for domestic / commercial consumption).				
Documentation provided by project participant				
-				
DOE assessment				Date: 29/07/2021
It is important to clarify that in normal operation conditions the electricity imported is measured by the bi-directional meter where the net electricity is reported by the parameter "Net electricity generated and supplied to the grid by the project activity in the year y (EG _{PJ,facility,y}). Only in extraordinary situation when the main T&D lines are interrupted, is then the electricity is taken from the rural line, where the consumed electricity (only for some illumination and some appliances used by the surveillance personnel) is measured by a rural meter and reported as the parameter "energy imports". It is important to notice that the energy imports in the last MP (2 nd MP) are 27.8 MW, which represent only 0.025% of the total ER, which in accordance with §74 of the VVS v.2 could be considered negligible. As the parameter "Energy imports" is already included in the monitoring plan the PP is including those in section D.2 of the MR. Findings is closed.				

Table 4. CAR from this validation

CAR ID	CAR 01	Section no.	A.4	Date: 07/04/2021
Description of CAR				
Allcot appears as PP, but it doesn't appear in the UNFCCC website				
Project participant response				Date: 14/06/2021
All reference for Allcot has been removed on the PDD as it is not a valid PP.				
Documentation provided by project participant				
PDD updated has been attached to this document.				
DOE assessment				Date: 29/07/2021
The PP in the updated PDD are in line with the PPs in the UNFCCC website. Finding is closed.				

CAR ID	CAR 02	Section no.	B.4	Date: 07/04/2021
Description of CAR				
B.4 - Step 1.3 <i>It has not been mentioned whether in the baseline, equipment was used.</i> This step is applicable only if the baseline equipment was used at registration time.				
Project participant response				Date: 14/06/2021
For the second crediting period, the same equipment used during the first crediting period will be used without additional investments or updates (in the baseline prior to the first crediting period, no equipment was used as it was a new project); this explanation has been included in the description of the baseline.				
Documentation provided by project participant				
PDD updated is attached to this document.				
DOE assessment				Date: 29/07/2021
The statement provided by the PP is correct. As per 1 st validation documents it is confirmed that no equipment was used in baseline situation. Finding is closed.				

CAR ID	CAR 03	Section no.	B.6.3	Date: 07/04/2021
Description of CAR				
The evidence to support the expected electricity generation has not been provided.				
Project participant response				Date: 14/06/2021
According to the technical information, yearly MWh that would be generated in the second crediting period are calculated taking as a reference the historic annual average of energy generation of the power plant during the last 7 years. This information has been updated on section B.6.3 of the PDD and determined in the emissions reduction calculation spreadsheet.				
Documentation provided by project participant				
PDD updated and excel spreadsheet have been attached to this document.				
DOE assessment				Date: 29/07/2021
The updated electricity generation data is in line with the historic records as per official information taken from the XM. Finding is closed.				

CAR ID	CAR 04	Section no.	B.6.3	Date: 07/04/2021
Description of CAR				
The baseline calculation provided in B.6.3 has to be provided for traceability				
Project participant response				Date: 14/06/2021
To support the baseline emissions calculation (reference to values provided on section B.6.3 of the PDD) and excel spreadsheet has been prepared to reflect and to explain origin of the data used in the calculations in the PDD.				
Documentation provided by project participant				
PDD updated and excel spreadsheet have been attached to this document.				
DOE assessment				Date: 29/07/2021
The baseline calculation provided in B.6.3 is correct and in consistent with the ER calculation spreadsheet. Finding is closed.				

CAR ID	CAR 05	Section no.	B.6.3	Date: 10/09/2021
Description of CAR				
1. Parameter $PE_{ECi,y}$ - The parameter is added as new and not shown in track change mode here for RCP. TR was under impression that not all changes from PDD version 6 to 7 are in track change. 2. Kindly justify the applicability of this tool as per §2 of tool for which option is this chosen. Moreover T&D losses: if electricity consumption is measured at project how T&D losses are applicable as those are more conservative				
Project participant response				Date: 21/09/2021
Our response to each point as follows:				
1. New parameters to determine project emissions have been deleted, since according to the registered PDD and the applied methodology, project emissions for this type of projects are zero ($PE = 0$). In addition, during the previous monitoring periods, it was possible to establish that the project emissions due to energy consumption or fossil fuel consumption represented much less than 1% of the emission reductions achieved in the period, therefore, considering the provision of the VVS, these sources of emission are not considered (this is a conservative approach and aligned with the VVS). 2. As the tool is necessary to calculate the parameters to establish project emissions due to energy consumption, which would no longer be included in the PDD (reference to the previous answer), any reference to the application and use of this tool has been erased.				
Documentation provided by project participant				
PDD updated has been attached to this document.				
DOE assessment				Date: 21/09/2021
After review of details the monitoring plan the VT concluded that no new parameters have to be added to the monitoring plan. The PP showed at validation stage that the PE_y due to diesel consumption are neglected. Finding is closed.				

Table 5. FAR from this validation

FAR ID		Section no.		Date:
Description of FAR				
1. —				
Project participant response				Date:
Documentation provided by project participant				
DOE assessment				Date: DD/MM/YYYY

- - - - -

Document information

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