VALIDATION REPORT OF LARIMAR WIND FARM PROJECT

Colombian Institute for Technical Standards and Certification (ICONTEC)

Project Title	Larimar Wind Farm Project
Version	04
Report ID	VCSVA-17-002-*4*

Report Title	Validation report of Larimar Wind Farm Project
Client	EGE Haina S.A. – Empresa Generadora de Electricidad Haina
Pages	40
Date of Issue	31 – August– 2017 report issued
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Summary:

ICONTEC was contracted for the validation of Larimar Wind Farm Project, this validation process was performed under VCS standard version 3.6. Larimar Wind Farm Project is located in Barahona Province, Dominican Republic; this project activity is developed in the municipality of Enriquillo. The opening meeting between ICONTEC and Empresa Generadora de Electricidad Haina S.A. was carried out after the project was listed in the VCS project pipeline on January 13th ,2017.

The project involves the implementation of two wind farms connected to the National Electrical Interconnected System of Dominican Republic. The wind farms are: (1) Larimar I which has 15 wind turbine generators with a total installed capacity of 49.5 MW and (2) Larimar II which has 14 wind turbines generators with a total installed capacity of 48.3 MW. The 29 wind turbine generators allow an installed capacity of 97.8 MW and annual supply of electricity to the grid of 370 GWh. The expected impact on emission reductions from the project is 246,766 tCO_2e per year.

This project proposes to apply baseline and monitoring methodology identified as ACM0002, version 17.0.0 of Approved methodologies for large scale CDM project activities by the CDM Executive Board. This methodology has been accepted to be used by the VCS standard.

The purpose of this validation process is to confirm the compliance of the project with the VCS standard (version 3.6), based on the PD version 3 of 15/08/2017, and the proper application of the monitoring methodology ACM0002 (Version 17.0.0) and its related CDM tools and guidelines.

During this validation process, 6 findings occurred to be classified as 5 corrective actions request and 1 clarifications actions request, which were treated by the project owner and clarified in a new version of the PD version 3. Upon review of the documentation and explanations provided by the Project Proponent, all findings were closed out in a clear and transparent manner.

ICONTEC verified the project design and the implementation status through the documental review and onsite visit (it was conducted between February 8th, 2017 to February 10th, 2017), addressing conservatively the restrictions and uncertainties associated to this validation process.

ICONTEC confirms that it achieved a reasonable level of assurance during validation; see Section 1.3 on this report.

The validation team was able to conclude that as it was described in the version 3 of the project description, it meets all relevant VCS requirements and correctly applies the baseline and monitoring methodology ACM0002, version 17. Hence, ICONTEC requests the registration of the project.

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1 INTRODUCTION

1.1 Objective

The purpose of a validation is to secure the opinion of an independent third party in order to assess the project´s design: the project's baseline, the monitoring plan, and the project's compliance with relevant VCS requirements of the proposed project activity.

Validation is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified voluntary emission reductions (VERs).

1.2 Scope and Criteria

The validation scope involves an independent and objective review to determine that the project design meets the following VCS criteria:

- VCS Program Guide, version 3.6.
- VCS Standard, version 3.6.
- Program Definitions, version 3.6.
- Program Fee Scheduled, version 3.5.
- Registration and Issuance Process, version 3.7
- Approved Consolidated Baseline and Monitoring Methodology ACM0002, Version 17.0

ICONTEC carries out audits according to its ethics code and internal procedures for carrying out validation, verification and certification audits of VCS project activities, which, in turn, are based on the VCS Standard. Likewise, ICONTEC focuses on the identification of significant risks for VER generation, and verification of the mitigation during its audits.

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

1.3 Level of Assurance

The information sources used are deemed reliable, these are: PD, on-site visit to the project proponent, on-site interviews, document review and secondary sources for confirmation.

All the revisions of the validation report before being submitted to the client were subjected to an independent internal technical review to confirm that all validation activities had been completed according to the pertinent ICONTEC instructions.

The technical review was performed by a technical reviewer(s) qualified in accordance with ICONTEC's qualification scheme VCS VER validation and verification. The validation team and the technical reviewers consist of the following personnel:

Table 1. Validation team

ROLE/ QUALIFICATION	LAST NAME	FIRST NAME	COUNTRY
Lead Auditor and Technical Expert	Ramirez	Francy	Colombia
Lead Technical Reviewer for VCS general requirements	Santos	Diana	Colombia
Technical Expert Reviewer	Grisales	Cristian	Colombia

Besides the above mentioned, during the validation ICONTEC ensured to fulfill the requirements additional to ISO 14064-3:2006 and ISO 14065:2007, set in VCS standard version 3.6, which are as follows:

- The level of assurance is reasonable for validation;
- The criteria is VCS standard version 3.6 or other GHG Program as approved under the VCS Program;
- The objective is in conformance with the VCS standard version 3.6 requirements and VCS program methodologies as applicable to the specific project; and
- The project is classified like a Project (Less than or equal to 300,000 tons of CO_2e per year). In consequence, the materiality with respect to the aggregate of errors, omissions and misrepresentations relative to the total reported GHG emissions reduced, is five per cent.

With the issues explained in this Section ICONTEC confirms that it achieved a reasonable level of assurance during validation.

1.4 Summary Description of the Project

The project activity consists of the supply of clean hydroelectric energy to the National Electrical Interconnected System of Dominican Republic through the implantation and operation of a 2 Greenfield Wind Farms. The wind farms are: (1) Larimar I which has 15 wind turbine generators with a total installed capacity of 49.5 MW and (2) Larimar II which has 14 wind turbines generators with a total installed capacity of 48.3 MW and is expected to generate 370 GWh/year of clean and renewable electric energy. Larimar I began its commercial operations on August 2016[1] /8/, and Larimar II is expected to start its commercial operations on second quarter of 2018.

In the absence of the project activity, the clean electricity supplied by Larimar Wind Farm Project to National Electrical Interconnected System of Dominican Republic would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources.

[1] Larimar I wind farm started its operation partially on May 2016 and it was fully operational (all its installed capacity) on July 2016 /5/, however the commercial operations (selling energy) start on August 2016

2 VALIDATION PROCESS

2.1 Method and Criteria

The validation consists of the following three phases:

i) A desk review of the project design documents,

ii) Follow up interviews with project stakeholders,

iii) Resolution of outstanding issues and the issuance of a final validation report and opinion.

As mentioned in clause 1.2 of this report ICONTEC, based on its ethics code and internal procedures, carries out validation, verification and certification audits of VCS project activities (which, in turn, are based on the VCS standard) focused on the identification of significant risks for VER generation and the verification of the contribution to climate change mitigation.

All documentation review during the validation process has been including in section 2.2 – Document Review.

Findings established during the validation can be seen as:

- A non-fulfillment of validation protocol criteria, or
- An identified risk to the fulfillment of the project objectives

The findings could take the form of a Corrective Action Request (CAR), Forward Action Request (FAR) or a Clarifications Request (CL).

Corrective Action Requests (CAR) are issued where:

i) The project participants have made mistakes which directly influence the ability of the project activity to achieve real, measurable and additional emission reductions;
ii) The VCS requirements have not been met; or
iii) There is a risk that emission reductions cannot be monitored or calculated

A Forward Action Request (FAR) is made to highlight issues related to project implementation that will require review during the next verification of the project activity.

A Clarification Request (CL) is required when information is insufficient or not clear enough to establish whether a requirement has been met.

ICONTEC resolve or “close out” CARs and CLs only if the project participants modify the project description, rectify the PD or provide additional explanations or evidence that satisfy the ICONTEC’s concerns.

This validation report explains the issues raised, the responses provided by the project proponent, the means of validation of such responses and references to any resulting changes in the PD or supporting annexes.

2.2 Document Review

PD submitted by EGE Haina and the additional background documents related to the project design and baseline were assessed during the validation.

Main documents reviewed are:

/1/ Project Description version 1 (issued on January 13th,2017), version 2 (issued on March 10th, 2017), version 3 (issued on August 15th/2017).

/2/ Spreadsheet with emission reduction calculations (files: 41_Larimar EF calculation.xls).

/3/ Spreadsheet with the financial calculation for additionality assessment (files: 35_Equity IRR DR LARIMAR I.xls, and 36_Equity IRR DR LARIMAR II.xls)

/4/ Report about electric generation on July 2016 issued by National Energy Comission (CNE) from Dominican Republic

/5/ Authorization for commissioning of Larimar I wind farm issued by Superintendency of electricity from Dominican Republic on July 22nd, 2016

/6/ Energy production assessment for Larimar I wind farm issued by GL Garrad Hassan Mexico (DNV-GL) on October 6th/2015

/7/ Energy production assessment for Larimar II wind farm issued by GL Garrad Hassan Mexico (DNV-GL) on September 15th/2015

/8/ Contract signed between EGE Haina and corporation of state and electric companies from Dominican Republic (CDEEE) for buying and selling electrical energy from Larimar I from 00:00 hours on August 1st/2016

/9/ Regulation for the application of the General electricity law N° 125/2001

/10/ Law N°57/2007 to Incentive to Renewable Energies and Special Regimes

/11/ Regulation for the application of the Law 157/2007 /10/

/12/ Resolution N° 05-2014 issued by City Council of Enriquillo which grant the land use authorization to EGE Haina to developed and to implement Larimar Wind Farm Project, issued on July 17th/2014

/13/ Decree N° 395-2014 issued by Republic President of Dominican Republic which authorize to General Manager of National Assets to enter into a contract with EGE Haina to developed and to implement Larimar I Wind Farm, dated on October 16th/2014

/14/ Special power granted by Republic President of Dominican Republic to Executive Director of National Energy Comission to enter into a contract with EGE Haina for operating Larimar I wind farm for own account and benefit, dated on April 25th/2016

/15/ Announcement published by National Energy Comission regarding the intention. EGE Haina to build Larimar II Wind Farm, issued on May 10th/2016

/16/ Environmental permit N°3103-16 granted to EGE Haina to develop Larimar II Wind Farm issued by Ministry of Environmental an Natural Resources from Dominican Republic, dated on December 13th/2016

/17/ Turnkey Engineering, Procurement and Construction Agreement for Larimar wind farm between EGE Haina and Urba Ingenieria y Energia y Recursos Naturales Intermacional

/18/ Minute of the board of director meeting held on September 11th/2014 which approves and authorizes EGE Haina to develop Larimar I wind farm

/19/ Minute of the board of director meeting held on June 8th/2016 which approves and authorizes EGE Haina to develop Larimar II wind farm

/20/ Financial model run for authorization of Board of Directors for Larimar I wind farm

/21/ Financial model run for authorization of Board of Directors for Larimar II wind farm

/22/ Environmental Impact Statement code: 10587 for Larimar I wind farm issued by SERCITEC engineers & consultants on November 2014

/23/ Environmental Impact Statement code: 1289 for Larimar II wind farm issued by SERCITEC engineers & consultants on January 2016

/24/ Environmental permit N° 2597-15 for Larimar I wind farm issued by the Ministry of Environment and Natural Resources from Dominican Republic on February 17th/2015

/25/ Environmental permit N° 3103-16 for Larimar II wind farm issued by the Ministry of Environment and Natural Resources from Dominican Republic on December 13th/2016

/26/ Spreadsheet with the common practice analysis (file: 37_Common Practice Analysis Larimar Wind Farm final.xlsx)

/27/ Renewable Power Generation Costs in 2014, issued by IRENA, dated on January 2015.

/28/ Larimar wind farm budget issued by EGE Haina, issued on September 2014

/29/ Turnkey Engineering, Procurement and Construction Agreement for Larimar II wind farm between EGE Haina and Urba Ingenieria y Energia y Recursos Naturales Intermacional

/30/ Service and Availability agreement for Larimar I wind farm signed between EGE Haina and Urba Ingenieria y Energia y Recursos Naturales Intermacional

/31/ Tributary code from Dominican Republic, Law 11 issued on 1992

/32/ Email sent by Gold Standard to MGM Innova with a description about the rejection of

Larimar wind farm as eligible project activity under that GHG program, dated on May 16th/2016

Background documents related to methodologies employed in the design or other reference document:

/UN1/ Approved Consolidated Methodology ACM0002: Grid-connected electricity generation from renewable sources, version 16.0.

/UN2/ Methodological Tool to calculate the emission factor for an electricity system, version 05.0

/UN3/ Methodological Tool for the demonstration and assessment of additionality, version 07.0.0

/UN4/ Methodological tool on investment analysis, version 07.0

/UN5/ Guidelines for the reporting and validation of plant load factors, version 01.0

/UN6/ Methodological tool on common practice, version 03.1

2.3 Interviews

The following table outlines the persons having been directly in contact with ICONTEC within the validation process:

Table 2. Follow up interviews

Date	Interview Delegate	Organization and Role	Interview Topics
15-02-2017 to 17-02-2017	Ricardo Estevez	Development Manager EGE Haina S.A.	Project description, application of the applied methodology, baseline scenario, additionality, quantification of GHG emission reductions, monitoring plan, environmental impact and local stakeholder consultation
	Juliana Correa	Consultant - Project Manager MGM Innova	
15-02-2017 and 17-02-2017	Jose Rodriguez	Development Director EGE Haina S.A.	Project Description, Land Regulatory Framework, local stakeholder consultation and Monitoring Plan
15-02-2017	Lluvia Garcia	Permits and Litigation Manager	Land Regulatory Framework and local stakeholder

Date	Interview Delegate	Organization and Role	Interview Topics
		EGE Haina S.A.	consultation
	Wilson Perez	Economic transactions Manager EGE Haina S.A.	Monitoring Plan
	Marino Inchaustegui	Healthy, safety and environment Manager EGE Haina S.A.	Environmental aspects, local stakeholder consultation
16-02-2017	Roselito Sanchez	Teaching Director Enriquillo Community	Local stakeholder consultation and environmental impacts
	Jose Urbaez	Colonel Of The Fire Department Enriquillo Community	
	Bari Dominguez	Plant Manager EGE Haina S.A.	Monitoring Plant

2.4 Site Inspections

An onsite visit was carried out by the lead auditor on February 16th, 2017. This visit included a tour by the facilities of the Larimar Wind Farm Project (Larimar I and Larimar II) and a visit to the electrical delivery point to National Electrical Interconnected System of Dominican Republic (Los Cocos electrical substation). It is worth to mention that only Larimar I is delivering energy to National electrical grid since August 2016 /8/; Larimar II is expected to begin operation on second quarter 2018. During the onsite visit the lead auditor verified that there is no wind turbine erected for Larimar II.

Likewise during the site inspection, the lead auditor carried out interviews with representatives of the local stakeholders in order to assess the impact of this project activity regarding to the environmental and social plans implemented by the PP.

2.5 Resolution of Findings

The validation audit process was prepared following the site visit during which all issues identified during the desk review were discussed. Corrective action and clarification requests raised by ICONTEC (5 CARs and 1 CLs) were presented to the PP and resolved through communication and meetings between EGE Haina S.A. and ICONTEC. To guarantee the transparency of the

validation process, the concerns raised and the response provided by the project participants are documented in more detail in Appendix A.

2.5.1 Forward Action Requests

There is no forward action requests raised during this validation process.

3 VALIDATION FINDINGS

3.1 Project Details

ICONTEC verified the following description of Larimar Wind Farm Project during the onsite visit and by means of desk review:

Table 3. Project Description

Project Parties:	EGE Haina S.A.
Title of project activity:	Larimar Wind Farm Project
Project Scale:	Project
Location of the project activity:	The project is located in Enriquillo municipality, Barahona Province, in Dominican Republic. Coordinates: The project activity is located at the following UTM coordinates: Latitude: between 2259273 and 264387 East Longitude: 1980248 and 1984394 North
Methodology :	Approved consolidated methodology ACM0002 Grid-connected electricity generation from renewable sources, version 17.0.
Project's crediting period:	10 years renewable
Estimated amount of emission reductions over the chosen crediting period:	2,467,667 tCO_2e

The PD in section 1.4 states MGM Innova Consulting as other entity involved in the project, however it is worth to drawn attention that MGM Innova Consulting wrote all versions of the PD and it has been the consultancy company contracted by EGE Haina with the aim to submit the project documentation to a GHG program.

Project scope, type, technologies and measures implemented, and eligibility of the project:

The project involves the implementation of two wind farms connected to the National Electrical Interconnected System of Dominican Republic. The wind farms are: (1) Larimar I which has 15 wind turbine generators with a total installed capacity of 49.5 MW and (2) Larimar II which has 14

wind turbines generators with a total installed capacity of 48.3 MW. The 29 wind turbine generators allow an installed capacity of 97.8 MW and annual supply of electricity to the grid of 370 GWh. The expected impact on emission reductions from the project is 246,766 tCO_2e per year. The project activity is connected to electrical interconnected system of Dominican Republic by a 2x34.5 kV transmission line to Los Cocos electrical substation which belongs to National Interconnected electrical system (SENI)[2] from Dominican Republic.

The description of the technology to be applied provides transparent information to evaluate its impact on the greenhouse gas balance. The credibility of this information was validated by ICONTEC during onsite visit through the reviewing of wind resources assessment for Larimar I /6/ and Larimar II /7/.

The GHG project assessed can be classified as a VCS project in the sector 1, Energy (renewable/non-renewable), according to the List of Sectoral Scopes of VCS.

The first phase of the project activity, Larimar I, began its commercial operations on August 1st/ 2016 /8/ and this date was defined as the start date of the renewable crediting period.

Conditions prior to project initiation

As the audit team could verified by means of the onsite visit and documental review /6//7/, there is no any power plants operating in the locations describe for every instance of this project activity (Larimar Wind Farm Project).

Project compliance with applicable laws, statutes and other regulatory frameworks

As described in Section 1.11 of the PD (version 3), the Project is in compliance with applicable laws from Dominican Republic. In order to validate this statement, the audit team found out that National Energy Comission of Dominican Republic (CNE)[3], it is the government institution which defines the states policy for the energy issues. The following evidence was reviewed: /9/,/10/ and /11/.

Ownership and other programs

ICONTEC reviewed documental evidence /12/,/13/,/14/,/15/,/16/, in order to validate the unconditional, undisputed and unencumbered EGE Haina S.A ability to claim the GHG emission reduction that Larimar Wind Farm Project will generate or cause, since these documents describe an enforceable and irrevocable agreement with the holder of the statutory, property or contractual right in the plant (EGE Haina S.A). ICONTEC considered these documental evidences as credible and reliable.

[2] http://www.oc.org.do/Portals/0/Images/ImaSitio/rednac.gif

[3] http://www.cne.gob.do/marco-legal/
http://www.cne.gob.do/mundos-energia/electrica/
http://www.cne.gob.do/mundos-energia/fuentes-alternas/

Currently, the project does not apply to other emission trading programs (CDM, Gold Standard) or other forms of environmental credit and is not part of any compliance scheme (binding limits). Nevertheless, it is worth to drawn attention that previously the project activity introduced its intention to validate its emission reduction by Gold Standard, however it was not successful, since the prior consideration requirement established by this GHG program was not fulfilled by this project activity, specifically the project start date requirement for those project activities which intent to apply to Gold Standard: after 2015 a project activity can be considered eligible until one year after the project start date as it was notified by Gold Standard by email/32/. Under VCS, the project start date is the date on which the project began generating GHG emission reductions or removals[4], likewise, Non-AFOLU projects shall complete validation within two years of the project start date[5]. Taking into account that first phase of the project activity, Larimar I wind farm, started its operation partially on May 2016 and it was fully operational (all its installed capacity) on July 2016 /5/, and the commercial operations (selling energy) start on August 2016, the VCS requirement is fulfilled.

Sustainable development contributions

Regarding to sustainable development contributions, the PP argued in PD version 3 as the project activity involves to deliver a clean energy (energy source: wind), that will help to Dominican Republic Government to fulfill their commitment to achieve INDC target. Since one of the objectives of this assessment process carried out by ICONTEC is to identify GHG assertion by this project activity, the assessment regarding the sustainable development contribution will be developed along this report

ICONTEC confirms that PD version 3 depicts in an accurate and complete way the project description, and it complies with the relevant form and guidance[6]. This PD provides an understanding of the nature of the project.

3.2 Application of Methodology

3.2.1 Title and Reference

The approved UNFCCC baseline and monitoring methodology ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (version 17.0) /UN1/ has been applied by the project activity.

[4] VCS, version 3.7 paragraph 3.7.1

[5] VCS, version 3.7 paragraph 3.7.2

[6] Project Description Template, version 3.3, issued on October 19th, 2016

3.2.2 Applicability

The project activity complies with the applicability criteria of the methodology /UN1/ since it is a grid-connected renewable energy power generation project activity that installs a Greenfield power plant. ICONTEC verified this statement, as follows:

Table 4. Applied methodology applicability conditions analysis

Applicability condition	Means of validation
This methodology is applicable to grid-connected renewable power generation project activities that: (a) Install a Greenfield power plant; (b) Involve a capacity addition to (an) existing plant(s); (c) Involve a retrofit of (an) existing operating plants/units; (d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or (e) Involve a replacement of (an) existing plant(s)/unit(s).	Larimar Wind Farm Project consists of installation of two wind farms (Larimar I and Larimar II) at a site where no renewable power plant was operated prior to the implementation of the project activity (Greenfield plant). ICONTEC verified this statement by means of: • On site visit • Energy production assessment for Larimar I /6/ and Larimar II /7/ • National Interconnected electrical system (SENI) map[7] from Dominican Republic, which states Los Cocos, the electrical substation where the project activity is connected inside SENI
The methodology is applicable under the following conditions: (a) The project activity may include renewable energy power plant/unit of one of the following types: hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit; b) In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation	Larimar Wind Farm Project consists of installation of two wind farms (Larimar I and Larimar II). ICONTEC verified this statement by means of: • On site visit • Energy production assessment for Larimar I /6/ and Larimar II /7/

[7] http://www.oc.org.do/Portals/0/Images/ImaSitio/rednac.gif

Applicability condition	Means of validation
of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.	
In case of hydro power plants one of the following conditions must apply: (a) The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or (b) The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density calculated using equation (3), is greater than 4 W/m^2; or (c) The project activity results in new single or multiple reservoirs and the power density, calculated using equation (3), is greater than 4 W/m^2; or (d) The project activity is an integrated hydro power project involving multiple reservoirs, where the power density for any of the reservoirs, calculated using equation (3), is lower than or equal to 4 W/m^2, all of the following conditions shall apply: (i) The power density calculated using the total installed capacity of the integrated project, as per equation (4), is greater than 4 W/m^2; (ii) Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity;	The assessment of this applicability condition is not applicable for this type of project activity (Wind farms)
In the case of integrated hydro power projects, project proponent shall: (a) Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or (b) Provide an analysis of the water balance	The assessment of this applicability condition is not applicable for this type of project activity (Wind farms)

Applicability condition	Means of validation
covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This demonstration has to be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore this water balance will take into account seasonal flows from river, tributaries (if any), and rainfall for minimum five years prior to implementation of CDM project activity.	
The methodology is not applicable to: • Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site; • Biomass fired power plants.	The assessment of this applicability condition is not applicable for this type of project activity (a Greenfield Wind farms)
In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance".	The assessment of this applicability condition is not applicable for this type of project activity (a Greenfield Wind farms)

The applicability conditions of this project activity regarding to tool to calculate the emission factor for an electricity system /UN2/ will be discussed on Sections 3.2.4, 3.2.6 and 3.2.8 on this report. As well as for tool for the demonstration and assessment of additionality /UN3/, the applicability conditions will be discussed on Section 3.2.5 on this report.

In summary, ICONTEC assessed the proposed project activity and agrees with the application of the approved consolidated methodology ACM0002 Grid-connected electricity generation from renewable sources, version 17.0, since PP correctly addressed the determination of the applicability conditions used to determine the ERs. Hence it is ICONTEC's opinion that the

proposed project activity is in compliance with the rules and requirements set out for the CDM and VCS project activities.

3.2.3 Project Boundary

In accordance with paragraph 22 of the applied methodology /UN1/, the project boundary "includes the project power plant/unit and all power plants/units connected physically to the electricity system that the CDM project power plant is connected to." This statement was verified by ICONTEC by means of documental review of technical description /6//7/ for both wind farms and the Letter issued by UPME /9/ and the communication exchanged with CNE regarding the connection of the project activity to SENI /14//15/. The coordinates of the power house are correctly documented in the VCS PD /1/. The sources and sinks of greenhouse gas identified in the VCS PD are deemed to be appropriate.

Table 5. Emission sources included from the project boundary

	GHG involved	Means of Validation
Baseline emissions	CO_2	Emissions from the generation of electrical power by fossil power plants in Colombian National Power Grid (Section 3.1 and 3.2.2 in this report)
Project emissions	-	Considered to be neglected as per section 5.4.1 , paragraph 38 of ACM0002 (version 17.0) /UN1/
Leakage	-	Considered to be neglected as per section 5.6 of ACM0002 (version 17.0) /UN1/

In accordance with the project activity and the applied methodology /UN1/, the emission sources are properly described in the PD version 2. The greenhouse gas emissions occurring within the project boundary as a result of its implementation are all addressed by the applied methodology, therefore there are not greenhouse gas emissions within the project boundary caused by the implementation of the project activity which contribute to more than 1% of the expected annual emission reductions and which are not addressed in by the applied methodology. This was verified by ICONTEC by means of the documental review related to the project's works and its nature /6/ and /7/.

3.2.4 Baseline Scenario

The project activity comprises the installation of two new grid-connected renewable power plants. Consequently, according to the applied methodology, the baseline scenario is: "*electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the Tool to calculate the emission factor for an electricity system".*/UN2/

The PD version 2 correctly identifies the baseline scenario as presented above. The relevant grid is the National Interconnected Electricity System of Dominican Republic./15/, /14/

As methodology ACM0002 (version 17.0) prescribes the baseline scenario and no further analysis is required, there is no need to take steps to identify the baseline scenarios.

3.2.5 *Additionality*

To demonstrate the additionality of the Project, the PD has correctly applied the "Tool for the demonstration and assessment of additionality" (Version 07.0.0) /UN3/. PP used an investment analysis to determine that the project is additional. No Barrier Analysis was presented. The details of ICONTEC's assessment on the project additionality are described below:

Step 0: Demonstration whether the proposed project activity is the first-of-its-kind

Since in the Tool for the demonstration and assessment of additionality /UN3/ clause 14 states that this step is optional and the PP did not used this analysis, hence it is considered that the proposed project activity is not the first-of-its-kind.

Step 1: Identification of alternatives to the project activity consistent with current laws and regulations

In the Tool for the demonstration and assessment of additionality /UN3/ clause 8 states that for project activities that apply this tool in context of approved consolidated methodology ACM0002, only need to identify that there is at least one credible and feasible alternative that would be more attractive than the proposed project activity; however the PP has presented in the PD version 2 two alternatives:

Table 6. Analysis of Alternatives

Alternatives	Assessment	Means of Validation of Alternatives	Conclusion
1. Undertake Larimar Wind Farm Project as a power generation project without being registered as a VCS (CDM) project activity.	In accordance with the tool for demonstration and assessment of additionality /UN3/ clause 20 (a)	All the alternatives comply with all applicable and enforced legislation. From Dominican Republic Besides that, ICONTEC could confirmed by means of the lead auditor's knowledge of the sector and documental review of the regulatory framework from Dominican Republic[8] that alternatives are credible and realistic in the	• The Identification of alternatives is realistic and credible. • The alternatives are consistent with mandatory laws and regulations
2. Not undertake the proposed project activity.	It corresponds to current situation, that is, the electricity will continue to be generated by the existing generation mix operating in the grid and by the addition of new generating sources. Besides, this		

[8] http://www.cne.gob.do/marco-legal/
http://www.cne.gob.do/mundos-energia/electrica/
http://www.cne.gob.do/mundos-energia/fuentes-alternas/

Alternatives	Assessment	Means of Validation of Alternatives	Conclusion
	alternative is the baseline prescribed in the applied methodology /UN1/	National scenario	

Step 2: Investment Analysis

The additionality was demonstrated according to Tool for the demonstration and assessment of additionality /UN3/ and the Methodological tool on the assessment of investment analysis /UN4/.

For this project activity, benchmark analysis (Option III) was selected for the investment analysis. In accordance with the type of this project activity it is expected that incomes other than VCS (CDM) inputs will be generated, regarding energy sales to the market, so ICONTEC agreed that simple cost analysis is not suitable. On the other hand, taking into account that EGE Haina S.A. has no intention in building a power station, different to wind farm in the area of the project activity as demonstrated in the PD and related documentation /6//7//, an investment comparison analysis is not appropriate and a benchmark analysis was used to determine the profitability of the investment.

The benchmark was chosen in accordance with the Appendix in the Methodological tool on the assessment of investment analysis /UN4/ which provides default values for the expected return on equity for different project activities, the relevant benchmark for energy projects in Dominican Republic (Group 1 as given in the guidelines /UN4/) is 14.67%, however these values are expressed in real terms, since the investment analysis carried out by the PP was performed in nominal terms, the addition of the Dominican inflation rate was used to convert the real term value (14.67%) to nominal term.

ICONTEC reviewed the Central Bank of Dominican Republic Website[9] and did not find inflation forecast for the duration of the crediting period, nevertheless there is target inflation rate, hence the PP correctly 4%, in accordance with the requirement stated in the methodological tool /UN4/ clause 17. Therefore the benchmark chosen by the PP was 18.67% (14.67% + 4.0%) as Nominal Return on equity in order to be compared with the financial indicator most suitable for the project type and decision context, in this particular case is IRR. ICONTEC agrees with all the data used in benchmark determination and points out that they were clearly presented, available for consulting and correct

ICONTEC reviewed the files “35_Equity IRR DR LARIMAR I.xls” and “36_Equity IRR DR LARIMAR II.xls” /3/ and confirmed that it included the relevant cost and revenues. The period of assessment was 22 years , the operation stage will take 20 years /17/ and the construction stage (24 months) /17/ are more than 20 years, the audit team deemed appropriate to undertake the investment analysis for 22 years. The depreciation for this project activity is 20 years for civil

[9] http://www.bancentral.gov.do/

works and infrastructure and 20 years for equipment, therefore there is no fair value at the end of the assessment period (year 22).

The input values used in all investment analysis have been consistently applied at the time of the investment decision (September 11th/2014 for Larimar I /18/ and June 8th/2016 for Larimar II /19/) (June 2015) /11/ and in all calculations. The depreciation has been calculated in accordance with accounting standards from Dominican Republic and they are aligned with Methodological Tool on the assessment of investment analysis/UN4/, in addition, the PP has assumed the total investment of both wind farms.

Since the times of investment decision are different for both wind farms, Larimar I (on September 11th/2014 and for Larimar II (on June 8th/2016) the PP performed different investment analysis, and the audit team assessed it as follows:

Larimar I

Parameter	Value	Source	Validation Analysis
Net energy generation	206 GWh/year	Energy production assessment for Larimar I wind farm /6/	In assessing whether the energy generation has been defined correctly, ICONTEC used the Guidelines for the reporting and validation of plant load factors /UN5/, and verified that the third-party generation study /5/ described by the PP as the documental source of this value, was provided by GL Garrad Hassan Mexico (DNV-GL) [10]. The Plant Load factor is 47.4% In accordance with the clause 3 (a) of the mentioned Guidelines /UN5/, ICONTEC deemed this value as credible and reliable.
Energy Price	See sheet "Energy tariff" column "G" Spreadsheet used for financial analysis /33/	Financial model run for authorization of Board of Directors for Larimar I wind farm/20/	In order to assess the reliability of these values, ICONTEC reviewed the technical report for connection points [11] available at the investment decision time September 2014. This report states that the average energy price for electricity generation purposes was USD$ 157.99 on 2014, USD$ 95.59 on 2015 and USD$ 73.61 on 2016. The average of these values is USD$ 109.06. This value was increased year by year using the inflation rate. Therefore this value used by the PP in its cash flow was considered by ICONTEC as credible and reliable.
Total Capital Costs	USD$ 120,000,00	- Larimar wind farm budget	ICONTEC reviewed the budget carried out for authorization of Board of Directors for Larimar I wind

[10] https://www.dnvgl.com/energy/

[11] http://sie.gob.do/mercado-mayorista/estadisticas

Parameter	Value	Source	Validation Analysis
	0		farm /28/ in order to verify the investment costs reported in the cash flow file This chashflow includes costs like:, equipment, civil works and connection to commercial point (delivery point). It was also reviewed by the audit team the Turnkey EPC contract /17/ with the aim to verify that the value stated in this cashflow was actually used. The price per kW installed is US$ 2,424.24. This unit cost was cross checked by ICONTEC with the one reported in "Renewable Power Generation Costs in 2014"/27/, issued by IRENA, page 61, Figure 4.4 where is described "The Total Installed Costs and Weighted Averages of Commissioned and Proposed Wind Farms by Country and Region, 2013-2014", for Latin America (excluding Brazil) the typically range is from a low of USD 1,500/kW to around USD 2,500/kW", hence the Investment cost reported for Larimar II Wind Farm Project is inside the recognized worldwide range of investment costs reported by IRENA, therefore ICONTEC deems that estimations of investment in the power electricity plants are suitable, reliable and conservative.
O&M costs (included insurance)	USD$ 2,141,700 per year USD$ 1,044,000 per year	Service and Availability agreement for Larimar I wind farm signed between EGE Haina and Urba Ingenieria y Energia y Recursos Naturales Intermacional -Clause 16. Insurance of the EPC contract /17/	Icontec verified the contracts signed with Urba Ingenieria y Energia y Recursos Naturales Intermacional /30/, and EPC contract /17/ with the aim to trace the data used by the PP in the investment analysis. The audit team confirmed that information used in the spreadsheet used for financial analysis/3/ is credible and verifiable. In order to carry out the crosscheck, ICONTEC deems that as a common practice, O&M costs are usually given as a percentage of investment cost, so this ratio is: $$\frac{O\&M\ Costs}{Investment\ Costs} = \frac{US\$\ 3{,}185{,}700}{US\$\ 120{,}000{,}000} = 0.0265$$ ICONTEC could verify that the O&M costs reported by PP (2.65 % of the Investments Costs) are inside the range reported in "Renewable Power Generation Costs in 2014, An Overview"/27/, issued by IRENA, Chapter 4 ICONTEC deems the value used as credible and reliable

Parameter	Value	Source	Validation Analysis
Equipment cost[12] (for depreciation only)	USD$ 105,000,000	EPC Contract /17/ Clause 8	The audit team verified this value in the EPC contract and it confirmed that value as credible and traceable. The value provided by the PP was cross checked by the audit team with the figure reported in "Renewable Power Generation Costs in 2014, An Overview"/27/, issued by IRENA, page 56, which stated: "*Wind turbines (including towers and installation) are the main cost item in developing a wind project. At the upper end of the cost range, wind turbines can account for as much as 84% of the total installed cost for onshore wind farms, although higher values are possible.*", hence this value reported for Larimar I Wind Farm Project (87.5% of the EPC contract) is inside the recognized worldwide range of electro-mechanical equipment cost reported by IRENA, therefore ICONTEC deems that estimation of equipment cost is suitable, reliable and conservative.
Income tax	27%	Law 253 issued on 2012	With the aim to assess the value described by the PP, ICONTEC verified the following link: http://www.dgii.gov.do/informacionTributaria/principalesImpuestos/Paginas/Impuesto-Sobre-la-Renta.aspx The truthfulness of the information provided by the PP was checked.
Annual depreciation Civil Works + Infrastructure	20 years	Annex 1.2 of EPC contract /17/ in accordance with accounting standards from Dominican Republic /31/	The depreciation costs are based on the rules established in the Law 11 issued on 1992 /31/. As audit team verified by means of documental review of the following link: http://www.wipo.int/edocs/lexdocs/laws/es/do/do043es.pdf The truthfulness of the information provided by the PP was checked.
Annual depreciation equipment	20 years		

ICONTEC could confirm that the assumptions used are appropriate and the financial calculations made in the file "35_Equity IRR DR LARIMAR I.xls" are correct.

With a benchmark of 18.67%, the financial analysis for this project activity states that the Equity IRR of the project without VCS revenues is 16.04%.

Regarding to sensitivity analysis, the PP has correctly chosen the Investment cost, the Electricity tariff, the energy generation and the O&M costs as variables for this purpose, with a variation of ±10% (This rage of variations seemed reasonable to the audit team in the Project Context and Dominican Republic). The outcome of this sensitivity analysis is described in Table 14 of PD

[12] This cost is included in the Investment Cost

version 2, as well as in the spreadsheet used for financial analysis /3/ (file 35_Equity IRR DR LARIMAR I.xls; Sheet: Equity IRR, file 62 and forward).

Variation of:	IRR without VCS Benefits
Investment cost (CAPEX)	
+10% Variation	14.83%
-10 Variation	16.04%
Electricity price	
+10 Variation	17.88%
-10 Variation	14.14%
Energy generation	
+10 Variation	17.88%
-10 Variation	14.14%
O&M costs (OPEX)	
+10 Variation	15.84%
-10 Variation	16.23%

As can be seen, in all of scenarios the project IRR is less than benchmark IRR. Therefore, in the view of ICONTEC, the sensitivity analysis demonstrates that the project is highly probable not to be financially attractive without the VCS incomes.

Larimar II

Parameter	Value	Source	Validation Analysis

Parameter	Value	Source	Validation Analysis
Net energy generation	176 GWh/year	Energy production assessment for Larimar II wind farm /7/	In assessing whether the energy generation has been defined correctly, ICONTEC used the Guidelines for the reporting and validation of plant load factors /UN5/, and verified that the third-party generation study /7/ described by the PP as the documental source of this value, was provided by GL Garrad Hassan Mexico (DNV-GL) [13]. The Plant Load factor is 38.2% In accordance with the clause 3 (a) of the mentioned Guidelines /UN5/, ICONTEC deemed this value as credible and reliable.
Energy Price	See sheet "Energy tariff" column "G" Spreadsheet used for financial analysis /3/	Financial model run for authorization of Board of Directors for Larimar II wind farm/21/	In order to assess the reliability of these values, ICONTEC reviewed the technical report for connection points[9] available at the investment decision time September 2014. This report states that the average energy price for electricity generation purposes was USD$ 157.99 on 2014, USD$ 95.59 on 2015 and USD$ 73.61 on 2016. The average of these values is USD$ 109.06. This value was increased year by year using the inflation rate. Therefore these values used by the PP in its cash flow assumption were considered by ICONTEC as credible and reliable.
Total Capital Costs	USD$ 113,000,000	Financial model run for authorization of Board of Directors for Larimar II wind farm /21/	ICONTEC reviewed the Financial model run carried out for authorization of Board of Directors for Larimar II wind farm /21/ in order to verify the investment costs reported in the cash flow file. This chashflow includes costs like:, equipment, civil works and connection to commercial point (delivery point). It was also reviewed by the audit team the Turnkey EPC contract /29/ with the aim to verify that the value stated in this cashflow was actually used. The price per kW installed is US$ 2,282.83. This unit cost was cross checked by ICONTEC with the one reported in "Renewable Power Generation Costs in 2014"/27/, issued by IRENA, page 61, Figure 4.4 where is described "The Total Installed Costs and Weighted Averages of Commissioned and Proposed Wind Farms by Country and Region, 2013-2014", for Latin America (excluding Brazil) the typically range is from a low of USD 1,500/kW to around USD 2,500/kW", hence the Investment cost reported for Larimar II Wind Farm Project is inside the recognized

[13] https://www.dnvgl.com/energy/

Parameter	Value	Source	Validation Analysis
			worldwide range of investment costs reported by IRENA, therefore ICONTEC deems that estimations of investment in the power electricity plants are suitable, reliable and conservative.
O&M costs (included insurance)	USD$ 2,141,700 per year USD$ 983,100 per year	Service and Availability agreement for Larimar I wind farm signed between EGE Haina and Urba Ingenieria y Energia y Recursos Naturales Intermacional -Clause 16. Insurance of the EPC contract /29/	Icontec verified the contracts signed with Urba Ingenieria y Energia y Recursos Naturales Intermacional /30/, and EPC contract /29/ with the aim to trace the data used by the PP in the investment analysis. The audit team confirmed that information used in the spreadsheet used for financial analysis/3/ is credible and verifiable. In order to carry out the crosscheck, ICONTEC deems that as a common practice, O&M costs are usually given as a percentage of investment cost, so this ratio is: $\frac{O\&M\ Costs}{Investment\ Costs} = \frac{US\$\ 3{,}124{,}800}{US\$\ 113{,}000{,}000} = 0.0276$ ICONTEC could verify that the O&M costs reported by PP (2.76 % of the Investments Costs) are inside the range reported in "Renewable Power Generation Costs in 2014, An Overview"/27/, issued by IRENA, Chapter 4 ICONTEC deems the value used as credible and reliable
Equipment cost[14] (for depreciation only)	USD$ 100,000,000	EPC Contract /29/ Clause 8	The audit team verified this value in the EPC contract and it confirmed that value as credible and traceable. The value provided by the PP was cross checked by the audit team with the figure reported in "Renewable Power Generation Costs in 2014, An Overview"/27/, issued by IRENA, page 56, which stated: "*Wind turbines (including towers and installation) are the main cost item in developing a wind project. At the upper end of the cost range, wind turbines can account for as much as 84% of the total installed cost for onshore wind farms, although higher values are possible.*", hence this value reported for Larimar II Wind Farm Project (88.5% of the EPC contract) is inside the recognized worldwide range of electro-mechanical equipment cost reported by IRENA, therefore ICONTEC deems that estimation of equipment cost is suitable, reliable and conservative.
Income tax	27%	Law 253 issued on 2012	With the aim to assess the value described by the PP, ICONTEC verified the following link: http://www.dgii.gov.do/informacionTributaria/principal

[14] This cost is included in the Investment Cost

Parameter	Value	Source	Validation Analysis
			esImpuestos/Paginas/Impuesto-Sobre-la-Renta.aspx The truthfulness of the information provided by the PP was checked.
Annual depreciation Civil Works + Infrastructure	20 years	Annex 1.2 of EPC contract /29/ in accordance with accounting standards from Dominican Republic /31/	The depreciation costs are based on the rules established in the Law 11 issued on 1992 /31/. As audit team verified by means of documental review of the following link: http://www.wipo.int/edocs/lexdocs/laws/es/do/do043es.pdf The truthfulness of the information provided by the PP was checked.
Annual depreciation equipment	20 years		

ICONTEC could confirm that the assumptions used are appropriate and the financial calculations made in the file "36_Equity IRR DR LARIMAR II.xls" are correct.

With a benchmark of 18.67%, the financial analysis for this project activity states that the Equity IRR of the project without VCS revenues is 11.61%.

Regarding to sensitivity analysis, the PP has correctly chosen the Investment cost, the Electricity tariff, the energy generation and the O&M costs as variables for this purpose, with a variation of ±10% (This rage of variations seemed reasonable to the audit team in the Project Context and Dominican Republic). The outcome of this sensitivity analysis is described in Table 15 of PD version 2, as well as in the spreadsheet used for financial analysis /3/ (file 36_Equity IRR DR LARIMAR II.xls; Sheet: Equity IRR, file 62 and forward).

It is worth to drawn attention that at the time of investment decision (June 8th/2016 /19/) the feasibility of Larimar II wind project had estimated 15 wind turbines (49.5 MW), however, as it was confirmed by the audit team during this assessment, Larimar II consist of 14 turbines (See Section 3.1 on this report), This change means a decrease in the energy generation by the wind farm estimated as 2,43% below the energy production estimated in the feasibility study available at the time of the investment decision. This change is inside the threshold previously described for the sensitivity analysis carried out for this financial assessment.

Variation of:	**IRR without VCS Benefits**
Investment cost (CAPEX)	
+10% Variation	14.27%
-10 Variation	11.61%
Electricity price	

+10 Variation	13.09%
-10 Variation	14.14%
Energy generation	
+10 Variation	13.09%
-10 Variation	10.06%
O&M costs (OPEX)	
+10 Variation	11.40%
-10 Variation	11.82%

As can be seen, in all of scenarios the project IRR is less than benchmark IRR. Therefore, in the view of ICONTEC, the sensitivity analysis demonstrates that the project is highly probable not to be financially attractive without the VCS incomes.

Step 3: Barrier Analysis

No Barrier analysis is presented in the PD version 2.

Step 4: Common Practice Analysis

Step 4 of the additionality analysis in the PD version 2 has been prepared according to section 4.5.1 of the latest version of the Tool for demonstration and assessment of additionality /UN3/, which applies the Methodological tool on Common Practice /UN6/.

The geographical scope for the common practice analysis is Dominican Republic. Considering that the project is connected to Electric Interconnected System of Dominican Republic, ICONTEC confirmed that it is justified to select Dominican Republic as the geographical scope in accordance with the Guidance /UN6/.

The project has an installed capacity of 97.8 MW. the PD version 2 correctly defines the applicable range as 48.9 MW – 146.7 MW (+/-50% of the installed capacity of the project activity).

The additionality tool defines output as “good/services produced by the project activity including, among other things, heat steam, electricity, methane, and biogas unless otherwise specified in the applied methodology.” Therefore, in the case of this project, the output considered is the electricity generated by grid-connected power plants.

According to the PD version 2 and the spreadsheet used to common practice analysis /26/, N_{all} is 19. ICONTEC verified this information by means of accessing the OC-SENI service information[15], and also the UNFCCC Website, Gold Standard Foundation Website and VCS Website in order to verify if the registered CDM, GS and VCS project activities, project activities submitted for registration and project activities undergoing validation were excluded. ICONTEC verified that the information provided by the PP regarding N_{all} is traceable, reliable and credible.

In accordance with the Guidelines on common practice /UN6/ clause 12) d (Different technologies), the PP correctly identified N_{diff}= 19 and it was presented by the PP in the PD version 2. This information is traceable, reliable and credible, and it is aligned with the methodological tool's requirements /UN6/.

Hence: $N_{all} – N_{diff} = 19 – 19 = 0$; and

$F = 1 - (N_{diff}/N_{all}) = 1 - (19/19) = 0$

Consequently, Larimar Wind Farm Project is not a common practice in Dominican Republic since F is lower than 0.2 and $N_{all} – N_{diff}$ is lower than 3.

Additionality Conclusion

In conclusion, it was verified that the project is not the most likely baseline scenario. Hence, the emission reductions occurring from the project are deemed additional to those that would occur in the absence of the project activity.

3.2.6 *Quantification of GHG Emission Reductions and Removals*

The steps taken, the equations and parameters applied in the VCS PD version 2 to calculate baseline emissions, project emissions, leakage and emission reductions comply with the requirements of the selected methodology /UN1/ including applicable tool(s)/UN2/. Please see below:

Baseline emissions need to be calculated in accordance with equation (11) of the relevant methodology /UN1/:

$BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$
BE_y = Baseline emissions in year y (tCO_2/yr)
$EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the VCS (CDM) project activity in year y (MWh/yr)

$EF_{grid,CM,y}$ = Combined margin CO_2 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" (tCO_2/MWh) /UN2/

[15] http://www.oc.org.do/inicio.aspx →Informes→Memorias

If the project activity is the installation of a new grid-connected renewable power plant/unit at a site where no renewable power plant was operated prior to the implementation of the project activity, then:

$EG_{PJ,y} = EG_{facility,y}$

Where

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

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

In the CERs calculation spread sheet (41_Larimar EF calculation.xlsx)/2/ and in the PD version 2, PP took $EG_{facility,y}$ as the expected net electricity generation supplied by the project plant to the electrical grid of Dominican Republic in year y (MWh/yr): 370,000 MWh/year.

The baseline emission factor ($EF_{grid, CM, y}$) was calculated by the PP using the Tool to calculate the emission factor for an electricity system /UN2/ as a combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) factors, according to the following steps:

Step 1. Identify the relevant electricity systems:

For Larimar Wind Farm Project case, the PP used the transmission system of Dominican Republic as the project electricity system, which is operated and maintained by Coordinating body of the interconnected national electricity system of Dominican Republic OC-SENI [16]. ICONTEC agreed taking into account that Larimar Wind Farm Project will be connected to this system /6/,/7/.

Step 2. Choose whether to include off-grid power plants in the project electricity system (optional).

In step 2, the PP chose option I, only grid power plants are included in the calculation.

Step 3. Select a method to determine the operating margin (OM).

In the step 3, simple OM was chosen by the PP to calculate the operating margin emission factor, using ex-ante data vintage taking into account that in the Colombian electric system, the low-cost/must-run resources constitute less than 50% of total grid generation, hence the Simple OM method can be used as it was verified by ICONTEC by means of reviewing the generation average of the five most recent years[17]. This reviewing allowed to the audit team to verify that

[16] OC-SENI is also in charge of the National Dispatch Center.

[17] http://www.oc.org.do/INFORMES/Operaci%C3%B3ndelSENI/Programaci%C3%B3ndelSENI.aspx

low-cost/must-run resources constitute less than 50 per cent of total grid generation. ICONTEC validated this choice.

Step 4. Calculate the operating margin emission factor according to the selected method.

Calculations of OM emission factor (step 4) were made as illustrated in the PD version 2, section 3.1, which is according to the tool specifications/UN2/. Plant emission factors $EF_{EL,m,y}$, were calculated under option A2 because the data on fuel consumption and energy generation are not fully available. ICONTEC validated the values comparing the values presented for the PP in the Emissions reduction file/2/, against the values downloaded from the OC-SENI website[13] (ICONTEC made a random sampling of 10 plants in four different dates and hours).

Regarding to the values used for NCV_i and $EF_{CO2,i,y}$, the audit team verified the truthfulness of the sources used by the PP in the Emissions reduction file /3/ (see Sheets: "Fuel Consumption_" and "EF e,l,m,y",), and it was concluded the information used is traceable, verifiable and credible.

After the comparison, ICONTEC deemed reliable and appropriate the values used. The OM calculated was 0.7223 tCO_2/MWh, hence ICONTEC deemed the obtained value as reliable and credible.

Step 5. Calculate the build margin (BM) emission factor.

In order to calculate the BM emission factor (step 5) option 1 (ex-ante) for the first crediting period was adopted, the build margin emission factor is calculated based on the most recent information available on units already built for sample group m at the time of CDM-PDD submission to the DOE for validation. The PP took the information from the latest official OC-SENI statistics[18].

ICONTEC agreed with the data collection used for the PP to calculate the BM, hence the BM is confirmed as reliable and credible. The BM calculated was 0.6172 tCO_2/MWh, hence ICONTEC deemed the obtained value as reliable and credible

Step 6. Calculate the combined margin (CM) emission factor.

Finally, combined margin was correctly calculated by weighted average method, as it is explained below:

$$EF_{grid,CM,y} = EF_{grid,OM,y} \times W_{OM} + EF_{grid,BM,y} \times W_{BM}$$

Where:

$EF_{grid,OM,y}$=0.7223 tCO_2/MWh
$EF_{grid,BM,y}$=0.6172 tCO_2/MWh
W_{OM}=0.75
W_{BM}=0.25

[18] http://www.oc.org.do/inicio.aspx →Informes→Memorias

Obtaining a result for the $EF_{grid,CM,y}$ = 0.6435 tCO_2/MWh

In conclusion, ICONTEC confirmed that the value included in the PD (version 2) for BE_y (246,766 tCO_2e/y) has been justified adequately.

Hence ICONTEC deemed the obtained value by the PP as reliable.

According to the previous description ICONTEC found that the project participant has correctly applied the selected methodology/UN1/ with respect to the Baseline determination. All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PD version 2.

Regarding to project emissions, the relevant methodology/UN1/ states in Section 5.4, that for this project activity PE_y = 0 tCO_2e/y.

$PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y}$

Regarding to the leakage, and according to ACM0002 v17.0.0, no leakage emissions need to be considered. The PD version 2 correctly describes this assumption.

Emission reductions are calculated in accordance with equation (17) of the relevant methodology/UN1/:

$ER_y = BE_y – PE_y$

Where:

ER_y = Emission reductions in year y (tCO_2e/yr)
BE_y = Baseline emissions in year y (tCO_2/yr)
PE_y = Project emissions in year y (tCO_2e/yr)

Seeing that project emissions is zero, $ER_y = BE_y$. See above, section 3.4 on this report how ICONTEC was able to validate the BE_y values presented in the PD version 2.

In conclusion, ICONTEC confirmed that the value included in the PD (version 2) for ER_y (246,766 tCO_2e/y) has been justified adequately.

3.2.7 Methodology Deviations

The project activity's implementation is fully in accordance with ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" version 17.0.0 /UN1/ and hence deviation of methodology is not applicable

3.2.8 Monitoring Plan

ICONTEC hereby confirms that the monitoring plan complies with the requirements of the methodology/UN1/ and the applicable tools/UN2/.

The Project uses the methodology ACM0002 Consolidated baseline methodology for grid-connected electricity generation from renewable sources, version 17.0.0 /UN1/. The project involves the installation of a new grid connected wind power plant.

The steps taken to assess whether the monitoring arrangements described in the monitoring plan are feasible within the project design are described below:

Data and Parameters Available at Validation:

In PD version 2, the PP has fixed the Combined margin CO_2 emission factor for Electrical grid od Dominican Republic, its value: 0.6435 tCO_2/MWh as it was described in section 3.2.6 on this report

Data and Parameters Monitored:

$EG_{facility,y}$ = In accordance with the monitoring plan, the main parameter that will be monitored is the quantity of net electricity generation supplied by the project activity to the grid in year y, measured continuously by the power plant's meters installed in the Los Cocos electrical substation (connection point to the grid). The measurement will be continuously done and recorded monthly.

Management system and quality assurance

The monitoring arrangement for the project has been described in the VCS PD:

- The accuracy of electric meters (0.2S) and record frequency have been identified appropriately.
- The operation and management structure of the monitoring have been described appropriately.
- The electric meters will be calibrated according to the regulation from Dominican Republic.

The PD has a detailed description of the monitoring management system. The audit team deemed the PP and the project activity have an operational and management structure to be put in place to implement the monitoring plan in accordance with the regulatory framework of Dominican Republic and the VCS requirements.In summary, the validation team is convinced that the monitoring plan reflects good monitoring practice appropriate to the project type and the PP is able to implement the monitoring plan.

3.3 Non-Permanence Risk Analysis

Since this project activity is not a AFOLU project and its emission reductions, that will be generated, does not have risk of reversibility, it is not necessary to performed a non-permanence analysis.

4 SAFEGUARDS

4.1 No Net Harm

An environmental impact assessment was carried out by EGE Haina for both wind farms (Larimar I and Larimar II) in order to identify potential negative environmental and socio-economic impacts, a detail of these impacts and their corrective action to mitigate them as described by the PP in PD version 2 on Table 21, section 5.1.

The impacts identified by the PP are:

- Generation of dust and emission combustion gases,
- Soil condition,
- Generation of liquid,
- Generation of liquid, and
- Generation of noise

The audit team deemed the list provided by the PP in Table 21 of PD version 2 as complete and it is coherent with project activity nature. Regarding the action plans to mitigate such impacts are reasonable and all of the identified impacts have a monitoring plan in order to supervise continuously how the proposed action plans contribute to mitigate the identified impact.

4.2 Environmental Impact

According to the legislation in force (article 40 of law 64 of 2000[19]), an Environmental Impact Statement (DIA) is required to be carried out before the project can receive its environmental permit /24/,/25/.

The project participants have undertaken an analysis of environmental impacts and an environmental impact assessment was prepared in accordance with procedures as required by legislation from Dominican Republic. The DIA /22/ and /23/, identified the project's impacts on the environment and also the necessary mitigation actions.

During the visit to the project proponents, they explained that in accordance with the legislation from Dominican Republic, it is necessary to perform an Environmental Accomplishment Report periodically (ICA by its Spanish Acronym), with the aim to inform to environmental authorities periodically the commitment made by EGE Haina with the issuance of environmental permits /24/,/25/.

[19] http://www.wipo.int/edocs/lexdocs/laws/es/do/do025es.pdf

ICONTEC based on the above arguments validated that the project is carrying out the environmental mitigation actions (environmental programs) in accordance with national legislation.

4.3 Local Stakeholder Consultation

Inside the framework of DIA, a consultation process was carried out by EGE Haina for both wind farms. The validation team assessed the adequacy of these local stakeholder consultations as follows:

Identification of local stakeholders

The local stakeholders involved in the proposed project activity have been appropriately identified. They are the population in the Municipality of Enriquillo

Timing of stakeholder consultation process

The local stakeholder consultation was performed on November 6th/2014 for Larimar I and on December 2015 for Larimar II[20] in the municipality affected by the development of this project activity: Enriquillo. The calls for these event were made in accordance with the legislation in force[16]

Summary of comments provided

By means of reviewing local stakeholder consultation meeting record and interview with local stakeholders described in the DIA /22//23/, the validation team confirms that summary of comments raised by the community during the consultation process have been addressed by the PP appropriately and transparently.

4.4 Public Comments

During the public comment period no comments was submitted.

5 VALIDATION CONCLUSION

ICONTEC performed the validation of the Larimar Wind Farm Project, in Dominican Republic, the validation was performed on the basis of Verified Carbon Standard (VCS version 3.6) and all relevant VCS requirements, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The review of the Project Description and the subsequent follow up interviews has provided ICONTEC sufficient evidence to determine the fulfilment of the stated criteria.

[20] The PP provided a copy of the attendance lists to these consultation on the PD, Section 5.3

The project activity is being proposed by EGE Haina S.A. and correctly applies the methodology: ACM0002: Consolidated baseline methodology for grid-connected electricity generation from renewable sources, Version 17.0.0

The project involves the implementation of two wind farms connected to the National Electrical Interconnected System of Dominican Republic. The wind farms are: (1) Larimar I which has 15 wind turbine generators with a total installed capacity of 49.5 MW and (2) Larimar II which has 14 wind turbines generators with a total installed capacity of 48.3 MW. The 29 wind turbine generators allow an installed capacity of 97.8 MW and annual supply of electricity to the grid of 370 GWh.. It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

The total emission reductions from the project are estimated to be 246,766 tCO_2e per year over the selected 10 years crediting period. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved because the underlying assumptions do not change.

In summary, it is ICONTEC's opinion that the Larimar Wind Farm Project in Dominican Republic, as described in the PD version 2 meets all relevant VCS requirements and correctly applies the baseline and monitoring methodology ACM0002: Consolidated baseline methodology for grid-connected electricity generation from renewable sources, Version 17.0.0. ICONTEC thus requests the registration of the project as a VCS project activity.

APPENDIX A: RESOLUTION OF CORRECTIVE ACTION, FORWARD ACTION AND CLARIFICATION REQUEST

The following table explains how ICONTEC resolve or "close out" CARs and CLs describing how the PP modify the project design, rectify the PDD or provide additional explanations or evidence that satisfy the ICONTEC's concerns.

This table explains the issues raised, the responses provided by the PP, the means of validation of such responses and references to any resulting changes in the PD or supporting annexes.

Report Clarifications and Corrective Action Requests	VCS' Reference	Summary of Project Owner Response	Validation Conclusion
CAR 1 The electrical energy production is not adjusted with the updated documents related with that issue	VCS program guide, version 3.6 Chapter 3 Conservative principle	Support documents were checked and real and accurate values were updated for the project Larimar I – 206 GWh/y (15 wind turbines) Larimar II – 164 GWh/y (14 turbines) See for Larimar I - Energy Production file 18_Energy Production Assesment EPA_Larimar I.pdf See for Larimar II - Energy Production file 19_Energy Production Assesment EPA_Larimar II.pdf	Validation Team Response: The audit team reviewed the files mentioned in its response and verified the following values for electrical energy production: • Larimar I: 206 GWh/year (Section 5, table 5-1 page 7) • Larimar II: 164 GWh/year (Section 5, table 5-1 page 7) Validation Team Conclusion Closed 13/03/2017

Report Clarifications and Corrective Action Requests	VCS' Reference	Summary of Project Owner Response	Validation Conclusion
CAR 2 For the calculation of Simple operating margin Emission factor it was not used the 3-year generation-weighted average, based on the most recent data available at the time of submission of the CDM-PDD to ICONTEC for validation.	Methodological Tool to calculate the emission factor for an electricity system Paragraph 39 (a)	Most Recent data related with year 2015 was found and Simple operating margin Emission factor was recalculated. See document 41_Larimar EF Calculation_Entrega.xls. Sheet Simple OM EF	Validation Team Response: The audit team reviewed the updated file for the calculation of Simple operating margin emission factor and now it was used the 3-year generation-weighted average, based on the most recent data available at OC-SENI Validation Team Conclusion Closed 13/03/2017
CAR 3 In accordance with the selection done by the PP for the calculation of the built margin Emission factor it was not used the most recent information available on units already built for sample group *m* at the time of PD submission to ICONTEC for validation.	Methodological Tool to calculate the emission factor for an electricity system Paragraph 70 (a)	Most Recent data related with year 2015 was found and Build Margin Emission factor was recalculated. See document 41_Larimar EF Calculation_Entrega.xls Sheet – Build Margin.	Validation Team Response: The audit team reviewed the updated file for the calculation of Simple operating margin emission factor and now it was used the most recent data available at OC-SENI Validation Team Conclusion Closed 13/03/2017

Report Clarifications and Corrective Action Requests	VCS' Reference	Summary of Project Owner Response	Validation Conclusion
CAR 4 In accordance with the information publicly available in OCSENI, the option chose for the $EF_{EL,m,y}$ calculation (See: file 41_Larimar EF calculation_07_02_16.xlsx, sheet: EF e,l,m,y,, colums: G,H and I) it was not right since it is available the fuel consumption an energy delivery to Dominican grid by every power plant	Methodological Tool to calculate the emission factor for an electricity system Paragraph 39 (a)	Information available related with fuel consumption given by OCSENI, was critically analyzed, and important inconsistencies were found especially in the units (barrels/kWh). Them the $EF_{EL,m,y}$ and OM calculation using this data, was given incoherent results. Considering this situation the equation A2 was chosen to calculate the $EF_{EL,m,y}$, having electricity generation and fuel type data.	Validation Team Response: The audit team carried out the $EF_{EL,m,y}$ calculation with the data available at OC-SENI. It was found incoherent outcomes form the calculations made. That is why, the audit team deemed reasonable the option chose by the PP to calculate $EF_{EL,m,y}$ Validation Team Conclusion Closed 13/03/2017
CAR 5 In order to convert to nominal terms the real terms used in the investment analysis carried out by the PP for Larimar I wind farm, the PP did not applied properly the provisions stated in the Methodological tool on investment analysis, version 07.0	Methodological tool on investment analysis, version 07.0 Paragraph 17	Dominican Republic target inflation rates were found and were applied for the Financial Analysis. See documents 35_Equity IRR DR LARIMAR I 36_Equity IRR DR LARIMAR II	Validation Team Response: The audit team verified the inflation targets stated in the Webpage of Dominican Republic Central Bank for both wind farms financial analysis, and 4% as inflation rate for 2017 and 2018 it was used properly in the spreadsheets. Validation Team Conclusion: Closed 13/03/2017

Report Clarifications and Corrective Action Requests	VCS' Reference	Summary of Project Owner Response	Validation Conclusion
CL 1 The project activity cannot be classified as a Large project in accordance with the estimated emission reduction calculation made on the Spreadsheet 41_Larimar EF calculation_07_02_16.xls	Large Project definition on Program Definitions version 3.6	Emission reduction results were confirmed and according with Large Project definition on Program Definitions version 3.6. The Larimar wind farm project is classified as PROJECT. See Document 3 - VCS Project Description Template, v3.3 _ LARIMAR WIND FARM PROJECT Entrega.doc	Validation Team Response: In the updated version of PD it was corrected the classification of the project activity in accordance with the provisions stated VCS Program Definitions Validation Team Conclusion Closed 13/03/2017