

## **CDM VALIDATION REPORT**

**Punta Palmeras S.A.**

### **VALIDATION OF THE PROJECT ACTIVITY:**

**Punta Palmeras Wind Power Project**

**AENOR REFERENCE: 2014/135/CDM/20**

**VERSION: 02**

## VALIDATION REPORT

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<b>Validation Report:</b>	AENOR Reference n°:		Version of this report:		Date:	
	2014/135/CDM/20		02		2014/11/24	
<b>PDD:</b>	Title:		GSC publication date:		Comments received:	
	Punta Palmeras Wind Power Project		2014/03/12		<input type="checkbox"/> Yes* <input checked="" type="checkbox"/> No	
<b>Parties involved:</b>	Host Party:		Other involved Parties:			
	Chile		N.A.			
<b>Project Participant(s):</b>	In host Party:		In other involved Parties:			
	Punta Palmeras S.A.		N.A.			
<b>Size of the project activity:</b>	<input type="checkbox"/> Small scale <input checked="" type="checkbox"/> Large scale					
<b>Applied methodology/ies:</b>	Title:		Code:		N° version	
	Grid-connected electricity generation from renewable sources"		ACM0002		14.0	
<b>Applied tools:</b>	Title:		Version:			
	Tool to calculate the emission factor for an electricity system		4.0			
	Title:		Version:			
	Tool for the demonstration and assessment of additionality		7.0.0			
<b>Emission reductions (ER):</b>		GSC PDD:		Final PDD:		
<input checked="" type="checkbox"/> Annual average of the ER (tCO <sub>2</sub> e)  <input type="checkbox"/> Total ER (tCO <sub>2</sub> e)		83,639		83,581		
<b>Previous versions of this document:</b>			Version:		Date:	
			1		2014/10/20	
			2			
			3			
			4			
<b>Report prepared by:</b>		Climate Change Unit. AENOR				

\* The comments are detailed in Section 4 of this Validation Report

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## ***Abbreviations***

ACM0002	Grid-connected electricity generation from renewable sources
BM	Build Margin
CAR	Corrective Action Requested
CDM	Clean Development Mechanism
CDEC-SIC	Load Economic Dispatch Center of Central Interconnected System (electricity market operator)
CER	Certified Emission Reductions
CL	Clarification Request
CNE	National Energy Commission
DECISION 3/CMP.1	Modalities and Procedures for a Clean Development Mechanism as Defined in Article 12 of the Kyoto Protocol
DNA	Designated National Authority
DOE	Designated Operational Authority
EB	Executive Board of the CDM of the Kyoto Protocol
EIA	Environmental Impact Assessment
GHG	Greenhouse Gases
GSC	Global Stakeholder Consultation
IPCC	Intergovernmental Panel on Climate Change
LoA	Letter of approval
MoC	Modalities of Communication
MP	Monitoring Plan
MWh	Mega Watt hour
NCV	Net calorific value
ODA	Official development assistance
OM	Operating Margin
PDD	Project Design Document

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PPs	Project Participants
PPA	Power Purchase Agreement
SIC	Central Interconnected System
tCO <sub>2</sub> e	Carbon dioxide equivalent tonnes
UNFCCC	United Nations Framework Convention on Climate Change
VVS	CDM Validation and Verification Standard
WTG	Wind turbine generator

**Table 1: Abbreviations**

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## **1 INTRODUCTION**

This validation concerns a project implemented by Punta Palmeras S.A. in Chile to reduce emissions of CO<sub>2</sub> by generating renewable energy from wind resources. The objectives of the validation exercise are to confirm that the project meets the necessary CDM criteria, that the project follows the approved methodology, ACM0002 version 14.0, and that the proposals presented in the PDD will lead to a realistic determination of the emission reductions.

The scope of the validation covers the additionality assessment (investment analysis), the Environmental Impact Assessment Evaluation and the stakeholder consultation. In addition, it covers the baseline methodology, the calculation of the emission factor (*ex-ante*) and the monitoring methodology to quantify the emissions reductions during the operational life of the project.

The project implies the installation of 45 MW from 15 wind turbine generators (WTG), each with a capacity of 3 MW located in the community of Canela, Choapa Province, Region IV of Coquimbo, Chile. This power plant will displace electricity from the national electricity grid, supplied partly from fossil fuels, resulting in a reduction in greenhouse gas (GHG) emissions.

### **1.1 Objective**

Punta Palmeras S.A. has commissioned AENOR to validate the project activity "Punta Palmeras Wind Power Project". The purpose of the validation is to have an independent, third party assessment of the project design. In particular, the project's baseline, the Monitoring Plan (MP), and the project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design, as documented, is reasonable and meets the stated requirements and identified criteria.

Validation is a requirement for all CDM projects and is considered necessary to provide assurance of the quality of the project and its intended generation of certified emission reductions (CERs). UNFCCC criteria refer to the Kyoto Protocol criteria and the CDM rules and modalities as agreed upon in the Bonn Agreement and the Marrakech Accords.

### **1.2 Scope**

The scope of the validation is to assess all aspects of GHG reduction involved in the project, including the project design, the baseline, the determination of the emission factor of the grid, and the procedures proposed for monitoring the emission reductions in the future.

The following documents were reviewed as part of the scope of the activity:

- PDD [1/ 2/], including baseline study and Monitoring Plan.
- Approved Methodology: ACM0002 version 14.0 [3/]
- Decision 3/CMP.1 and relevant decisions and guidelines from the EB
- CDM Validation and Verification Standard, version 07.0 [4/]

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- Associated documentation (EF calculation, environmental requirements, investment analysis, etc.)
- Letter of approval from the DNA /5/.

AENOR recognises that the project activity is helping the country to fulfill its goals of promoting sustainable development. The project is expected to be in line with the host-country's specific CDM requirements as it:

- Reduces GHG emissions in the host country compared to the business-as-usual scenario.
- Helps to develop the local community.
- Generates local employment opportunities during the implementation and operation of the project.

The validation scope is defined as an independent and objective review of the PDD, the project's baseline study and monitoring plan, and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. AENOR, based on the Specific Instruction for the Validation, verification and certification of clean development mechanism (CDM) project activities (IE/DTC/0039), has used a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of CERs.

The validation is not meant to provide any consultancy services to the Client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the PDD.



## 2 METHODOLOGY

The project assessment aims to be a risk-based approach and is based on the methodology developed in the CDM Validation and Verification Standard, an initiative of Designated and Applicant Entities, which aims to harmonise the approach and quality of all such assessments.

The validation of the project started in March 2014, with the submission of the PDD for the global stakeholder consultation process, and will conclude with the submission of the final validation report. The validation was performed in several phases, starting with a desk review of the PDD against the approved methodology and CDM and other relevant criteria. The desk review was followed by a site visit to the project site and main stakeholders in Chile.

As a final step of the validation, the validation report and the protocol have to undergo internal quality control by means of a technical review following the procedures of AENOR. The technical reviewer is a competent person from AENOR, independent of the team that carried out the validation of the project activity.

In order to ensure transparency, a validation protocol was customised for the project, according to Specific Instruction IE-DCT-039. The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results derived from validating the identified criteria.

The validation protocol serves the following purposes:

- It organises, provides details and clarifies the requirements a CDM project is expected to meet.
- It ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.

The validation protocol consists of one table. The completed validation protocol is enclosed in Annex 1 of this report.

The sequence of the validation is given in the table below:

Topic	Date
Submission of PDD for global stakeholder consultation process	2014/03/12
On-site visit	2014/04/28-29
Validation Protocol - Version 01.	2014/05/12
Final Validation Report	2014/11/24

**Table 2: Sequence of the main validation activities**

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## 2.1 Appointment of team members and technical reviewers

The list of involved personnel and their qualification status are summarized in the table below. The details of the persons that visited the project site are included as well.

Function	Qualification in Technical Area related with the project activity	Name	Visited the project site YES/NO
Chief Validator	TA 1.2	Freddy Alejandro Garro Flores	Yes
Validator	TA 1.2	Marcelino Pellitero Martinez	No
Validator	TA 1.2	Richard Daniel Gonzales Toledo	No
Technical Reviewer	TA 1.2	Jose Antonio Gesto Vilacoba	No
Technical Reviewer	TA 1.2	Mercedes García Madero	No

**Table 3: List of the personnel involved**

Technical areas (TA) mentioned above correspond to the following:

TA code	Technical area
TA 1.1	Thermal energy generation from fossil fuels and biomass including thermal electricity from solar (COMPLEX)
TA 1.2	Energy generation from renewable energy sources
TA 2.1	Electricity distribution
TA 2.2	Heat distribution
TA 3.1	Energy demand
TA 4.1	Cement sector (COMPLEX)
TA 4.2	Aluminum (COMPLEX)
TA 4.3	Iron and steel (COMPLEX)
TA 4.4	Refinery (COMPLEX)
TA 5.1	Chemical process industries (COMPLEX)
TA 6.1	Construction
TA 7.1	Transport
TA 8.1	Mining and mineral processes, excluding those included in TA 8.2 below
TA 8.2	Oil and gas industry, coal mine methane recovery and use (COMPLEX)
TA 9.1	Metal production

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TA 10.1	Mining and mineral processes, excluding those included in TA 10.2 below
TA 10.2	Oil and gas industry, coal mine methane recovery and use (COMPLEX)
TA 11.1	Chemical process industries (COMPLEX)
TA 11.2	GHG capture and destruction
TA 12.1	Chemical process industries (COMPLEX)
TA 13.1	Waste handling and disposal
TA 13.2	Animal waste management
TA 14.1	Forestry
TA 15.1	Agriculture
TA 15.2	Animal waste management

## 2.2 Document review

The first version of the Project Design Document submitted by the PP was reviewed against the approved methodology (ACM0002) and against CDM requirements and other relevant criteria. Additional background documents related to the project design, baseline and additionality were also made available before and during the on-site visit in Chile. These additional background documents were also reviewed.

In order to address the corrective actions and clarifications requests that arose from the desk review and on-site visit, the PP had to revise the first PDD, which was submitted for Global Stakeholder Consultation (GSC), and then developed the final version which gathers all the requested clarifications and corrective actions.

Furthermore, the AENOR validation team has validated that the requirements of the applied methodology have been applied correctly in the final PDD.

The final validation findings are presented in this report regarding the project, as described in the final version of the PDD.

The reviewed documents used throughout the validation process are detailed in chapter 7 of this report.

The final PDD is in compliance with in force forms and guidance stated by the CDM documentation.

## 2.3 Follow-up actions

AENOR conducted interviews with Punta Palmeras S.A. in Chile to confirm selected information and to resolve issues identified in the document review.

From 28 to 29 April 2014, the validation team carried out the visit to the project site. On these two days, representatives from Punta Palmeras S.A. were interviewed, in addition to relevant local stakeholders such

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as local authorities and local inhabitants of communities affected by the project. Also, a meeting with DNA and the dispatch centre CDEC-SIC took place.

The main topics of the interviews are summarised below (see Table 4).

Interviewed organization Person/Position	Interview topics
<b>Punta Palmeras S.A.</b> Marcia Latorre, Project Manager Jaime Mansilla, Project Manager	<ul style="list-style-type: none"> <li>✓ Technical details of the project design</li> <li>✓ Methodology applicability</li> <li>✓ EIA approval and related conditions</li> <li>✓ Monitoring of environmental impact</li> </ul>
<b>Municipality of Canela</b> Juan Bernardo Leyton Lemus, Mayor	<ul style="list-style-type: none"> <li>✓ Opinion about the project</li> <li>✓ Benefits for the local community</li> <li>✓ Local permits</li> <li>✓ Interviews and comments in the past</li> <li>✓ Consultation with municipality's authorities</li> </ul>
<b>Fisherman Association of Maitencillo</b> Antonio Gonzales, Treasurer Eran Torreblanca, Secretary	<ul style="list-style-type: none"> <li>✓ Opinion about the project</li> <li>✓ Knowledge of the environmental impacts</li> <li>✓ Benefits for the community</li> <li>✓ Fisherman' current socioeconomic situation</li> <li>✓ Consultation with stakeholders</li> </ul>
<b>Load Economic Dispatch Centre of Central Interconnected System (CDEC-SIC)</b> Ernesto Huber, Operations Director	<ul style="list-style-type: none"> <li>✓ Dispatch Model</li> <li>✓ Electricity Generation Data</li> <li>✓ Dispatch Centre Procedures</li> <li>✓ Compliance with applicable law</li> <li>✓ Monitoring Requirements</li> <li>✓ Price projections and tariff applied</li> </ul>
<b>MINISTRY OF ENVIRONMENT - DNA</b> Jillian Van der Gaag, Officer	<ul style="list-style-type: none"> <li>✓ Project's contribution to sustainable development</li> <li>✓ Consultation with sector authorities, landowners and other stakeholders</li> <li>✓ Letter of Approval process</li> <li>✓ DNA's opinion</li> </ul>

**Table 4: Interview topics**

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### 2.4 Findings

As an outcome of the validation process, the team can raise different types of findings according to the CDM Validation and Verification Standard.

A Clarification Request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

Where a non-conformance arises the validation team shall raise a Corrective Action Request (CAR). A CAR is issued, where:

- a) The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;
- b) The CDM requirements have not been met;
- c) There is a risk that emission reductions cannot be monitored or calculated.

Failure to address a CL may result in a CAR. Information or clarifications provided as a result of a CL may also lead to a CAR.

A Forward Action Request (FAR) is raised during validation to highlight issues related to project implementation that require review during the first verification of the project activity. FARs shall not relate to the CDM requirements for registration.

The project participants were requested to address all validation findings and finally provided the validation team with sufficient evidence to determine that the applicable CDM requirements have been met. The project participant modified the initial PDD to resolve the validation team concerns and resubmitted a final version of the PDD. AENOR has prepared this report based on the final PDD.

All the validation findings are summarized in detail in section 6 and in the validation protocol included in Annex 1.

### 2.5 Internal Quality Control

Following the completion of the assessment process by the validation team, all documentation undergoes an internal quality control through a technical review before submission to the CDM-EB. The Technical reviewer is a qualified member of AENOR, independent from the team that carried out the validation of the project activity. The technical reviewer or the team appointed for the technical review are qualified in the technical area(s) and sectoral scope(s) of the project activity.

### **3 VALIDATION FINDINGS**

#### **3.1 Approval**

The project participant for "Punta Palmeras Wind Power Project." is Punta Palmeras S.A., from Chile, as the host country.

Punta Palmeras S.A., from the host country, meets all relevant participation requirements detailed as follows:

- The project activity has been approved by the host party, through a written letter of approval from the host country DNA, dated 07 October 2014 [5].
- The PP has provided the LoA from the Chilean DNA of the project activity, which confirms that:
  - Chile is a Party of the Kyoto Protocol (26 August 2002).
  - The voluntary participation of Chile.
  - The project's contribution to sustainable development.
  - The title of the CDM project activity approved corresponds with the title of the PDD submitted for registration.

The DNA of the host country confirmed the project's contribution to the sustainable development of Chile. The audit team has confirmed the validity of the letter of approval as per the VVS since it has been issued by the respective Chile DNA in accordance with the list of DNAs available on the UNFCCC CDM website.

The validation did not reveal any information that indicates that the project can be seen as a diversion of ODA funding towards Chile.

The LoA does not refer to a specific version of the PDD or validation report. The corresponding references included in the LoA, PDD and validation report are consistent.

AENOR ensures that the LoA has been issued by the respective parties' designated national authorities and does not doubt the authenticity of the letters of approval received from the PP. Hence, AENOR confirms that the LoA is in compliance with paragraphs 40-43 of the VVS v.07.0.

#### **3.2 Participation**

As stated above, the project participants in the "Punta Palmeras Wind Power Project" is Punta Palmeras S.A., from Chile, as the host country.

The project participant has been listed in a consistent manner in the project documentation, and a Party to the Kyoto Protocol, Chile has approved its participation in the project activity. The host Party ratified the Kyoto Protocol on 26 August 2002 and has appointed a DNA.

The project participant listed in tabular form in section A.4 of the PDD is consistent with the contact details provided in annex 1 of the PDD.

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No entities other than those approved as project participants are included in these sections of the PDD.

The participation of the project participant Punta Palmeras S.A. has been approved by the Chilean DNA in the letter of approval dated on 07 October 2014.

Hence, AENOR confirms that a Party to the Kyoto Protocol through interviews has approved the participation of the project participant with the people in charge of the approval in the host country DNA.

### 3.3 Modalities of Communication

The corporate and personal identity of the project participant has been validated through the Citizenship identities /6/ and a written confirmation of employment status and authorizer signatories /7/ provided by the PP.

AENOR confirms that the corporate identity of all project participants and focal points included in the Modalities of Communication (MoC) statement, as well as the personal identities, including specimen signatures and employment status, of their authorized signatories, included in the written confirmation; are valid and accurate.

AENOR, also confirms that the MoC statement complies with all relevant forms and requirements. Thus:

- The valid version of the form "Modalities of Communication Statement" (F-CDM-MOC) has been used.
- The information required as per the F-CDM-MOC, including its annex 1, is correctly completed.
- The project participant's authorised signatories signing the F-CDM-MOC correspond to the project participant's authorised signatories included in F-CDM-MOC, annex 1.

### 3.4 Project Design Document

The PDD used as the basis for validation has been prepared in accordance with the in force template and guidance from the CDM Executive Board available on the UNFCCC CDM website and the applicable CDM requirements for completing PDDs under the VWS track.

The initial version of the PDD was submitted for GSC on 12 March 2014.

Due to the clarifications and corrective actions requested during the validation process, the project participant has made the final version of the PDD, which includes all issues raised to the PP either corrected or clarified.

The relevant changes in the final PDD respect to the PDD for GSC are the following:

Issue	Information in PDD for GSC	Information in final PDD
Description of the	A second phase may come in future	A second phase may come in

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project	with 7 more turbines and 21 MW.	future with 7 more turbines and 21 MW. This second phase is not considered part of the proposed project activity.
Project participants	NA	NA
ER	83,639 tCO <sub>2</sub> e	83,581 tCO <sub>2</sub> e
Additionality	7/2/2014. Date when Punta Palmeras presented the project to Chile DNA  IRR 7.56%	07/10/2014. Date when Punta Palmeras received the Letter of Approval  IRR 8.18%
Starting date, crediting period	NA	NA
Others	NA	NA

The mentioned changes are explained in the different sections of this validation report.

The final PDD is in compliance with relevant forms and guidance stated by the CDM documentation.

### 3.5 Project description

"Punta Palmeras Wind Power Project" consists of a new grid connected wind based renewable energy source, zero emission power project connected to the Central Interconnected System (SIC) of Chile. The project is a 45 MW wind power project, expected to produce 124,155 MWh per annum with an average capacity factor of 31.5%. The operational lifetime is 20 years.

The main technical characteristics are detailed below:

Item	Value	Magnitude
Total Power Capacity	45	MW
Turbine AW116/3000	15	units
Rated Power per turbine	3	MW
Hub Height	92	m
Generator voltage	12,000	V
Equivalent annual operating hours	2,759	hours
Capacity Factor	31.5	%
Transmission Line Voltage	220	kV
Transmission Line Length	6.5	Km



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The transmission line will be connected to the Central Interconnected System (SIC). Transformer will be at 220 kV and 6.5 km long line, running from the wind farm control house where the transformer is located to the Las Palmas substation.

As established in the final PDD, the project’s contribution to sustainable development is not only related to electric generation from renewable resources and the subsequent reduction of GHG emissions, but also to the environmental, social economic and technological benefits that will be introduced in the area.

The project design engineering reflects good practise. As the project will reduce greenhouse gas (GHG) emissions by generating electricity using renewable energy sources to be supplied to the grid instead of using fossil fuel power generation.

All of the characteristics included in the PDD were checked during the on-site visit and against technical documentation submitted by the PP. The validation team has primarily checked the project design against the technical offer presented to the Tender /8/, power purchase agreement (PPA) /9/, turbine technical specifications /10/, design of lifetime /11/ and environmental impact assessment evaluation /12/.

The final version of the PDD details the project’s design in a precise manner, in accordance with the accuracy and completeness principles required for the CDM process.

AENOR’s validation team states that the description of the proposed CDM project activity as contained in the PDD sufficiently covers all relevant elements, is accurate and provides the reader with a clear understanding of the nature of the proposed CDM project activity.

In conclusion, AENOR confirms that the project description, as included in the PDD, is sufficiently accurate and complete in order to comply with the requirements of the CDM and therefore in compliance with VVS paragraphs 65-70.

### **3.6 Baseline methodology**

The final version of the PDD describes the baseline methodology, which is in conformance with the approved methodology ACM0002 (version 14.0) for grid-connected renewable electricity generation. The key conclusions about the correct application are summarised below.

The methodology is applicable because the project consists of the installation of a new grid connected wind based renewable energy source, zero emission power project connected to the Central Interconnected System (SIC) of Chile. Based on the on-site visit assessment and relevant documents provided by the project participant during the validation process, such as the technical offer, technical specifications, and the PPA, AENOR checked the applicability of the methodology to the project activity.

**“Punta Palmeras Wind Power Project”** will supply electricity to the Central Interconnected System (SIC). The project boundaries include the project power plant and all power plants connected physically to the

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electric grid of Chile (SIC) that the power plant is connected to. This requirement is in accordance with the ACM0002 methodology, version 14.0.

In order to calculate the baseline emission factor for the project activity, the electric grid of Chile is also included in the boundary of the project activity.

The grid's data source is the Load Economic Dispatch Centre of Central Interconnected System (CDEC-SIC).

The baseline emission factor included in the final PDD has been determined with the ex ante option according to the six steps stated in "Tool to calculate the emission factor of an electricity system", version 04.0. The Operational Margin (OM) and the Build Margin (BM) have been calculated and combined to obtain the Baseline Emission Factor.

The method selected to calculate the operating margin emission factor was the Simple Adjusted OM, called "Option b" from "Tool to calculate the emission factor of an electricity system", version 04.0.

The procedure followed for the calculation of the operating margin was correctly described in the PDD, and was assessed by the validation team against the methodology and the tool. The chosen option was an ex-ante approach for the operating margin emission factor, so it will be fixed for the crediting period.

For the purpose of determining the build margin (BM) emission factor, the set of plants used for the build margin emission factor calculation were the plants that had been recently built and generated more than 20 per cent of the system's energy during 2012, excluding the CDM registered project activities, according to the tool (step 5c). "Option 1" was chosen in the build margin emission factor as the selected method. This option does not require monitoring the emission factor during the first crediting period.

The values of all plants in operation have been provided by CDEC-SIC, and the audit team checked them.

The audit team requested the origin of data and it was also checked.

The formulae included in the EF and ER calculation spreadsheets /13/ were checked and they were in accordance with the methodology and tool as they are based on the most recent data available at the time of submission of the CDM-PDD to the DOE for validation, using the same values and variables.

The following sources of data were taken into account:

- "Operation Statistics for 2010, 2011 and 2012", CDEC-SIC, /14/ (during the visit a meeting with the dispatch centre were scheduled, availabilities of the data was corroborated: the most recent data, available at the time of submission DOE for validation, refers to December 2012)
- "Energy Balance Reports", CNE (National Energy Commission in Chile), /15/.
- 2006 IPCC Guidelines for National Greenhouse Gas Inventories, vol. 2, chapter 1, table 1.2 and 1.4, /16/.

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AENOR confirms that the baseline and monitoring methodologies selected by the project participants comply with the methodologies previously approved by the CDM Executive Board, that the selected methodology is applicable to the project activity and that the PP has correctly applied the selected methodology.

### **3.6.1 Applicability of the selected methodology to the project activity**

The selected baseline and monitoring methodology for the "Punta Palmeras Wind Power Project" previously approved by the CDM Executive Board is ACM0002, version 14.0 and it is not the latest version but request for registration can be submitted until 26 January 2015. The final version of the PDD identifies, in section B.2, the applicability conditions of the approved methodology and describes how the project fulfils the conditions.

The applicability of the selected methodology to the proposed CDM project activity has been assessed in the following way:

1. *This methodology is applicable to grid-connected renewable power generation project activities that: (a) install a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (Greenfield plant); (b) involve a capacity addition; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s).*

The project activity consists of the installation of a new grid connected wind based renewable energy power plant (Greenfield) connected to the Central Interconnected System (SIC). The description was checked against the technical offer, PPA, environmental impact assessment evaluation and visual inspection carried out during the on-site visit.

2. *The project activity is the installation, capacity addition, retrofit or replacement of a power plant/unit of one of the following types: hydro power plant/unit (either with a run-of-river reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit;*

The project activity consists of the installation of a wind power project; therefore, the project activity complies with the applicability condition. The description was checked against the technical offer, PPA, technical specifications, environmental impact assessment evaluation and visual inspection carried out during the on-site visit.

3. *In the case of capacity additions, retrofits or replacements (except for wind, solar, wave or tidal power capacity addition projects which use Option 2: on page 16 to calculate the parameter  $EG_{P,y}$ ): the existing plant started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion or retrofit of the plant has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.*

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The project activity is a new grid connected wind power project. This issue was checked against technical offer, PPA, technical specifications and environmental impact assessment evaluation. The project activity does not involve capacity additions, retrofits or replacements.

4. *In case of hydro power plants: One of the following conditions must apply:*
- a) *The project activity is implemented in an existing single or multiple reservoirs, with no change in the volume of any of reservoirs; or*
  - b) *The project activity is implemented in an existing single or multiple reservoirs, where the volume of any of reservoirs is increased and the power density of each reservoir, as per the definitions given in the project emissions section, is greater than  $4 \text{ W/m}^2$ ; or*
  - c) *The project activity results in new single or multiple reservoirs and the power density of each reservoir, as per the definitions given in the project emissions section, is greater than  $4 \text{ W/m}^2$ .*

This applicability condition of the methodology does not apply to the project activity since it is not a hydro power plant. This data has been assessed during the on-site visit and against the technical information.

5. *In case of hydro power plants using multiple reservoirs where the power density of any of the reservoirs is lower than  $4 \text{ W/m}^2$  all the following conditions must apply:*
- a) *The power density calculated for the entire project activity using equation (5) is greater than  $4 \text{ W/m}^2$ ;*
  - b) *Multiple reservoirs and hydro power plants located at the same river and where are designed together to function as an integrated project<sup>1</sup> that collectively constitute the generation capacity of the combined power plant;*
  - c) *Water flow between multiple reservoirs is not used by any other hydropower unit which is not a part of the project activity;*
  - d) *Total installed capacity of the power units, which are driven using water from the reservoirs with power density lower than  $4 \text{ W/m}^2$ , is lower than 15 MW;*
  - e) *Total installed capacity of the power units, which are driven using water from reservoirs with power density lower than  $4 \text{ W/m}^2$ , is less than 10 per cent of the total installed capacity of the project activity from multiple reservoirs.*

This applicability condition of the methodology does not apply to the project activity since it is not a hydro power plant. This data has been assessed during the on-site visit and against the technical information.

6. *The methodology is not applicable to the following:*
- a) *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;*
  - b) *Biomass fired power plants;*

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- c) A hydro power plant that results in the creation of a new single reservoir or in the increase in an existing single reservoir where the power density of the power plant is less than 4 W/m<sup>2</sup>.*
7. *In the case of retrofits, 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 project activity project activity is not a retrofit, nor a replacement, nor a capacity addition in accordance with technical information and visual inspection carried out during the on-site visit.

Based on the on-site visit, interviews with relevant authorities and technical documentation provided by the PP during the validation process, AENOR confirms the applicability condition of the selected methodology to the project activity.

The project activity is not expected to result in emissions other than those allowed by the methodology, and there are no greenhouse gas emissions occurring within the proposed CDM project activity boundary as a result of the implementation of the proposed CDM project activity which are expected to contribute more than 1 per cent of the overall expected average annual emission reductions, which are not addressed by the applied methodology.

### **3.6.2 Project boundary**

The boundary of the project activity is as per methodology definition ACM0002 which is "includes the project power plant and all power plants connected physically to the electric system that the CDM project power plant is connected to".

The project will supply electricity to the Central Interconnected System (SIC).

The project boundaries are the wind turbines and associated electrical equipment, including all power plants contributing electricity to the electric grid (SIC).

In addition, all emission sources and gases related to the baseline scenario, project scenario, and leakage are clearly identified and described in a complete manner in the final PDD. CO<sub>2</sub> is the main emission source and is included in the baseline, but not CH<sub>4</sub> and N<sub>2</sub>O in compliance with the methodology. CO<sub>2</sub>, N<sub>2</sub>O and CH<sub>4</sub> are not included in the project activity as an emission source in compliance with applicable methodology. Leakage is also not considered according to methodology.

In order to calculate the emission factor for the project activity, the Central Interconnected System is also included in the boundary of the project activity.

AENOR has validated the project boundary of the project during the on-site visit and with project's technical offer, PPA, environmental impact declaration and technical specification. The validation team concludes that the identified boundary and selected sources and gases are justified for the project activity.

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The identified boundary and the selected sources and gases are justified for the project activity. The project activity is not expected to result in emissions other than those allowed by the methodology, and there are no greenhouse gas emissions occurring within the proposed CDM project activity boundary as a result of the implementation of the proposed CDM project activity which are expected to contribute more than 1 per cent of the overall expected average annual emissions reductions, which are not addressed by the applied methodology.

### **3.6.3 Baseline identification**

The final PDD describes the baseline scenario, which is in conformance with the approved methodology ACM0002, version 14.0 for grid-connected electricity generation from renewable sources.

Since the project activity is the installation of a new grid-connected renewable power plant, the baseline scenario is the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system". This definition is in accordance with ACM0002 methodology and has been correctly stated in the final PDD.

The assumptions and data used in the identification of the baseline scenario are appropriately justified, supported by evidence and can be deemed reasonable. In addition, relevant national and/or sectoral policies and circumstances are indicated in the final PDD.

The PDD identifies the baseline for the proposed CDM project activity, defined as the scenario that reasonably represents the anthropogenic emissions by sources of GHGs that would occur in the absence of the proposed CDM project activity.

### **3.6.4 Algorithms and/or formulae used to determine emission reductions**

The methodology for calculating emission reductions is transparently documented and complies with the requirement of the selected methodology, ACM0002, version 14.0 [3] and with tool to calculate the emission factor, version 04.0 [17].

According to the applied methodology the formula used to calculate emission reductions is:

$$ER_y = BE_y - PE_y$$

Where

$ER_y$  : Emission Reduction in year y (tCO<sub>2</sub>)

$BE_y$  : Baseline emission in year y (tCO<sub>2</sub>)

$PE_y$  : Project emissions in year y (tCO<sub>2</sub>)

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Due to the fact that the project activity is a grid connected wind power generation; there is no project emission from the project activity. Therefore:

$$ER_y = BE_y$$

Baseline Emission ( $BE_y$ ) is calculated by multiplying the net quantity of electricity supplied by the project activity with the CO2 baseline grid emission factor, as follow

$$BE_y = EG_{P,y} * EF_{grid, CM, y}$$

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, according to the methodology

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

$EG_{P,y}$  : 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)

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

The Baseline emission factor is calculated as combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM).

The baseline emission factor is determined following the steps stated in the "tool to calculate the emission factor for an electricity system" version 04.0

### Step 1: Identify the relevant electricity systems;

The project will supply electricity to the Central Interconnected System (SIC). Therefore, the central interconnected System is the relevant electricity system. This has been checked against the information provided by the PP, especially, EIA approval [18] and PPA [9].

According to the information provided by the CDEC-SIC (dispatch centre) in the annual statistics of operation 2012 [14], there are no electricity transfers from other connected electricity systems to the project electricity system (electricity imports) nor electricity transfers to connected electricity systems (electricity exports).

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

From two options the PP chose Option I: Only grid power plants are included in the calculation of the operating and build margin emission factor.

### STEP 3: Select a method to determine the operating margin (OM);

The calculation of the operating margin emission factor ( $EF_{grid, OM, y}$ ) is based on one of the following methods, which are described under Step 4:

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- (a) Simple OM, or
- (b) Simple adjusted OM, or
- (c) Dispatch data analysis OM, or
- (d) Average OM

Any of the four methods can be used. However, the simple OM method (option a) can be used if low-cost/must-run resources constitute less than 50% of total grid generation. However, according to CDEC-SIC information total grid generation by low-cost/must-run plants (on the basis of average of five most recent years) for the SIC Chile grid is 52.91% which is slightly higher than 50% of the total generation. Thus, Simple OM method cannot be used, and therefore; project participant selects Simple Adjusted OM method for calculating the emission factor.

For the Simple Adjusted OM, the emissions factor can be calculated using either of the two following data vintages: Ex ante option or Ex post option. However, the project proponent choose an ex ante option for calculation of the OM with a three year generation weighted average, based on the most recent data available at the time of submission DOE for validation (2010, 2011 and 2012); therefore, fixed during the crediting period. Availabilities of the data was corroborated during the on-site visit during the meeting with the dispatch centre, the most current data refers to December 2012.

### Step 4: Calculate the operating margin emission factor according to the selected method;

It has been validated that Simple Adjusted OM, where the power plants/units (including imports) are separated in low-cost/must-run power sources (k) and other power sources (m), is calculated using option A, based on the net electricity generation of the each power unit and an emission factor for each power unit, as follow:

$$EF_{grid,OM-adj,y} = (1 - \lambda_y) \times \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}} + \lambda_y \times \frac{\sum_k EG_{k,y} \times EF_{EL,k,y}}{\sum_k EG_{k,y}}$$

Where:

- $EF_{grid,OM-adj,y}$  : Simple adjusted operating margin CO<sub>2</sub> emission factor in year y (tCO<sub>2</sub>/MWh)
- $y$  : Factor expressing the percentage of time when low-cost/must-run power units are on the margin in year y
- $EG_{m,y}$  : Net quantity of electricity generated and delivered to the grid by power unit m in year y (MWh)
- $EG_{k,y}$  : Net quantity of electricity generated and delivered to the grid by power unit k in year y (MWh)
- $EF_{EL,m,y}$  : CO<sub>2</sub> emission factor of power unit m in year y (tCO<sub>2</sub>/MWh)
- $EF_{EL,k,y}$  : CO<sub>2</sub> emission factor of power unit k in year y (tCO<sub>2</sub>/MWh)
- $m$  : All grid power units serving the grid in year y except low-cost/must-run power units
- $k$  : All low-cost/must-run grid power units serving the grid in year y
- $y$  : The relevant year as per the data vintage chosen in Step 3



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**Determination of CO<sub>2</sub> emission factor of power unit ( $EF_{EL,m,y}$ )**

The emission factor of each power unit is determined using Option A1 for the power units for which data on fuel consumption and electricity generation is available, Option A2 for the power units for which only data on electricity generation and the fuel types used is available.

- **Option A1:** If for a power unit  $m$  data on fuel consumption and electricity generation is available, the emission factor ( $EF_{EL,m,y}$ ) should be determined as follows:

$$EF_{EL,m,y} = \frac{\sum_m FC_{i,m,y} \times NCV_{i,y} \times EF_{CO2,i,y}}{EG_{m,y}}$$

Where:

$EF_{EL,m,y}$  : CO<sub>2</sub> emission factor of power unit  $m$  in year  $y$  (t CO<sub>2</sub>/MWh)

$FC_{i,m,y}$  : Amount of fuel type  $i$  consumed by power unit  $m$  in year  $y$  (Mass or volume unit)

$NCV_{i,y}$  : Net calorific value (energy content) of fuel type  $i$  in year  $y$  (GJ)/mass or volume unit

$EF_{CO2,i,y}$  : CO<sub>2</sub> emission factor of fuel type  $i$  in year  $y$  (t CO<sub>2</sub>/GJ)

$EG_{m,y}$  : Net quantity of electricity generated and delivered to the grid by power unit  $m$  in year  $y$  (MWh)

$m$  : All power units serving the grid in year  $y$  except low-cost/must-run power units

$i$  : All fuel types combusted in power unit  $m$  in year  $y$

$y$  : The relevant year as per the data vintage chosen in Step 3

The emission factors for the fossil fuels type ( $EF_{CO2,i,y}$ ) used by the power plants have been obtained, following the procedures of the applied tool, from the 2006 IPCC Guidelines on National GHG Inventories [16]. The lower values of the 95% confidence intervals are used for the emission factors of the fuels employed, which is a conservative approach in the emission factor calculation context.

The net calorific values for the fossil fuels ( $NCV_{i,y}$ ) adopted have been obtained, following the procedures stated in the applied tool, from the official source National Energy Balance 2013, published by National Energy Commission [15]. Default conversion from 2006 IPCC Guidelines for National Greenhouse Inventories has been applied to convert GCV to NCV values. These values are deemed appropriate in accordance with the procedures stated in the applied tool, which indicates that "Regional or national average default values may be used if values are reliable and documented in regional or national energy statistics / energy balances", and the "Guidance on IPCC default values" EB 25 [19], where the Board agreed that the IPCC default values should be used only when country or project specific data are not available or difficult to obtain. The audit team has checked this issue against others registered CDM projects in Chile.

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In order to calculate fuel consumptions ( $FC_{i,m,y}$ ) PP has obtained the specific fuel consumption, public available on dispatch centre website (<https://www.cdec-sic.cl>), document used is: CDEC-SIC year book 2013 /20/. If data is not available on this document another official source is used: CNE Price report /21/, also public available (<http://www.cne.cl>)

If emission factor of power unit ( $EF_{EL,m,y}$ ) is not possible to calculate under option A1; then PP applies option A2, stated in the tool, using default values for energy efficiency combustion, listed in the applied tool.

- **Option A2** - If for a power unit m only data on electricity generation and the fuel types used is available, the emission factor should be determined based on the CO2 emission factor of the fuel type used and the efficiency of the power unit, as follows:

$$EF_{EL,m,y} = \frac{EF_{CO2,i,y} \times 3.6}{n_{m,y}}$$

Where:

$EF_{EL,m,y}$  : CO2 emission factor of power unit m in year y (t CO2/MWh)

$EF_{CO2,i,y}$  : Average CO2 emission factor of fuel type i used in power unit m in year y (t CO2/GJ)

$n_{m,y}$  : Average net energy conversion efficiency of power unit m in year y (ratio)

$m$  : All power units serving the grid in year y except low-cost/must-run power units

$y$  : The relevant year as per the data vintage

The emission factors for the fossil fuels type ( $EF_{CO2,i,y}$ ) used by the power plants have been obtained, following the procedures of the applied tool, from the 2006 IPCC Guidelines on National GHG Inventories. The lower values of the 95% confidence intervals are used for the emission factors of the fuels employed, which is a conservative approach in the emission factor calculation context.

Default Efficiency factors ( $n_{m,y}$ ) for power plants have been obtained from Annex 1 of the "Tool for the calculation of the emission factor of the electricity system" Version 0.4.0.

### Determination of net quantity of electricity generated and supplied to the grid ( $EG_{m,y}$ )

The determination of the net electricity generated and delivered to the grid by power unit is determined as per the provisions of the tool. Data of the net electricity generation from 2010 /22/, 2011 /23/ and 2012 /24/ have been obtained from dispatch centre CDEC-SIC.

AENOR has compared data provided by PP against official information, which is public available on dispatch centre website; no inaccuracies were detected.

### Calculation of Lambda ( $\lambda$ )

AENOR has validated that the Lambda factor is calculated according to the applied tool as follows:

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For the calculation, only grid power units have been considered. Hourly generation data of 2010, 2011 and 2012 used in the calculation have been provided by the official source CDEC-SIC. AENOR has replicated the calculation and the duration curves and the values obtained are deemed correct.

The input data used to calculate the Operating Margin have been verified and compared with the official sources and can be confirmed as correct. Formulae and factors are properly described in the final PDD and they are considered correct and transparent.

$EF_{grid,OM,y}$  is calculated as 0.6776 tCO<sub>2</sub>e/MWh in the final PDD. Calculations have been reproduced and AENOR deems that they are in compliance with the methodology, the "Tool to calculate the emission factor for an electricity system" version 4.0 and relevant EB guidance.

### Step 5: Calculate the build margin (BM) emission factor;

Option 1 of the applicable tool has been chosen in terms of vintage of data, i.e. for the first crediting period the BM emission factor is calculated ex-ante, based on the most recent information available on units already built at the time of the PDD submission to the DOE for validation, i.e. year 2012.

The sample group of power units used to calculate build margin is defined as the set of power capacity additions in the electricity system that started to supply electricity to the grid most recently and that comprise 20% of the electricity generation of the electricity system, instead of the set of five power units that started to supply energy to the grid most recently. In AENOR's opinion, this option has been correctly selected, since it comprises the larger annual generation ( $SET > 20\% = 8,014,738.80$  MWh) and none of the power units that belong to the set started to supply electricity more than 10 years ago.

According the tool, the build margin factor is the generation-weighted average emission factor of all power units during the most recent year for which electricity generation data is available, i.e. 2012, and it has been calculated as follow:

$$EF_{grid,BM,y} = \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}}$$

Where:

$EF_{grid,BM,y}$  : Build margin CO<sub>2</sub> emission factor in year y (tCO<sub>2</sub>/MWh);

$EG_{m,y}$  : Net quantity for electricity generated and delivered to the grid by power unit m in year y (MWh)

$EF_{EL,m,y}$  : CO<sub>2</sub> emission factor of power unit m in year y (tCO<sub>2</sub>/MWh);

$m$  : Power units included in the build margin

$y$  : Most recent historical year for which power generation data is available

Calculation of the CO<sub>2</sub> emission factor for each power unit is determined per tool step 4 (a), Option A1 for the power units for which data on fuel consumption and electricity generation is available; and Option A2

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for the power units for which only data on electricity generation and the fuel types used is available. This can be confirmed as correct.

Formulae and factors used to calculate the Build Margin are properly described in the final PDD and they are considered correct and transparent.

As a result,  $EF_{grid,BM,y}$  is calculated as **0.6603** tCO<sub>2</sub>/MWh in the final PDD for the year 2012.

Calculations have been reproduced and AENOR deems they are in compliance with the methodology, the Tool to calculate the emission factor for an electricity system and data sources.

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

The combined margin emissions factor has been calculated according to method a) Weighted Average CM of the applied tool as follow:

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

Where:

$EF_{grid,BM,y}$  : Build margin CO<sub>2</sub> emission factor in year y (tCO<sub>2</sub>/MWh).

$EF_{grid,OM,y}$  : Operating margin CO<sub>2</sub> emission factor in year y (tCO<sub>2</sub>/MWh).

$W_{BM}$  : Weighting of operating margin emissions factor (%).

$W_{OM}$  : Weighting of build margin emissions factor (%).

According to the tool, as the project activity involves wind power generation, the value of the weightings for the first crediting period are  $W_{OM} = 0.75$  and  $W_{BM} = 0.25$

Therefore the combined baseline emission factor is determined ex-ante and will remain fixed during the crediting period, as follow:

$$EF_{grid,CM,y} = 0.6776 \text{ tCO}_2/\text{MWh} \times 0.75 + 0.6603 \text{ tCO}_2/\text{MWh} \times 0.25$$

$$EF_{grid,CM,y} = 0.6732 \text{ tCO}_2/\text{MWh}.$$

In addition, as per baseline methodology ACM0002 and the "Tool to Calculate the Emission Factor for an Electricity System", the baseline emission considered are the emission reduction E<sub>R</sub> during the crediting period which is the difference between baseline emissions and project emissions, as no leakage emissions are considered by the methodology. The emission reductions are calculated as follow:

#### 1. Baseline Emission

As it has been explained above, the baseline emissions include only CO<sub>2</sub> emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity, and are equal to the baseline emission factor ( $EF_{grid,CM,y}$  in tCO<sub>2</sub>/MWh) multiplied by the net electricity supplied to the grid ( $EG_{PJ,y}$  in MWh).

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$$BE_y = EG_{PJ,y} * EF_{grid, CM, y}$$

$$BE_y = 124,155 \text{ MWh/year} * 0.6732 \text{ tCO}_2/\text{MWh} = 83,581 \text{ tCO}_2/\text{year}$$

**2. Project Emissions**

As the project is a wind power plant, there are no project related emissions; according to the applicable methodology.

**3. Emission reductions**

As described above, according to the applied methodology the formula used to calculate emission reductions is:

$$ER_y = BE_y - PE_y$$

$$ER_y = 83,581 - 0$$

$$ER_y = 83,581 \text{ tCO}_2/\text{year}$$

AENOR considers that baseline methodology and the tools have been applied correctly to calculate project emissions, baseline emissions emission reductions. The data sources are referenced. The applied values have been crosschecked by AENOR's validation team and found to be complete, plausible and conservative. Details of the calculations, grid emission factor and emission reductions, are presented in a spreadsheet called: "*c\_CER\_11\_CalculationCERsEmissionFactor\_PuntaPalmeras\_v02\_20140527.xlsx*" [13]. Calculation input values and formulae have been verified for completeness, correctness and consistency.

AENOR confirms that all assumptions and data used by the PP are listed in the final PDD, including their references and sources. Furthermore, all documentation used by project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PDD and all values used in the PDD are considered reasonable in the context of the proposed CDM project activity that result in a conservative estimate of emission reductions.

**3.7 Additionality****3.7.1 Starting date of the project activity and prior consideration of the CDM**

PP addresses the 21 June 2013 as the start date of the project activity which represents the first real action made by the PP [9]. The selected starting date corresponds to the date on which the resolution of the tender by Colbun S.A was awarded to Punta Palmeras S.A and the PPA was signed. In the opinion of the AENOR validation team, this date is the earliest date at which the real implementation of the project activity begins, since the PPA signature forces the PP to carry out the project, under big penalties in case of breaches.

The PP has provided to AENOR the timeline of the project activity and the evidence to support it. The main milestones of the project are shown below:

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Date	Milestone
3 February 2009	Initial project of Punta Palmeras Wind Power Project presentation.
2 September 2009	Initial project of Punta Palmeras Wind Power Project was approved by the regional commission of environment of the Coquimbo's region.
15 December 2010	Environmental impact Assessment resolution for the initial project of Punta Palmeras
30 July 2012	Presentation of Punta Palmeras modification to the Environmental impact Assessment Evaluation.
26 November 2012	Submission of the proposal bid to the public tender organized by Colbun SA /25/
26 December 2012	Environmental impact assessment resolution for the modification
21 June 2013	PPA signature (starting date) /9/
25 September 2013	EPC signature /26/
27 September 2013	Project activity announced its Prior CDM consideration to UNFCCC secretariat /27/
27 September 2013	Project activity announced its Prior CDM consideration to Chilean DNA /28/
30 September 2013	Date when Punta Palmeras asked for validation quotations
12 Mar 14 - 10 Apr 14	Public stakeholder consultation of PDD "Punta Palmeras Wind Power Project" /29/
07 October 2014	LoA of Chile /5/

In the opinion of the AENOR validation team, this selected starting date is in line with EB70, Annex 7 /30/ as this is the first real action made by the project participants for implementation of the project activity.

Regarding the prior consideration of the CDM and taking into account the CDM project standard version 07.0 /31/, as the project starting date is after 2 August 2008 and the PDD has been submitted for global stakeholder consultation on 12 March 2014, i.e., after the project starting date, the PP has informed to the Host Party DNA (Chile) and UNFCCC in writing of the commencement of the project activity and of their intention to seek CDM status.

PP has provided to the validation team the notification letter to the Chilean DNA dated on 27 September 2013. In addition, AENOR has ensured that notification to the UNFCCC secretariat has been provided

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checking the publicly available list in the UNFCCC web page. A notification was provided on 27 September 2013.

Therefore, both Chilean DNA and UNFCCC notifications have been provided within six months of the project activity start date in compliance with paragraph 33 of the CDM project standard version 07.0 and paragraphs 112-113 of the VVS version 07.0.

All evidence provided to the validation team are credible and reliable, hence in the opinion of the AENOR validation team the project activity was seriously considered in the decision to implement the project activity.

### **3.7.2 Analysis of the additionality**

The additionality of the Punta Palmeras Wind Power project activity as required by ACM0002 version 14.0 is demonstrated by applying the *"Tool for the demonstration and assessment of additionality"* version 07.0.0 [32].

During the validation process, further information regarding the importance of the incentive of the CDM, the origin of all the input values and the improvement of the financial analysis were requested and three Corrective Action (CAR 3, CAR 4 and CAR 5) were raised regarding the additionality of the project activity explained in the first version of the PDD.

Finally, all issues requested to the project participant have been resolved in opinion of the validation team since section B.5 of the PDD has been reinforced and the new criteria and assumptions considered fulfil with the methodology and tool of additionality. Therefore CAR 3, CAR 4 and CAR 5 have been solved.

The new assumptions are explained in the following paragraphs.

Applying the step 1 of the tool, plausible alternative baseline scenarios to the project have been identified and discussed in the final PDD. These are:

- Alternative 1: Execution of the project activity without its registration as CDM.
- Alternative 2: Continuation of the current situation i.e. the supply of electricity from the Interconnected System of Chile (baseline scenario).

The alternatives presented in the Step 1 are realistic and credible and comply with the regulation in place, Law Decree nº 4, General Law of Electricity Services (LGSE), Law 19,940 and Law 20,257. [33/34/35]

### **Application of Benchmark Analysis**

Concerning the step 2, the PP has chosen the investment analysis. As the project activity generates financial and economic benefits other than CDM related income through the sales of electricity and the proposed baseline scenario does not involve an investment, Punta Palmeras S.A. has used an IRR benchmark analysis in order to demonstrate the additionality of the Project activity.

In order to reproduce and validate the financial calculations, the spreadsheets together with the evidence regarding the input values were requested to the PP. In regard to this matter, the financial model [36] has been provided.

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It has been demonstrated that the project IRR post-tax without CDM revenues is estimated to be 8.18%. The project IRR is lower than the IRR benchmark of 10% in real terms, adopted by the Project Participant. As per the "Tool for the demonstration and assessment of additionality" version 07.0.0, a relevant benchmark for a project IRR can be derived from Government/official approved benchmark where such benchmarks are used for investment decisions.

In line with this, the Benchmark IRR of 10% in real terms, is the benchmark for power generation projects, which is used to determine node prices, transmission line and distribution investments in the power sector in Chile, according to "Law Decree nº 4, General Law of Electricity Services (LGSE), Article 174)" [37].

This benchmark has been widely accepted in newly constructed power plants in Chile, and has also been accepted as a suitable post-tax benchmark by the EB for the following registered electricity generation from renewable sources CDM projects: "Project 8932 : San Pedro Wind Farm Project" [38]; "Project 4449 : Monte Redondo Wind Farm Project" [39]; "Project 5831 : Providencia Hydroelectric Plant" [40]; "Project 7801 : Lican Hydroelectric Plant" [41]; "Project 8427 : Los Hierros Hydroelectric Power Plant" [42].

The post-tax benchmark IRR of 10% is validated to be suitable for the project activity by AENOR's validation team in compliance with paragraph 12, Annex 5 of the EB62 report and paragraph 128 (a) of the VVS version 07.0.

The validation team verified that taxes and depreciation used in the investment analysis comply with the Chilean legal requirements i.e. 20% value of the income tax and a linear depreciation 20 years for civil works and electromechanical equipment [43/44].

Following Annex 5 of EB62 "Guidelines on the Assessment of Investment Analysis", it has been validated that the project IRR calculation reflects the expected operation of the underlying project activity (a technical lifetime of 20 years), that the capital cost of the assets and their depreciation as an expense to the project were not both treated to constitute a double counting of this cost, and that the cost of financing expenditures (i.e., loan repayments and interest) was not included in the calculation of the project IRR in the final version of the PDD and the IRR calculation spreadsheet [36]. AENOR validation team has confirmed that the project has no bank financing.

AENOR has verified and confirmed that the values used in the financial analysis are consistent with the value of the source and this information was available before the starting date of the project and was thus likely to be considered in the decision. References are included in the PDD and IRR calculation spreadsheet.

The financial spreadsheets have been evidenced and verified to be correct. The assumptions used, the base documents and the financial calculations have also been verified.

### **Use of fixed values in the IRR calculation:**

As discussed above, the input values used for the investment analysis of the project were valid and applicable at the time of the investment decision [25]. In addition, as per further explanation in paragraph 6 of the Annex 5 to EB62 report, no information from a later point should be the basis for the investment



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decision. The application of fixed values is in line with this guidance, because at the time of investment decision, any information on the variation of the input values over the following 20 years was not available to the project owner.

In summary, given the information available at the time of the investment decision, the benchmark chosen and also considering the latest information on these parameters as well as the applied standard and guideline, in AENOR's opinion the assumption of fixed input values throughout the period of assessment is plausible and appropriate.

**Total Project Investment costs**

The total project investment costs of 88,470,000 US\$ is taken from the proposal presented by the PP to Colbun's tender /45/. The PP has provided evidence of these investment costs and AENOR's validation team has checked that the total figure matches the amount stated in the financial model.

In addition a comparison of investment cost per MW is done among the proposed project activity and similar wind power projects in Chile.

The comparison results show that the investment per MW used in the PDD for Punta Palmeras Wind Power project is within the range observed in similar projects registered as CDM in the same area (see below table).

**Comparison of investment per MW among similar registered CDM projects in Chile**

Project	Capacity (MW)	Total static Investment 1,000 US\$	Investment per MW 1,000 US\$
Project 9361: Parque Talinay Oriente /46/	100.00	183,400	1,834
Project 7814: Llay Llay Wind Farm Project /47/	56.00	107,848	1,926
Project 8932: San Pedro Wind Farm Project	36.00	80,550	2,237
Project 7458 : Valle de los Vientos Wind Farm /48/	90.00	160,029	1,778
Project 6985: El Arrayán Wind Farm Project /49/	115.00	265,058	2,305
Project 8133: Arauco Wind Farm /50/	117.00	229,320	1,960
Project 6635: Cuel Wind Farm Project /51/	33.00	54,090	1,639
Project 7856: Lebu II Wind Farm Project /52/	158.00	292,743	1,853
Project 7003 : Lebu 1 Wind Farm Project /53/	108.00	198,909	1,842

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Project	Capacity (MW)	Total static Investment 1,000 US\$	Investment per MW 1,000 US\$
Project 7002 : Ckani Wind Farm Project /54/	240.00	375,260	1,564
Project 5028: Canela II Wind Farm Project /55/	60.00	146,727	2,445
Project 4449: Monte Redondo Wind Farm Project	48.00	119,047	2,480
Project 3252 : Totoral Wind Farm Project /56/	46.00	132,500	2,880
Project 1958 : Canela Wind Farm Project /57/	18.15	47,698	2,628
<b>Punta Palmeras Wind Power Project</b>	<b>45.00</b>	<b>88,470</b>	<b>1,966</b>

Source: PP and UNFCCC

### O&M Costs

The applied annual O&M costs are also taken from the proposal presented by the PP to Colbun's tender.

In order to validate the suitability of the input values applied, the validation team of AENOR crosschecked the annual average O&M costs with data from IRENA "Renewable Energy Technologies. Cost Analysis Series. June 2012" /58/ and with similar projects signed as CDM project in the same area (see table below).

### Comparison of O&M costs among similar registered CDM projects in Chile

Project	Capacity (MW)	Annual Generation (MW)	Annual Average O&M costs 1,000 US\$	O&M costs US\$/KWh
Project 9361: Parque Talinay Oriente	100.00	223,300	3,329	0.015
Project 7814: Llay Llay Wind Farm Project	56.00	140,800	1,652	0.012
Project 8932: San Pedro Wind Farm Project	36.00	117,393	1,877	0.016
Project 7458 : Valle de los Vientos Wind Farm	90.00	219,330	2,534	0.012
Project 6985: El Arrayán Wind Farm Project	115.00	348,560	4,880	0.014
Project 8133: Arauco Wind Farm	117.00	345,074	11,135	0.032
Project 6635: Cuel Wind Farm Project	33.00	96,800	753	0.008

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Project	Capacity (MW)	Annual Generation (MW)	Annual Average O&M costs 1,000 US\$	O&M costs US\$/KWh
Project 7856: Lebu II Wind Farm Project	158.00	390,311	3,950	0.010
Project 7003 : Lebu 1 Wind Farm Project	108.00	277,201	2,700	0.010
Project 7002 : Ckani Wind Farm Project	240.00	688,300	4,896	0.007
Project 5028: Canela II Wind Farm Project	60.00	137,181	3,020	0.022
Project 4449: Monte Redondo Wind Farm Project	48.00	101,463	976	0.010
Project 3252 : Totoral Wind Farm Project	46.00	103,000	1,120	0.011
<b>Punta Palmeras Wind Power Project</b>	<b>45.00</b>	<b>124,155</b>	<b>1,742</b>	<b>0.014</b>

Source: PP and UNFCCC

The applied average annual O&M costs of 0.014 US\$/KWh, were found to in line with similar projects signed as CDM project in the same area an also within the interval of 0.01 US\$/KWh to 0.043 US\$/KWh provided by the IRENA, hence it deems appropriate and therefore accepted by the validation team of AENOR.

Based on above information, in AENOR's opinion the Annual O&M cost used in the PDD was reasonable, valid and applicable at the time of the investment decision.

### Annual Power Generation/ Plant Capacity Factor

The wind farm plant capacity factor of 31.5% was found to be to be within the range of similar projects signed as CDM in the same area, and is, therefore, accepted by AENOR's validation team.

In addition, electricity generation was determined by a third party, Acciona Energía with data from the wind resource measurement, taking into account the on-site topography, geomorphology, air density, wind turbine efficiency and other basic data /59/.

Therefore, AENOR confirms that the above procedure for the annual power supply estimation is common practice for wind farm projects in Chile.

Therefore, AENOR confirms that the above procedure for the annual power supply estimation is common practice for wind farm projects in Chile.

### Comparison of Annual Power Generation among similar registered CDM projects in Chile

Project	Capacity (MW)	Annual Generation (MW)	Load Factor (%)
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Project	Capacity (MW)	Annual Generation (MW)	Load Factor (%)
Project 9361: Parque Talinay Oriente	100.00	223,300	25.5%
Project 7814: Llay Llay Wind Farm Project	56.00	140,800	28.7%
Project 8932: San Pedro Wind Farm Project	36.00	117,393	37.2%
Project 7458 : Valle de los Vientos Wind Farm	90.00	219,330	27.8%
Project 6985: El Arrayán Wind Farm Project	115.00	348,560	34.6%
Project 8133: Arauco Wind Farm	117.00	345,074	33.7%
Project 6635: Cuel Wind Farm Project	33.00	96,800	33.5%
Project 7856: Lebu II Wind Farm Project	158.00	390,311	28.2%
Project 7003 : Lebu 1 Wind Farm Project	108.00	277,201	29.3%
Project 7002 : Ckani Wind Farm Project	240.00	688,300	32.7%
Project 5028: Canela II Wind Farm Project	60.00	137,181	26.1%
Project 4449: Monte Redondo Wind Farm Project	48.00	101,463	24.1%
Project 3252 : Totoral Wind Farm Project	46.00	103,000	25.6%
Project 1958 : Canela Wind Farm Project	18.15	48,000	30.2%
<b>Punta Palmeras Wind Power Project</b>	<b>45.00</b>	<b>124,155</b>	<b>31.5%</b>

Source: PP and UNFCCC

Therefore, according to the "Guidelines for the reporting and validation of plant load factors" /60/ and above cross-checking, AENOR considers that the annual grid-connected electricity generation is reasonable and appropriate.

### Firm capacity and Firm Power tariff

The firm capacity has been calculated following the Chilean rules and calculation methodology in force /61/, resulting in a long term firm capacity of 7.20 MW, hence accepted by the validation team.

The Price per Firm Installed Capacity of 118,942 US\$/MW-year has been from the value stated in the report of the node price fixation of 9.78 US\$/Kw-month published by the National Commission of Energy /63/ and

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then multiplied by a penalty factor of 1.014, also included in the report, which represents an increase to be applied to the node price due to SIC conditions and finally multiplied by 12 in order express the value in annual basis. Both values and calculations were checked and confirmed by the validation team.

**Energy market price**

As mentioned in the PDD the project activity will supply electricity to the SIC under a long term Power Purchase Agreement (PPA) signed with Colbun S.A with a tariff of 100 US\$/MWh. Under this scheme it is mandatory to sell the committed energy to Colbun S.A. at that fixed price during the first 12 years. The remaining years up to the 20 years of project lifetime the electricity will be sold to the market.

Therefore as the project activity lifetime is 20 years, the remaining 8 years, electricity is estimated to be sold at 91.092 US\$/MWh on the spot market. This value is derived from the energy price of 87.563 US\$/MWh stated in the report of the node price fixation published by the National Commission of Energy [62] and then multiplied by a penalty factor of 1.040, also included in the report, which represents an increase to be applied to the node price due to SIC conditions.

AENOR has checked the Node price report and the contract signed between Colbun S.A. and the PP [9] and found the tariff values used in the financial model to be the same. Calculations were also found to be correct.

In addition, AENOR checked the PDDs of wind farm projects in Chile and found the tariff used in the investment analysis and the final PDD, within the range of tariffs for registered CDM projects. The validation team also checked that even with the application of the highest tariff, the project IRR does not cross the benchmark.

**Comparison of tariffs among similar registered CDM projects in Chile**

Project	Capacity (MW)	Tariff (US\$/MWh)	Indexed (Y/N)
Project 9361: Parque Talinay Oriente	100.00	84.87	No
Project 7814: Llay Llay Wind Farm Project	56.00	87.56	No
Project 8932: San Pedro Wind Farm Project	36.00	80.00	No
Project 7458 : Valle de los Vientos Wind Farm	90.00	89.99	Yes
Project 6985: El Arrayán Wind Farm Project	115.00	100.41	Yes
Project 8133: Arauco Wind Farm	117.00	104.33	Yes
Project 6635: Cuel Wind Farm Project	33.00	72.87	No
Project 7856: Lebu II Wind Farm Project	158.00	69.50	No

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Project	Capacity (MW)	Tariff (US\$/MWh)	Indexed (Y/N)
Project 7003 : Lebu 1 Wind Farm Project	108.00	69.50	No
Project 7002 : Ckani Wind Farm Project	240.00	69.77	No
Project 5028: Canela II Wind Farm Project	60.00	75.46	No
Project 4449: Monte Redondo Wind Farm Project	48.00	79.71	No
<b>Punta Palmeras Wind Power Project</b>	<b>45.00</b>	<b>96.44<sup>1</sup></b>	<b>No</b>

Source: PP and UNFCCC

Therefore, AENOR considers that the value for the tariff used for the IRR calculation as has been done in the PDD is appropriate and was valid and applicable at the time of the investment decision.

**Regulatory Costs**

The CDEC-SIC fees are estimated as 30,000 US\$/year according to the calculation methodology established in Supreme Decree 14 of the Ministry of Energy of Chile /63/.

In the same way, the municipal levy of 26,000 US\$/year taken from the Decree 10 of the municipality of Canela /64/ has been verified and confirmed. Furthermore, the validation team checked that even when both regulatory costs become zero, the project IRR does not reach the benchmark.

**Other running costs**

Insurance costs on catastrophic coverage are estimated in the financial model as 0.15% of total investment. The validation team checked that even when both insurance costs become zero, the project IRR does not reach the benchmark.

In the same way, management costs are estimated to be 15,000 US\$/year while the other fees are estimated to be 40,000 US\$/year. The validation team checked that even when management costs and other fees become zero, project IRR does not reach the benchmark.

Finally, land costs as per lease agreement are calculated as the 2.5% of the total income as agreed in the land lease contract /65/. Validation team has cross-checked the lease agreement and found the value correct. The validation team checked that even when land costs become zero, project IRR does not reach the benchmark.

In summary, the variation of the other running costs is insignificant regarding the financial/economic attractiveness of the proposed project activity.

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<sup>1</sup> This is the average tariff for the twenty years of operation.

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### Sensitivity Analysis

The PDD includes a sensitivity analysis to demonstrate that the conclusion regarding the financial/economic attractiveness withstands reasonable variations in the critical assumptions.

For this purpose, variations in the range of +/- 10% for the parameters of energy market price, total project investment costs, plant capacity factor and O&M costs have been considered, since that range is reasonable for the project context and these variables constitute more than 20% of either total project costs or total project revenues.

The sensitivity analysis shows that without the income from CERs sales the IRR of the proposed project is also lower than the benchmark, even when the possible variations of the main parameters are considered. It was confirmed that the conclusion obtained in the analysis mentioned above was robust to conclude that the project activity is unlikely to be financially attractive.

In addition, AENOR has validated that higher variations of these parameters, that would make the project IRR reach the benchmark, are not likely to occur due to the following facts:

- 14.1% increase in the energy market price. As told before, the chosen price was settled based on a PPA for the first 12 years of operation. The average tariff is 17.6% higher than the average tariff observed in similar wind power projects registered as CDM in Chile; therefore it is unlikely that the chosen electricity tariff could increase an additional 14.1% to make the equity IRR reach the benchmark.
- 13.5% decrease in the total project investment costs. Prices including those for the main equipments and raw materials have been increasing in recent years [66]. In addition, the investment cost per MW of the project was found to be in line with similar registered projects in the area; therefore, it is unlikely that the total investment will decrease by 13.5%, such that the project IRR reaches the benchmark.
- 96.0% decrease in the total O&M costs. As told above, prices have been increasing in recent years in Chile. In addition the O&M cost of the project was found to be within the range of similar registered projects in the area; therefore, it is unlikely that total O&M costs will decrease by 96.0%, such that the project IRR reaches the benchmark.
- 13.1% increase in plant capacity factor (electricity generation) .The annual electricity output is determined by a third party, Acciona Energía, an engineering firm specialised in the wind power sector resulting in a plant capacity factor of 31.50%. In addition, the average load factor of similar CDM registered projects in the area is 29.80% i.e. 5% lower than the proposed project activity; thus, it is unlikely that the load factor of the project will increase an additional 13.1%, such that the project IRR reaches the benchmark.

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AENOR reviewed and confirmed all related documents. The assessments show clearly that investment is unlikely to be 13.5% lower, energy market price 14.1% higher and electricity generation 13.1% higher and O&M costs 96.0% lower.

In summary, it is AENOR's opinion that the additionality of the project is sufficiently demonstrated based on the investment analysis and thus it is sufficiently demonstrated that the project is not a likely baseline scenario and those emission reductions are therefore additional.

### **Barrier analysis**

The barrier analysis has not been selected to demonstrate the additionality.

### **Common Practice**

According to the tool and following the Guidelines on common practice, version 02.0 [67], a common practice analysis is carried out.

Step 1: The proposed project is of 45 MW installed capacity, thus the projects with  $\pm 50\%$  design capacity of the proposed project activity (22.50–67.50 MW) are considered as of similar size.

Step 2: 0 similar projects located in Chile with an installed capacity within the range of 22.50–67.50 MW and that started commercial operation before the start date of the project, have been correctly identified in this step. Information used has been carefully verified and the determination of similar projects is assessed as reasonable and it has been crosschecked with the webpage of the National Energy Commission (CNE) of Chile [68], and found to be accurate by the validation team of AENOR.

Step 3: 0 plants have been correctly identified. According to the National Energy Commission of Chile, there are no similar projects which fulfil all the conditions. Hence,  $N_{all}$  is determined as 0.

Information used has been carefully verified and the determination of  $N_{all}$  is assessed as reasonable.

Step 4: There are no similar plants projects applying different technologies that the proposed project activity. Hence,  $N_{diff}$  is determined as 0.

Information used is carefully verified and the determination of  $N_{diff}$  is assessed as reasonable.

Step 5: calculate factor  $F = 1 - N_{diff}/N_{all}$

$F = 1 - N_{diff}/N_{all} = 1 - 0/0 = \text{undefined}$

$N_{all} - N_{diff} = 0$ .

Therefore as  $N_{all} - N_{diff}$  is smaller than 3, irrespective of F value; therefore, the proposed project clearly cannot be taken as common practice in Chile.

In summary, based on our local and sectoral expertise it is AENOR's opinion that the additionality of the project is sufficiently demonstrated based on the investment analysis, that the project is not a likely baseline scenario, and that those emission reductions are, therefore, additional.



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### 3.8 Monitoring Plan

The Project is using the approved consolidated baseline and monitoring baseline methodology for grid-connected electricity generation from renewable sources, ACM0002, version 14.0. Applicability of this methodology is justified in the final PDD as it involves grid-connected renewable power generation using wind sources.

According to the final version of the PDD, there is only one parameter for monitoring, which is the net energy delivery to grid by the project activity. All the aspect related to the monitoring of this parameter; such as, responsibilities for monitoring, recording data, quality procedures and maintenance of the meters are in accordance with applied methodology.

In AENOR's opinion participants is able to implement the monitoring plan; which is feasible within the project design, and that the data management, quality assurance, and quality control procedures are sufficient to ensure that the emission reductions achieved by resulting from the proposed CDM project activity can be reported ex post and verified.

#### 3.8.1 Compliance of the monitoring plan with the approved methodology

The final PDD includes information of the monitoring plan, in section B.7. The monitoring plan is based on the approved monitoring methodology for selected CDM project activity. The final PDD clearly identifies the parameters to monitor in compliance with the applicable methodology:

***EG<sub>facility,y</sub>: Quantity of the net electricity generated by the project activity supplied to the grid (SIC) in year y.***

This parameter shall be measured continuously and at least monthly recording. Electricity meter will be calibrated in accordance with Chilean applicable regulation. The accuracy level of the metering equipment will be  $\pm 0.2\%$ . Data will be directly obtained from the metering equipment and double check by receipt of sales.

Therefore, in opinion of the AENOR's validation team, all necessary parameters required by the selected approved methodology are contained in the monitoring plan. They are clearly described and the means of monitoring described in the plan comply with the requirements of the methodology. Thus, AENOR confirms the monitoring plan is in compliance with the requirements of the applied methodology.

#### 3.8.2 Implementation of the Monitoring Plan

The project participant has developed a monitoring plan in order to compile the guidelines for the emission reduction calculation detailed in the PDD and defined roles and responsibilities of the members of the monitoring team in charge of the emission reduction calculations. The responsibilities of each element of the Monitoring Team are the following:

- General Manager: Overall responsible for the management of project activity
- Technical Director: Ensure correctness of data and compliance of monitoring methodology

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- Finance Director: Generation of invoices and CER calculation
- Site Manager: Ensuring proper data recording and calibration of relevant meters as per legal requirements.

After the review of evidence provided by the PP, the interviews and communication with the PP, AENOR confirms that monitoring arrangements described in the monitoring plan are feasible within the project design and that the means considered for the implementation, including data management, quality and assurance control procedures, are sufficient to ensure that the emission reductions achieved resulting from the proposed CDM project activity can be reported ex post and verified. In AENOR's opinion PP will be able to implement the monitoring plan stated in the PDD.

Therefore, AENOR confirms that the monitoring arrangements described in the monitoring plan are feasible within the project design, and that the data management, quality assurance, and quality control procedures are sufficient to ensure that the emission reductions achieved by resulting from the proposed CDM project activity can be reported ex post and verified.

### 3.9 Comments by Local Stakeholders

According to the Chilean regulation requirements; stakeholders should be duly informed at the time of project evaluation. Therefore, consultation process was carried out in conjunction with the development of Environmental Impact Assessment. Furthermore, a CDM presentations /69/ was developed in order to explain global warming problem, the scientific evidence that this warming is caused mainly by human activities and the Kyoto Protocol.

The local stakeholder consultation process, developed by project participant, consisted of several meetings with local authorities and residents, invited by PP, through individual invitations (meetings) to comment on the proposed CDM project activity prior to the publication of the PDD on the UNFCCC website.

- On February 6<sup>th</sup>, 2014 presentation was made to 16 attendants of the meeting, most of them were partners of the fisherman association including the presence of the president and the secretary /70/
- On February 14<sup>th</sup>, 2014 presentation was made to 5 attendants of the utility Colbún /71/
- On March 3<sup>rd</sup>, 2014 presentation was made to 8 attendants of the Canela Municipality most of them were city councillor. Major was also present. /72/

During the on-site visit, the AENOR's validation team held interviews with some of those local stakeholders affected by the project activity in order to know their opinions about the implementation of the project. By means of the documents reviewed and the interviews performed, AENOR considers that the summary of the conclusions of the consultation process included in section E.2 of the PDD is complete. Then, in opinion of the AENOR's validation team the local stakeholder consultation is adequate and accurate.

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**3.10 Environmental Impacts**

According to the Chilean regulation, project activity requires an environmental approval, which was obtained through a resolution issued by the local Environmental Authority with reference N° 0122 on 26 December 2012. The main conclusion of the approval is that there are not significant environmental impacts.

As per section D.2 of the PDD, the location of the project and the mitigation strategies taken avoid the adverse environmental effects. Section E of the PDD is in line with the EIS approval. During the on-site visit, the representatives of the DNA of Chile were interviewed, and they confirmed the contribution of the project activity to the sustainable development of the area.

AENOR concludes that the PP has followed a correct analysis of environmental impacts in accordance with procedures as required by the host Party.

In addition, AENOR confirms that the host Party's DNA confirmed the project activity's contribution to the sustainable development of Chile during the on-site visit and through the approval letter.

**4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS**

According to Decision 3/CMP.1, the validator shall make publicly available the PDD and receive comments on the validation requirements from parties, stakeholders and UNFCCC accredited NGOs within 30 days, and make them publicly available.

AENOR published the first PDD, version 01, on the CDM website (<http://unfccc.cdm.int>) on 12 March 2014 and invited comments by parties, stakeholders and non-governmental organisations. No comments were received during this period.

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**5 VALIDATION OPINION**

AENOR has performed the validation of the "Punta Palmeras Wind Power Project" in Chile. The validation process was performed on the basis of all UNFCCC requirements and criteria for CDM projects, the host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

The conclusions of this report show that the project, as was described in the project documentation, is in line with all applicable criteria for the validation.

The validation consisted of the following three phases: i) a desk review of the project design, the baseline and the monitoring plans; ii) follow-up interviews with project stakeholders; iii) the resolution of outstanding issues and the issuance of the final validation report and opinion. In the course of the validation process, 6 corrective actions and 2 clarifications raised have been successfully closed.

The project participant used the latest "Tool for demonstration and assessment of additionality", version 07.0.0, to demonstrate the additionality of the project. In line with this tool, the PDD provides an investment analysis to determine that the project activity itself is not the baseline scenario.

The "Tool to calculate the emission factor for an electricity system" (version 04.0) and the methodology ACM0002, version 14.0, have also been applied to determine the emission factor of the Grid and to calculate the emission reductions.

The investment analysis demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are, hence, additional to any that would occur in the absence of the project activity.

The review of the project design documentation and additional documents related to baseline and monitoring methodology, and the subsequent background investigation, follow-up interviews and review of comments by parties and stakeholders have provided AENOR with sufficient evidence to validate the fulfillment of the stated criteria.

The conclusions can be summarised in detail as follows:

- The project is in line with all relevant host country criteria of the host country DNA and with all relevant UNFCCC requirements for CDM. The LoA from Chile is dated 07 October 2014.
- The project additionality is sufficiently justified in the PDD.
- The Monitoring Plan is transparent and adequate.

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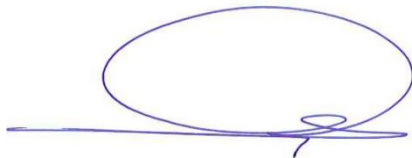
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- The calculation of project emission reductions has been carried out in a transparent and conservative manner, so that the annual calculated emission reductions of 83,581 tCO<sub>2</sub>e are most likely to be achieved within the renewable crediting period.

In our opinion, the project correctly applies and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria.

The validation has been performed using a risk-based approach, as described above. The only purpose of this report is its use during the registration process as part of the CDM project cycle. Hence, AENOR cannot be held liable by any party for decisions made or not made based on the validation opinion, which would go beyond the purpose.

DATE: 2014/11/24



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Luis Robles Olmos  
Authorized person

DATE: 2014/11/24



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Freddy Garro Flores  
Validation Team Leader

## VALIDATION REPORT

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## 6 CORRECTIVE ACTION REQUESTS, CLARIFICATIONS AND FORWARD ACTION REQUESTS

PROJECT ACTIVITY	Punta Palmeras Wind Power Project		
FINDING	Nº 1		
Classification	CAR <input checked="" type="checkbox"/>	CL <input type="checkbox"/>	FAR <input type="checkbox"/>
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<b>The Letter of Approval (LoA) of the project activity has not been provided. The project participant (PP) shall obtain the letter of approval from the DNA of the party involved in the project activity in accordance with the latest version of the CDM Project Standard (PS).</b>		
<b>PP RESPONSE #1</b> <i>This section shall be filled by the PP.</i>			
<i>It shall address the corrective action taken in details</i>	The LoA has been provided as required.		
<i>It shall provide and indentified the evidences proposed (if applicable)</i>			
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues. In case of non-closure additional corrective action and DOE assessments (#2, #3, etc.) shall be added</i>	The LoA has been provided and the audit team confirms that it is in accordance with the latest version of the PS.		
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<b>CAR/CL CLOSED</b> <input checked="" type="checkbox"/>	To be checked during the periodic verification <input type="checkbox"/>	

## VALIDATION REPORT

"Punta Palmeras Wind Power Project"

<b>PROJECT ACTIVITY</b>	<b>Punta Palmeras Wind Power Project</b>		
<b>FINDING</b>	<b>Nº 2</b>		
<b>Classification</b>	<b>CAR</b> <input checked="" type="checkbox"/>	<b>CL</b> <input type="checkbox"/>	<b>FAR</b> <input type="checkbox"/>
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<b>The Modalities of communication (MoC) of the project activity has not been provided. The PP shall define for the project activity his modalities of communication with the CDM Board and present them in a Modalities of communication statement (MoC statement), with the latest version of PS.</b>		
<b>PP RESPONSE #1</b> <i>It shall address the corrective action taken in details</i> <i>It shall provide and indentified the evidences proposed (if applicable)</i>	<i>This section shall be filled by the PP.</i> The MoC of the project activity has been defined as per the requirements of PS.		
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues. In case of non-closure additional corrective action and DOE assessments (#2, #3, etc.) shall be added</i>	The MoC has been provided and the audit team confirms that it is in accordance with the latest version of the PS.		
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<b>CAR/CL CLOSED</b> <input checked="" type="checkbox"/>	To be checked during the periodic verification <input type="checkbox"/>	

## VALIDATION REPORT

"Punta Palmeras Wind Power Project"

<b>PROJECT ACTIVITY</b>	<b>Punta Palmeras Wind Power Project</b>		
<b>FINDING</b>	<b>Nº 3</b>		
<b>Classification</b>	<b>CAR</b> <input checked="" type="checkbox"/>	<b>CL</b> <input type="checkbox"/>	<b>FAR</b> <input type="checkbox"/>
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<b>Evidence about the appropriateness of the input values used (techno-economic parameters and assumptions) in the investment analysis shall be provided, i.e. tax rate used is not appropriate and firm capacity shall be determined according to the methodology established by CDEC-SIC.</b>		
<b>PP RESPONSE #1</b>	<i>This section shall be filled by the PP.</i>		
<i>It shall address the corrective action taken in details</i>	Evidences of input values issued have been provided. Tax rate has been changed into 20% and methodology established by CDEC-SIC has been explained in order to calculate firm capacity.		
<i>It shall provide and indentified the evidences proposed (if applicable)</i>			
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues. In case of non-closure additional corrective action and DOE assessments (#2, #3, etc.) shall be added</i>	Appropriate and reliable evidence has been provided.		
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<b>CAR/CL CLOSED</b> <input checked="" type="checkbox"/>	To be checked during the periodic verification <input type="checkbox"/>	



## VALIDATION REPORT

"Punta Palmeras Wind Power Project"

<b>PROJECT ACTIVITY</b>	<b>Punta Palmeras Wind Power Project</b>		
<b>FINDING</b>	<b>Nº 4</b>		
<b>Classification</b>	<b>CAR</b> <input checked="" type="checkbox"/>	<b>CL</b> <input type="checkbox"/>	<b>FAR</b> <input type="checkbox"/>
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<b>Evidence and disaggregation of the called "Recurrent operational costs" shall be provided and analyzed in the PDD and financial spreadsheet and sensitivity analysis.</b>		
<b>PP RESPONSE #1</b>	<i>This section shall be filled by the PP.</i>		
<i>It shall address the corrective action taken in details</i>	Disaggregation of recurrent operational costs has been provided. Financial spreadsheet, sensitivity analysis and PDD have been changed accordingly.		
<i>It shall provide and indentified the evidences proposed (if applicable)</i>			
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues. In case of non-closure additional corrective action and DOE assessments (#2, #3, etc.) shall be added</i>	Recurrent operational costs have been disaggregated and analyzed in the final PDD and financial spreadsheet and appropriate and reliable evidence has been provided.		
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<b>CAR/CL CLOSED</b> <input checked="" type="checkbox"/>	To be checked during the periodic verification <input type="checkbox"/>	

## VALIDATION REPORT

"Punta Palmeras Wind Power Project"

<b>PROJECT ACTIVITY</b>	<b>Punta Palmeras Wind Power Project</b>		
<b>FINDING</b>	<b>Nº 5</b>		
<b>Classification</b>	<b>CAR</b> <input checked="" type="checkbox"/>	<b>CL</b> <input type="checkbox"/>	<b>FAR</b> <input type="checkbox"/>
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<b>The selection of projects identified in the step 2 of the common practice analysis shall fulfill all the conditions required in the guidelines. Current selection identifies as similar project with different technologies and different energy sources.</b>		
<b>PP RESPONSE #1</b>	<i>This section shall be filled by the PP.</i>		
<i>It shall address the corrective action taken in details</i>	Project identified in step 2 have been changed following the conditions of the guideline. More explanation has been done in the PDD to clarify.		
<i>It shall provide and indentified the evidences proposed (if applicable)</i>			
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues. In case of non-closure additional corrective action and DOE assessments (#2, #3, etc.) shall be added</i>	The final version of the PDD fulfills all the conditions required in the guidelines and appropriate evidence has been provided.		
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<b>CAR/CL CLOSED</b> <input checked="" type="checkbox"/>	To be checked during the periodic verification <input type="checkbox"/>	

## VALIDATION REPORT

"Punta Palmeras Wind Power Project"

<b>PROJECT ACTIVITY</b>	<b>Punta Palmeras Wind Power Project</b>		
<b>FINDING</b>	<b>Nº 6</b>		
<b>Classification</b>	<b>CAR</b> <input checked="" type="checkbox"/>	<b>CL</b> <input type="checkbox"/>	<b>FAR</b> <input type="checkbox"/>
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>Grid emission factor is not determined in accordance with applied methodology and tool. PP is requested to correct following inconsistencies:</p> <ul style="list-style-type: none"> <li>• Spreadsheet for Emission reduction calculation is not fully traceable and presents some undefined values.</li> <li>• Correct Justification for not using simple OM method (page 24 of PDD) shall be described; since the sum of low cost/must-run and no Low cost/must run sources totalize more than 100%.</li> <li>• It is not clearly described how was determined the intersection point for determining lambda value for calculating OM.</li> <li>• It not clearly described which power plants generations are considered as low-cost/must-run.</li> <li>• Build Margin is not properly determined: The parameters AEGTotal is not determined in accordance with applied tool. Therefore, SETsample of power units considered in BM calculation are not properly determined.</li> <li>• There are some inconsistencies between NCV values listed in the PDD and evidence provided by CNE: i.e. LPG and Natural Gas.</li> <li>• Some values for the parameter EFEL,m,y are overestimated. E.g. emission factor for the power plants: Newev Diesel-2010, San Isidro - 2011, Huasco TG – 2012, among others. Furthermore, measurement methods and procedures for determining this parameter shall clarify and described in relevant section of the PDD.</li> <li>• Source of data for the parameter EFCO2,i,y is not correctly described in the PDD</li> </ul>		
<b>PP RESPONSE #1</b>	<i>This section shall be filled by the PP.</i>		
<i>It shall address the corrective action taken in details</i>	<ul style="list-style-type: none"> <li>• Spreadsheet for Emission reduction calculation has been changed in order not to present undefined values.</li> <li>• Corrected Excel sheet calculation for low-cost/must-run has been presented to validator and PDD has been changed accordingly.</li> <li>• Intersection point for lambda value has been explained in Excel sheet.</li> </ul>		

## VALIDATION REPORT

"Punta Palmeras Wind Power Project"

	<ul style="list-style-type: none"> <li>• Definition of low-cost/must-run and plants considered in calculation has been described in the PDD.</li> <li>• AEGTotal has been recalculated in the Excel sheet. Generation from plants registered has been calculated and this figure is deducted from total generation for year 2012. Result is changed in PDD.</li> <li>• NCV values in PDD have been corrected.</li> <li>• In order to be conservative, CDEC-SIC source of data has been changed in cases parameters EFEL<sub>m,y</sub> are high. Source from CNE has been used when data was available. Option A2 of the tool when this was not the case. Measurements methods and procedures for determining this parameter are clarified and described in PDD deeply.</li> <li>• Source of data for the parameter EFCO<sub>2,i,y</sub> has been corrected in PDD.</li> </ul>	
<i>It shall provide and indentified the evidences proposed (if applicable)</i>		
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues. In case of non-closure additional corrective action and DOE assessments (#2, #3, etc.) shall be added</i>	Grid emission factor calculation and PDD have been properly updated, taking into consideration previous comments. PDD properly refers to the evidence related to emission reduction calculation. Moreover, evidences and comments contained in the emission reduction calculation spreadsheet are in accordance with applied methodology and tool.	
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<b>CAR/CL CLOSED</b> <input checked="" type="checkbox"/>	To be checked during the periodic verification <input type="checkbox"/>

## VALIDATION REPORT

"Punta Palmeras Wind Power Project"

<b>PROJECT ACTIVITY</b>	<b>Punta Palmeras Wind Power Project</b>		
<b>FINDING</b>	<b>Nº 1</b>		
<b>Classification</b>	<b>CAR</b> <input type="checkbox"/>	<b>CL</b> <input checked="" type="checkbox"/>	<b>FAR</b> <input type="checkbox"/>
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<b>The PP has mentioned in the PDD a second phase of the wind power plant. The PP is requested to clarify if the second phase of 21 MW is considered as part of the proposed project activity.</b>		
<b>PP RESPONSE #1</b>	<i>This section shall be filled by the PP.</i>		
<i>It shall address the corrective action taken in details</i>	It has been clarified in PDD that this second phase is not part of the proposed project activity.		
<i>It shall provide and indentified the evidences proposed (if applicable)</i>			
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues. In case of non-closure additional corrective action and DOE assessments (#2, #3, etc.) shall be added</i>	The PP has clarified that the second phase of 21 MW is not considered part of the project activity and the PDD has been corrected		
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<b>CAR/CL CLOSED</b> <input checked="" type="checkbox"/>	To be checked during the periodic verification <input type="checkbox"/>	

## VALIDATION REPORT

"Punta Palmeras Wind Power Project"

<b>PROJECT ACTIVITY</b>	<b>Punta Palmeras Wind Power Project</b>		
<b>FINDING</b>	<b>Nº 2</b>		
<b>Classification</b>	<b>CAR</b> <input type="checkbox"/>	<b>CL</b> <input checked="" type="checkbox"/>	<b>FAR</b> <input type="checkbox"/>
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<b>The geographical coordinates stated in the PDD are not clear. The PP is requested to clarify to which facility of the project activity correspond the geographic coordinates indicated in section A.2.4 of the PDD.</b>		
<b>PP RESPONSE #1</b>  <i>It shall address the corrective action taken in details</i>  <i>It shall provide and indentified the evidences proposed (if applicable)</i>	<i>This section shall be filled by the PP.</i>  Project participant has explained in PDD the facility which corresponds to the geographic coordinates.		
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues. In case of non-closure additional corrective action and DOE assessments (#2, #3, etc.) shall be added</i>	The coordinates of the project activity have been clarified in the latest PDD.		
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<b>CAR/CL CLOSED</b> <input checked="" type="checkbox"/>	To be checked during the periodic verification <input type="checkbox"/>	

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VALIDATION REPORT  
"Punta Palmeras Wind Power Project"

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## 7 REFERENCES

Reference	Document Name	Author/Competent Authority
1	PDD Punta Palmeras Wind Power Project version 1 dated 10 March 2014	PROJECT PARTICIPANT
2	PDD Punta Palmeras Wind Power Project version 2 dated 13 October 2014	PROJECT PARTICIPANT
3	ACM0002 version 14.0 "Grid-connected electricity generation from renewable sources", dated 4 October 2013	CDM – EXECUTIVE BOARD
4	CDM Validation and Verification Standard, version 07.0, dated 1 June 2014	CDM – EXECUTIVE BOARD
5	Letter of Approval from Chile, dated 07 October 2014	MINISTRY OF ENVIRONMENT OF CHILE (Chilean DNA)
6	Citizenship identities	PROJECT PARTICIPANT
7	Written confirmation of employment status and authorizer signatories	PROJECT PARTICIPANT
8	Technical offer presented to the Tender, dated November 2012	PROJECT PARTICIPANT
9	Power purchase agreement - PPA, dated 21 June 2013	PROJECT PARTICIPANT AND COLBUN S.A.
10	Turbine technical specifications, dated 30 June 2011 and updated on 27 March 2013	ACCIONA WINDPOWER S.A.
11	Certificate of design lifetime of turbines, dated 22 January 2013	ACCIONA WINDPOWER S.A.
12	Environmental impact assessment, dated July 2012	PROJECT PARTICIPANT
13	EF and ER calculation spreadsheets	PROJECT PARTICIPANT
14	Operation Statistics for 2010, 2011 and 2012	CDEC-SIC
15	Energy Balance Reports	CNE - National Energy Commission
16	2006 IPCC Guidelines for National Greenhouse Gas Inventories	IPCC
17	Tool to calculate the emission factor for an electricity system version 4.0, dated 4 October 2013	CDM – EXECUTIVE BOARD
18	Approval of environmental impact assessment, dated 26 December 2012	SEA - Environmental Assessment Service
19	Guidance on IPCC default values, EB 25	CDM – EXECUTIVE BOARD
20	CDEC-SIC year book 2013	CDEC-SIC
21	CNE Price report, October 2012	CNE - National Energy Commission

## VALIDATION REPORT

"Punta Palmeras Wind Power Project"

Reference	Document Name	Author/Competent Authority
22	CDEC-SIC Data Electricity generation 2010	CDEC-SIC
23	CDEC-SIC Data Electricity generation 2011	CDEC-SIC
24	CDEC-SIC Data Electricity generation 2012	CDEC-SIC
25	Submission of the proposal bid to the public tender organized by Colbun SA, 26 November 2012	PROJECT PROPONENT
26	EPC Signature, dated 25 September 2013	PROJECT PROPONENT and ACCIONA ENERGÍA CHILE
27	Prior CDM consideration of the CDM to UNFCCC secretariat, dated 27 September 2013	CDM - EXECUTIVE BOARD
28	Prior CDM consideration of the CDM to Chilean DNA, dated 27 September 2013	MINISTRY OF ENVIRONMENT OF CHILE (Chilean DNA)
29	Public stakeholder consultation of PDD Punta Palmeras Wind Power Project	CDM - EXECUTIVE BOARD
30	Glossary: CDM terms version 07.0, dated 23 November 2012	CDM - EXECUTIVE BOARD
31	CDM Project Standard version 07.0., dated 1 June 2014	CDM - EXECUTIVE BOARD
32	Tool for the demonstration and assessment of Additionality. Version 07.0.0, dated 23 November 2012	CDM - EXECUTIVE BOARD
33	Law Decree n° 4, General Law of Electricity Services (LGSE)	MINISTRY OF ECONOMY, DEVELOPMENT AND RECONSTRUCTION OF CHILE
34	Law 19,940	MINISTRY OF ECONOMY, DEVELOPMENT AND RECONSTRUCTION OF CHILE
35	Law 20,257	MINISTRY OF ECONOMY, DEVELOPMENT AND RECONSTRUCTION OF CHILE
36	Financial Analysis Spreadsheets	PROJECT PARTICIPANT
37	Government/ Official approved benchmark / Article 174 of Law Decree n° 4, General Law of Electricity Services (LGSE)	MINISTRY OF ECONOMY, DEVELOPMENT AND RECONSTRUCTION OF CHILE
38	Project 8932: San Pedro Wind Farm Project	CDM - EXECUTIVE BOARD
39	Project 4449: Monte Redondo Wind Farm Project	CDM - EXECUTIVE BOARD
40	Project 5831 : Providencia Hydroelectric Plant	CDM - EXECUTIVE BOARD
41	Project 7801 : Lican Hydroelectric Plant	CDM - EXECUTIVE BOARD
42	Project 8427 : Los Hierros Hydroelectric Power Plant	CDM - EXECUTIVE BOARD
43	Income Tax <a href="http://www.sii.cl/aprenda_sobre_impuestos/impuestos/imp_directos.htm">http://www.sii.cl/aprenda_sobre_impuestos/impuestos/imp_directos.htm</a>	INTERNAL TAX SERVICE OF CHILE (SII)



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VALIDATION REPORT  
"Punta Palmeras Wind Power Project"

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Reference	Document Name	Author/Competent Authority
44	Depreciation periods <a href="http://www.sii.cl/pagina/valores/bienes/tabla_vida_enero.htm">http://www.sii.cl/pagina/valores/bienes/tabla_vida_enero.htm</a>	INTERNAL TAX SERVICE OF CHILE (SII)
45	Proposal presented to Colbun's tender, dated November 2012	PROJECT PROPONENT
46	Project 9361: Parque Talinay Oriente	CDM - EXECUTIVE BOARD
47	Project 7814: Llay Llay Wind Farm Project	CDM - EXECUTIVE BOARD
48	Project 7458 : Valle de los Vientos Wind Farm	CDM - EXECUTIVE BOARD
49	Project 6985: El Arrayán Wind Farm Project	CDM - EXECUTIVE BOARD
50	Project 8133: Arauco Wind Farm	CDM - EXECUTIVE BOARD
51	Project 6635: Cuel Wind Farm Project	CDM - EXECUTIVE BOARD
52	Project 7856: Lebu II Wind Farm Project	CDM - EXECUTIVE BOARD
53	Project 7003 : Lebu 1 Wind Farm Project	CDM - EXECUTIVE BOARD
54	Project 7002 : Ckani Wind Farm Project	CDM - EXECUTIVE BOARD
55	Project 5028: Canela II Wind Farm Project	CDM - EXECUTIVE BOARD
56	Project 3252 : Totoral Wind Farm Project	CDM - EXECUTIVE BOARD
57	Project 1958 : Canela Wind Farm Project	CDM - EXECUTIVE BOARD
58	Renewable Energy Technologies: Cost Analysis Series, dated June 2012	INTERNATIONAL RENEWABLE ENERGY AGENCY (IRENA)
59	Wind Resource Assessment, dated November 2012	ACCIONA ENERGÍA
60	Guidelines for the reporting and validation of plant load factors v.1., dated July 2009	CDM - EXECUTIVE BOARD
61	CDEC-SIC year book 2013 (page 34).	CDEC-SIC
62	Technical Report of the Node Price Fixation at SIC, dated April 2012	NATIONAL ENERGY COMMISSION OF CHILE (CNE)
63	Supreme Decree 14 (CDEC-SIC fees), dated February 2012	MINISTRY OF ENERGY OF CHILE
64	Decree 10 (Municipal Levy), dated January 1998	MUNICIPALITY OF CANELA
65	Land lease contract	PROJECT PROPONENT and INMOBILIARIA, INVERSIONES Y SERVICIOS PUNTA CANELA SAC
66	Price Indexes <a href="http://www.ine.cl/canales/chile_estadistico/estadisticas_precios/ipm/series_estadisticas/series_estadisticas.php">http://www.ine.cl/canales/chile_estadistico/estadisticas_precios/ipm/series_estadisticas/series_estadisticas.php</a>	CHILEAN STATISTICAL INSTITUTE (INE)

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VALIDATION REPORT  
"Punta Palmeras Wind Power Project"

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Reference	Document Name	Author/Competent Authority
67	Guidelines on common practice, version 02.0, dated 13 September 2012	CDM - EXECUTIVE BOARD
68	Installed plans in Chile <a href="http://www.cne.cl/estadisticas/energia/electricidad">http://www.cne.cl/estadisticas/energia/electricidad</a>	NATIONAL ENERGY COMMISSION OF CHILE (CNE)
69	Stakeholder CDM presentations	PROJECT PROPONENT
70	Stakeholder consultation Attendance list of fisherman association, dated 6 February 2014	PROJECT PROPONENT
71	Stakeholder consultation Attendance list of the utility Colbún, dated 14 February 2014	PROJECT PROPONENT
72	Stakeholder consultation Attendance list of Canela Municipality, dated 3 March 2014	PROJECT PROPONENT

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VALIDATION REPORT

"Punta Palmeras Wind Power Project"

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## **ANNEX 1: CDM VALIDATION PROTOCOL**

**VALIDATION PROTOCOL****PROJECT: "Punta Palmeras Wind Power Project"****PROJECT PARTICIPANT:****Punta Palmeras S.A.**

Validation Type	
<input checked="" type="checkbox"/> Validation of a Project Activity	
Validation Team:  Freddy Garro Flores – Chief Validator Marcelino Pellitero Martinez – Validator Richard Gonzales Toledo - Validator	
Version of this Validation Protocol: 02	Date: 2014/11/24

**Validation Protocol**

Project Title: Punta Palmeras Wind Power Project

Date of Completion: 2014/11/24

CHECKLIST TOPIC / QUESTION	MoV/Ref*	COMMENTS	Draft Conclusion	Final Conclusion
<b>A. GENERAL DESCRIPTION OF PROJECT ACTIVITY</b>				
<b>A.1. Approval</b>				
A.1.1 Have all the Parties involved in the project activity provided a written Letter of Approval of the project activity? Are they valid for the project activity?	DR I	<p>During the on site visit the audit team confirmed with the DNA representative that the approval process is ongoing.</p> <p><b>CAR 1: The Letter of Approval (LoA) of the project activity has not been provided. The project participant (PP) shall obtain the letter of approval from the DNA of the party involved in the project activity in accordance with the latest version of the CDM Project Standard (PS).</b></p> <p>The LoA has been provided by the PP. The audit team confirms that it is valid for the project activity.</p> <p><b>CAR is closed.</b></p>	<b>CAR 1</b>	OK
A.1.2 Do the Letters of Approval confirm that: <ul style="list-style-type: none"> <li>The Party is a Party to the Kyoto Protocol</li> <li>The participation is voluntary</li> <li>The CDM project activity contributes to the sustainable development (host Party)</li> <li>The title of the project activity is precise and coincides with the title included in the PDD</li> </ul>	DR	<p>The audit team confirms that:</p> <ul style="list-style-type: none"> <li>Chile is a Party to the Kyoto Protocol</li> <li>The participation is voluntary</li> <li>The CDM project activity contributes to the sustainable development (host Party).</li> <li>The title of the project activity is precise and coincides with the title included in the PDD</li> </ul>	<b>CAR 1</b>	OK
A.1.3 Has the Letter of Approval been obtained from the project participants or directly from the DNA? In case that it has been obtained from the project participant, how has its authenticity been assessed?	DR	The LoA has been provided by the PP. Validation team has confirmed the authenticity of the LoA based on that the contact person who signed the LoA is the same focal point of the UNFCCC web page.	<b>CAR 1</b>	OK
A.1.4. If LoA contains either additional specification or conditions of the project activity, then has the request for registration been based on the documents specified	DR	The audit team confirms that LoA does not contain either additional specification or conditions of the project activity.	<b>CAR 1</b>	OK

**Validation Protocol**

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in the LoA?				
<p>A.1.5. If the LoA references a specific version of the Validation Report or PDD and this version cannot be submitted, then has either of the following been submitted?</p> <p>a) a statement indicating final LoA has not been received, or</p> <p>b) an updated Validation Report/ PDD</p>	DR	The audit team confirms that LoA does not reference a specific version of the Validation Report or PDD.	<b>CAR 1</b>	OK
<b>A.2. Authorization of Project participants</b>				
A.2.1. Is the form of required for the indication of project participants correctly applied in the PDD?	DR	Yes, the required form for the indication of the PP is correctly stated in section A.4 of the PDD.	OK	OK
A.2.2. Has each project participant been authorized in a letter of approval by at least one Party involved?	DR	The audit team confirms that the project participant Punta Palmeras S.A. has been authorized by the DNA of Chile.	<b>CAR 1</b>	OK
A.2.3. Is all information on participants / Parties provided in consistency with details provided by further chapters of the PDD (in particular annex 1)?	DR	Yes, the information of the PP is consistent in the entire PDD.	OK	Ok
A.2.4. Are any other project participants approved but not listed in the PDD?	DR	No, the only PP listed in the PDD is "Punta Palmeras S.A."	OK	Ok
<b>A. 3. Modalities of communication</b>				
A.3.1. Has the corporate and personal identity of all project participants and focal points included in the MoC statement been validated? Have the signatures and employment status been checked?	DR	<b>CAR 2: The Modalities of communication (MoC) of the project activity has not been provided. The PP shall define for the project activity his modalities of communication with the CDM Board and present them in a Modalities of communication statement (MoC statement), with the content indicated in the latest version of PS.</b>	<b>CAR 2</b>	OK

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<p>This has been validated through:</p> <p>(a) Directly checking evidence for corporate, personal identity and other relevant documentation;</p> <p>(b) Notarized documentation; or</p> <p>(c) Written confirmation from the project participant or the coordinating/managing entity that submits to it the MoC statement that all corporate and personal details, including specimen signatures, are valid and accurate. In this case, the official who signed the written confirmation (if a different person than the signatory in the MoC) is duly authorized to do so.</p>		<p>The MoC has been provided.</p> <p><b>CAR is closed.</b></p> <p>The audit team has validated the corporate and personal identity of the PP and focal point against Written confirmation from the project participant. Validation team concludes that all corporate and personal details, including specimen signatures, are valid and accurate.</p>		
A.3.2. Has the MoC statement been received from the PP with whom the DOE has a contractual relationship?	DR	Yes, the MoC statement has been provided by the PP.	<b>CAR 2</b>	OK
A.3.3. In the case of a CDM PoA, has the MoC statement been received from the coordinating/managing entity?	DR	Not applicable.	N/A	N/A
<p>A.3.4 Has the MoC statement been correctly completed and duly authorized?</p> <p>(a) The latest version of the form "Modalities of Communication statement" (F CDM MOC) has been used;</p> <p>(b) The information required as per the F-CDM-MOC, including its annex 1, is correctly completed;</p> <p>(c) The project participant's authorized signatories</p>	DR	The audit team verified that the MoC statement has been correctly completed and duly authorized as per the latest version.	<b>CAR 2</b>	OK

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signing the F-CDM-MOC correspond to the project participant's authorized signatories included in F-CDM-MOC, annex 1.				
<b>A.4. Project Design Document</b>				
A.4.1. Does the used project title clearly enable to identify the unique CDM project activity? Is it consistent in all section of the PDD and in all documents?	DR	Yes, the project title "Punta Palmeras Wind Power Project" clearly identifies the project activity and is consistent in the entire PDD.	OK	OK
A.4.2. Is there any indication concerning the version number and the date of the version?	DR	Yes, the PDD published for GSC is version 01 dated on 10 March 2014.  Finally, the version and date of the final PDD is clearly indicated.	OK	OK
A.4.3. Is this consistent with the time line of the project's history?	DR	Yes, the date of the PDD is consistent with the timeline stated in section B.5 of the PDD.	OK	OK
A.4.4. Is the PDD prepared in accordance with the latest template and requirements from the CDM Executive Board?	DR	During the validation process the PP has updated the PDD form to the latest version (CDM-PDD –FORM). In addition, the instructions for filling out the project design document form for CDM project activities has been used by the PP.	OK	OK
A.4.5. Has the PDD been published for Global Stakeholder Consultation (GSC) in UNFCCC website?	DR	Yes, the PDD was published for GSC on 12 March 2014.	OK	OK
A.4.6. Have there been any comments during the GSC process?	DR	No comments were received.	OK	OK
A.4.7. Have they been correctly addressed by the validation team?	DR	N/A.	N/A	N/A
<b>A.5. Description of the project activity</b>				
The PDD (section A.1) shall contain a clear description of the project activity that provides the reader with a clear understanding of the precise nature of the project activity.				
A.5.1. Is the description delivering a transparent	DR	Yes, the purpose of the project activity is to generate clean electricity from renewable wind resources. The total installed	OK	OK



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overview of the project activities?  Does the description of the proposed CDM project activity as contained in the PDD sufficiently cover all relevant elements? Is it accurate and does it provide the reader with a clear understanding of the nature of the proposed CDM project activity?	I	capacity of this project activity is 45 MW from 15 WTGs, each with a capacity of 3 MW. The electricity generated will be supplied to the Central Interconnected System (Sistema Interconectado Central - SIC).  The audit team confirms that the description contained in the PDD is accurate and provides a clear understanding of the nature of the project activity.  During the on site visit, the audit team confirmed that the project activity consist of a 45 MW wind power plant connected to the SIC.		
A.5.2. What proofs are available for demonstrating that the project description is in compliance with the actual situation or planning?	DR	The project description is in compliance with the following evidence provided by the PP: <ul style="list-style-type: none"> <li>• Technical offer presented to the Tender</li> <li>• Environmental Impact Assessment Evaluation</li> <li>• Interconnection point PPA</li> </ul>	OK	OK
A.5.3. Is the information provided by these proofs consistent with the information provided by the PDD?	DR	<b>CL 1: The PP has mentioned in the PDD a second phase of the wind power plant. The PP is requested to clarify if the second phase of 21 MW is considered as part of the proposed project activity.</b>  The information provided in the PDD has been clarified. <b>CL is closed.</b>  The audit team confirms that description is in accordance with technical evidence provided by the PP.	<b>CL 1</b>	OK
A.5.4. Has the validation team conducted a physical site inspection to confirm the description of the PDD? If not, justify.	DR	The on site visit was carried out from 28 to 29 April 2014.	OK	OK
A.5.5. If the proposed CDM project activity involves the alteration of an existing installation or process, does the	DR I	The proposed project activity does not involve the alteration of an existing installation. Prior to the implementation of the project activity, no renewable power project was operated at the	OK	OK

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project description clearly state the differences resulting from the project activity compared to the pre-project situation?		project site. During the on site visit, the audit team confirmed that the project activity is a new facility.		
A.5.6. In the case of greenfield project activity, is the project design described sufficiently by means of specifications, drawings and manuals?	DR	Yes, the project design has been sufficiently described in accordance with the following technical specification: <ul style="list-style-type: none"> <li>• Technical offer presented to the Tender</li> <li>• Environmental Impact Assessment Evaluation</li> <li>• Interconnection point PPA</li> <li>• DesignLiveTime_GL</li> <li>• SpecificationsTurbine_AccionaWindPower</li> </ul>	OK	OK
A.5.7. Does the PDD explain how the proposed project activity reduces greenhouse gas emissions (i.e. what type of technology is being employed, what measures are undertaken as part of the project activity, etc)?	DR	Yes, the PDD states that the electricity generated by the project activity will displace electricity from the national electricity grid, supplied partly from fossil fuels, resulting in a reduction in greenhouse gas (GHG) emissions.	OK	OK
<b>A.6. Technical description of the project activity</b> The PDD (section A.2 and A.3) shall contain a clear description of the project activity that provides the reader a clear understanding of the technical aspects of its implementation.				
<i>A.6.1. Location of the project activity</i>				
A.6.1.1. Does the information provided on the location of the project activity allow for a clear identification of the site(s)? Are the latitude and longitude on the site indicated (decimal points)?	DR	The project activity is located at Canela community, Choapa Province, Region IV of Coquimbo. During the on site visit, the audit team confirmed the geographic coordinates of the project. <b>CL 2: The geographical coordinates stated in the PDD are not clear. The PP is requested to clarify to which facility of the project activity correspond the geographic coordinates indicated</b>	<b>CL 2</b>	OK

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		<b>in section A.2.4 of the PDD.</b> The geographical coordinates stated in the PDD correspond to the project substation. <b>CL is closed.</b>		
A.6.1.2. How is it ensured and/or demonstrated that the project proponents can implement the project at this site (ownership, licenses, contracts etc.)?	DR	The PP has obtained the following licenses and contracts: <ul style="list-style-type: none"> <li>• Power Purchase Agreement with Colbun</li> <li>• Engineering, Procurement and Construction Contract</li> <li>• EIA Approval</li> <li>• Authorization of civil works of Municipality of Canela</li> </ul>	OK	OK
<i>A.6.2. Category of the project activity</i>				
A.6.2.1. Does the project qualify as a small scale CDM project activity as defined in paragraph 6 (c) of decision 3/CMP.1 on the modalities and procedures for the CDM?	DR	No, the project activity is qualified as large scale.	OK	OK
A.6.2.2. To which category(ies) does the project activity belong to? Is this category correctly identified and indicated?	DR	The project activity corresponds to sectoral Scope: 1; Energy industries (renewable/non renewable sources).	OK	OK
A.6.2.3. Does proposed project activity confirm to one of the project categories defined for small scale CDM project activities?	DR	N/A	N/A	N/A
A.6.2.4. In the case of a small scale project activity, is it justified that it is not a debundled component of a larger project activity?	DR	N/A	N/A	N/A

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A.6.2.5. In case of small scale project activities, is the estimate of emissions reductions increasing during the crediting period?  In affirmative case, have project participants demonstrated in the CDM-SSC-PDD that the project activity characteristics are defined in a way that precludes project activities to go beyond the limits for SSC Project activities (as stipulated in paragraph 3 of the General Guidelines to SSC CDM methodologies)?	DR	N/A	N/A	N/A
<i>A.6.3. Technology to be employed by the project activity</i>				
A.6.3.1. Does the description of the technology to be applied provide sufficient and transparent input/information to evaluate its impact on the greenhouse gas balance? And, is the explanation how the project will reduce greenhouse gas emission transparent and suitable?	DR	Yes, the description of the technology is sufficient and transparent in accordance with the technical specification provided by the PP.  The audit team confirms that the PDD states an explanation of how the project will reduce greenhouse gas emission in a transparent and suitable manner.	OK	OK
A.6.3.2. Does the project require extensive initial training and maintenance efforts in order to be carried out as scheduled during the project period? If so, does the project make provisions for meeting training and maintenance needs?	DR	The project participant has signed engineering, Procurement and Construction Contract (EPC contract).	OK	OK
A.6.3.3. Is a schedule available for the implementation of the project and are there any risks for delays? Is the	DR	Yes, the PP has provided a Planification Chart which is consistent with the starting date of the crediting period.	OK	OK

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schedule consistent with the starting date of the crediting period?				
<i>A.6.4. Estimated amount of emission reductions over the chosen crediting period</i>				
A.6.4.1. Is the form required for the indication of projected emission reductions correctly applied?	DR	Yes, the form is correctly applied.	OK	OK
A.6.4.2. Are the figures provided consistent with other data presented in the PDD?	DR	Yes, figures are consistent in the entire PDD.	OK	OK
<i>A.6.5. Public funding of the project activity</i>				
A.6.5.1. In case of public funding from Annex I Parties, is it confirmed that such funding does not result in a diversion of official development assistance?	DR	No public funding is considered. During the on site visit, the audit team confirmed that the project activity is a private initiative.	OK	OK
A.6.5.2. Is all information provided consistent with the details given in remaining chapters of the PDD (in particular annex 2)?	DR	Yes, it is consistent.	OK	OK
<b>B. BASELINE AND MONITORING METHODOLOGY</b>				
<b>B.1. Title and reference of the approved baseline and monitoring methodology</b>				
B.1.1. Are reference number, version number, and title of the approved baseline and monitoring methodology clearly indicated?	DR	Yes, the applied methodology ACM0002 "Grid-connected electricity generation from renewable sources" version 14.0 is indicated in the PDD.	OK	OK
B.1.2. Is the applied version the most recent one and / or	DR	The version of the applied methodology is not the latest one but	OK	OK

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is this version still applicable?		request for registration can be submitted until 26 January 2015.		
B.1.3. Does the PDD refer to the corresponding tools with their latest approved versions?	DR	<p>Yes, the PDD also refers to the following tools:</p> <ul style="list-style-type: none"> <li>• Tool to calculate the emission factor for an electricity system (Version 04.0)</li> <li>• Tool for the demonstration and assessment of additionality (Version 07.0.0)</li> </ul>	OK	OK
B.1.4. Have any sources of greenhouse gas emissions been identified by the DOE, within the project boundary following project implementation, which are expected to contribute more than 1% of the overall expected average annual emissions reductions, and which are not addressed by the applied methodology?	DR I	No other GHG emission have been identified by the audit team during the on site visit.	OK	OK
<b>B.2. Applicability of the selected methodology to the project activity</b>				
B.2.1. Are the chosen tools considered applicable in accordance with the design of the project and the provisions of the applied methodology?	DR	Yes, the chosen "Tool to calculate the emission factor for an electricity system" and "Tool for the demonstration and assessment of additionality" are considered applicable to the project activity.	OK	OK
B.2.2. Is the choice of the methodology correctly justified by the PDD and is the project in conformance with all applicability criteria of the applied methodology and tools?	DR	<p>Yes, the PDD state that methodology is applicable to the project activity since it is a new grid connected wind based renewable energy power plant connected to the Central Interconnected System-SIC.</p> <p>In addition, each applicability condition of the methodology has been justified in section B.1 of the PDD.</p>	OK	OK
B.2.3 Has been applied the specific guidance provided by the CDM Executive Board in respect to the approved methodology?	DR	Yes, it is.	OK	OK

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B.2.4. Is the evidence provided to the validation team enough to prove that all applicability criteria are completely met?	DR	Yes, technical information has been provided by the PP and the audit team confirmed this information during the on site visit.	OK	OK								
B.2.5. In the case of project activities consisting in different sites or implementation phases, are all applicability criteria met for all the sites and phases?	DR	The audit team confirms that the project activity does not consist in different sites or implementation phases.	CL 1	OK								
Fill in the required amount of sub checklists for applicability criteria as given by the methodology applied and comment at least every line answered with “No”												
B.2.6. Criterion 1 – The project activity is the installation, capacity addition, retrofit or replacement of a power plant/unit of one of the following types: hydro power plant/unit (either with a run-of-river reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit;	DR I	<table><tr><th>Applicability checklist</th><th>Yes/No</th></tr><tr><td>Criterion discussed in the PDD?</td><td>Yes</td></tr><tr><td>Evidence provided?</td><td>Yes</td></tr><tr><td>Compliance verified?</td><td>Yes</td></tr></table> The audit team confirmed that the project activity is the installation of a new wind power project at site where no renewable power plant was operated prior the project activity in accordance with technical information provided by the PP and visual inspection during the on site visit.	Applicability checklist	Yes/No	Criterion discussed in the PDD?	Yes	Evidence provided?	Yes	Compliance verified?	Yes	OK	OK
Applicability checklist	Yes/No											
Criterion discussed in the PDD?	Yes											
Evidence provided?	Yes											
Compliance verified?	Yes											
B.2.7. Criterion 2 – In the case of capacity additions, retrofits or replacements (except for wind, solar, wave or tidal power capacity addition projects which use Option 2: on page 16 to calculate the parameter EGP <sub>j,y</sub> ): the existing plant started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no	DR I	<table><tr><th>Applicability checklist</th><th>Yes/No</th></tr><tr><td>Criterion discussed in the PDD?</td><td>Yes</td></tr><tr><td>Evidence provided?</td><td>Yes</td></tr><tr><td>Compliance verified?</td><td>Yes</td></tr></table>	Applicability checklist	Yes/No	Criterion discussed in the PDD?	Yes	Evidence provided?	Yes	Compliance verified?	Yes	OK	OK
Applicability checklist	Yes/No											
Criterion discussed in the PDD?	Yes											
Evidence provided?	Yes											
Compliance verified?	Yes											

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capacity expansion or retrofit of the plant has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.		Not applicable since the project activity is a new grid connected wind power project in accordance with technical information provided by the PP and visual inspection during the on site visit.										
<p>B.2.8. Criterion 3 –</p> <p>In case of hydro power plants, one of the following conditions must apply:</p> <p>(a) The project activity is implemented in an existing single or multiple reservoirs, with no change in the volume of any of reservoirs; or</p> <p>(b) The project activity is implemented in an existing single or multiple reservoirs, where the volume of any of reservoirs is increased and the power density of each reservoir, as per the definitions given in the project emissions section, is greater than 4 W/m<sup>2</sup>; or</p> <p>(c) The project activity results in new single or multiple reservoirs and the power density of each reservoir, as per the definitions given in the project emissions section, is greater than 4 W/m<sup>2</sup>.</p>	DR I	<table><tr><th>Applicability checklist</th><th>Yes/No</th></tr><tr><td>Criterion discussed in the PDD?</td><td>Yes</td></tr><tr><td>Evidence provided?</td><td>Yes</td></tr><tr><td>Compliance verified?</td><td>Yes</td></tr></table> <p>Not applicable since the project activity is a new grid connected wind power project in accordance with technical information provided by the PP and visual inspection during the on site visit.</p>	Applicability checklist	Yes/No	Criterion discussed in the PDD?	Yes	Evidence provided?	Yes	Compliance verified?	Yes	OK	OK
Applicability checklist	Yes/No											
Criterion discussed in the PDD?	Yes											
Evidence provided?	Yes											
Compliance verified?	Yes											
<p>B.2.9. Criterion 4 –</p> <p>In case of hydro power plants using multiple reservoirs where the power density of any of the reservoirs is lower than 4 W/m<sup>2</sup> all the following conditions must apply:</p> <p>(a) The power density calculated for the entire project activity using equation (5) is greater than 4 W/m<sup>2</sup>;</p> <p>(b) Multiple reservoirs and hydro power plants located at the same river and where are designed together to function as an integrated project that collectively constitute the generation capacity of the combined power plant;</p> <p>(c) Water flow between multiple reservoirs is not used by any other hydropower unit which is not a part of the project activity;</p>	DR I	<table><tr><th>Applicability checklist</th><th>Yes/No</th></tr><tr><td>Criterion discussed in the PDD?</td><td>Yes</td></tr><tr><td>Evidence provided?</td><td>Yes</td></tr><tr><td>Compliance verified?</td><td>Yes</td></tr></table> <p>Not applicable since the project activity is a new grid connected wind power project in accordance with technical information provided by the PP and visual inspection during the on site visit.</p>	Applicability checklist	Yes/No	Criterion discussed in the PDD?	Yes	Evidence provided?	Yes	Compliance verified?	Yes	OK	OK
Applicability checklist	Yes/No											
Criterion discussed in the PDD?	Yes											
Evidence provided?	Yes											
Compliance verified?	Yes											



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<p>(d) Total installed capacity of the power units, which are driven using water from the reservoirs with power density lower than 4 W/m<sup>2</sup>, is lower than 15 MW;</p> <p>(e) Total installed capacity of the power units, which are driven using water from reservoirs with power density lower than 4 W/m<sup>2</sup>, is less than 10 per cent of the total installed capacity of the project activity from multiple reservoirs.</p>												
<p>B.2.10. Criterion 5 –</p> <p>The methodology is not applicable to the following:</p> <p>(a) 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;</p> <p>(b) Biomass fired power plants;</p> <p>(c) A hydro power plant that results in the creation of a new single reservoir or in the increase in an existing single reservoir where the power density of the power plant is less than 4 W/m<sup>2</sup>.</p>	<p>DR I</p>	<table><tr><th>Applicability checklist</th><th>Yes/No</th></tr><tr><td>Criterion discussed in the PDD?</td><td>Yes</td></tr><tr><td>Evidence provided?</td><td>Yes</td></tr><tr><td>Compliance verified?</td><td>Yes</td></tr></table> <p>The project activity is a new grid connected wind power project in accordance with technical information provided by the PP and visual inspection during the on site visit.</p>	Applicability checklist	Yes/No	Criterion discussed in the PDD?	Yes	Evidence provided?	Yes	Compliance verified?	Yes	<p>OK</p>	<p>OK</p>
Applicability checklist	Yes/No											
Criterion discussed in the PDD?	Yes											
Evidence provided?	Yes											
Compliance verified?	Yes											
<p>B.2.11. Criterion 6 –</p> <p>In the case of retrofits, 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</p>	<p>DR I</p>	<table><tr><th>Applicability checklist</th><th>Yes/No</th></tr><tr><td>Criterion discussed in the PDD?</td><td>Yes</td></tr><tr><td>Evidence provided?</td><td>Yes</td></tr><tr><td>Compliance verified?</td><td>Yes</td></tr></table>	Applicability checklist	Yes/No	Criterion discussed in the PDD?	Yes	Evidence provided?	Yes	Compliance verified?	Yes	<p>OK</p>	<p>OK</p>
Applicability checklist	Yes/No											
Criterion discussed in the PDD?	Yes											
Evidence provided?	Yes											
Compliance verified?	Yes											

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generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance".		The project activity is a new grid connected wind power project in accordance with technical information provided by the PP and visual inspection during the on site visit.		
B.2.12. Was there a request for clarification, revision or deviation made for the adopted methodology in relation to the proposed project activity?  If so, were the correct procedures provided by the CDM EB followed?	DR	No, there was not a request for clarification, revision or deviation made of the applied methodology.	OK	OK
<b>B.3. Description of the Project Boundary</b>				
B.3.1 Are all the sources and gases included in the project boundary of the project activity (baseline scenario, project scenario and leakage) in accordance with the applied methodology?	DR I	Yes, all the sources and gases of the project activity have been included in the project boundary.	OK	OK
B.3.2. Are the inclusion or exclusion of the sources of gases correctly justified?	DR	Yes, the inclusion or exclusion of the sources of gases has been justified in the PDD.	OK	OK
B.3.3. Do the spatial and technological boundaries as verified on-site comply with the discussion provided by the PDD?	DR I	Yes, the project boundary has been verified on site.	OK	OK
B.3.4. In case of grid connected electricity projects, is the	DR	Yes, the Central Interconnected System (SIC) has been identified	OK	OK

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relevant grid correctly identified in accordance with EB guidance and the underlying methodology?	I	in the PDD in accordance with the applied methodology and tools.		
<b>B.4. Description of the baseline scenario identification</b>				
B.4.1. Is the baseline scenario clearly described?	DR	Yes, the PDD clearly describes that the baseline is the electricity delivered to the grid by the project activity that 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"	OK	OK
B.4.2. Have there been other alternative scenarios considered? Is it justified the selected scenario as the most likely one?	DR	No, the only baseline scenario considered by the applied methodology has been selected.	OK	OK
B.4.3. Does the PDD follow the steps to determine the baseline scenario required by the methodology?	DR	Yes, it is.	OK	OK
B.4.4. Has the baseline scenario been determined using conservative assumptions where possible?	DR	Yes, it is.	OK	OK
B.4.5. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies? ( <i>Note: refer Annex 3 EB 22</i> ). Are they listed in the PDD?	DR	Yes, the baseline scenario has been stated in accordance with national laws and regulations.  The main regulatory framework of the electric sector has been listed in section B.5 of the PDD.	OK	OK

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B.4.6 If alternatives are excluded:  a.- Is sufficient evidence/ justification provided to support every exclusion of alternatives? Is it reasonable?  b.- Is it shown that at least one credible and feasible alternative does not face a barrier? Is this reasonable?	DR	According to the applied methodology there is only one baseline alternative.	OK	OK
B.4.7 Is the baseline scenario determination compatible with the available data and is all literature and sources clearly referenced?	DR	Yes, all sources have been referenced in the PDD.	OK	OK
<b>B.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered CDM project activity (assessment and demonstration of additionality):</b>				
B.5.1 Is the start date defined in accordance with the "Glossary of CDM terms"? What evidence is provided to verify that this was the official start date? Is this considered reliable and reasonable?	DR	The starting date of the project activity has been established on 21/06/2013.  The main milestones of the project have been addressed in the PDD and appropriate and reliable evidence has been provided	OK	OK
B.5.2 Is it a new project activity (start date on or after August 2008) or an existing project?	DR	It is a new project activity. The start date of the project activity is after August 2008.	OK	OK
B.5.3 For a new project which does not require a new methodology and has not published its PDD for stakeholder comments prior to the start date, then:  a. Have the project proponents informed the DNA and/or UNFCCC secretariat in writing? How has this notification been verified? (i.e. confirmation from the	DR	The prior consideration has been demonstrated according to paragraph 33 of the CDM project standard version 07.0 and evidence has been provided to DOE.  The Project Participant informed the DNA on 27/09/2013 by mail and UNFCCC secretariat acknowledged the receipt of the communication of the prior consideration on 01/10/2013, both notifications were made within 6 months of the project activity start date, on 21/06/2013.	OK	OK

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DNA or UNFCCC)  b. Was the notification made within 6 months of the project activity start date?  c. Does the letter/ notification indicate the precise geographic location and provide a brief description of the proposed project?  d. Have the project proponents informed the DNA and/ or UNFCCC secretariat of the progress of the project activity every subsequent two years after the initial notification?				
B.5.4 For an existing project which has a start date prior to the publication of the PDD for global stakeholder comments, has the project proponent provided the following:  a. Evidence of awareness of the CDM prior to the project activity start date and that the benefits of the CDM were a decisive factor in the decision to proceed with the project? (e.g. Board minutes, notes etc) Is this sufficient?  b. Reliable evidence that demonstrates real actions were taken to secure CDM status in parallel with the project's implementation? (e.g. contracts with consultants for CDM/PDD/methodology services, ERPAs, correspondence with CER buyers, DOEs, DNAs or the UNFCCC). Is this sufficient?	DR	Not applicable. The project is a Greenfield project.	N/A	N/A

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B.5.5. Is the project additionality assessed according to the applicable methodology? Detail the Tool used to demonstrate the Additionality of the project activity.	DR	Yes, the additionality has been assessed according to the latest version of the "Tool for the demonstration and assessment of additionality".	OK	OK
B.5.6. In the case of a small scale project activity, is the additionality justified according to the applicable CDM requirements specific for small scale project activities?	DR	Not applicable. The project is a large scale project.	N/A	N/A
B.5.7 Have realistic and credible alternatives been identified providing comparable outputs or services?	DR	Yes, realistic and credible alternatives have been identified.	OK	OK
B.5.8. Is the project activity without CDM included in these alternatives?	DR	Yes, it is included.	OK	OK
B.5.9. Is a discussion provided for all identified alternatives concerning the compliance with applicable laws and regulations?	DR	Yes, it is provided.	OK	OK
B.5.10. In case of using a FSR as a basis of the decision, is this analysis made in accordance with the EB Guidance?	DR	Not applicable. The project activity does not use a FSR as a basis of the decision.	N/A	N/A
B.5.11. In case the PDD argues that specific laws are not enforced in the country or region: Is evidence available concerning that statement?	DR	Not applicable since there is no reference to not enforced laws.	N/A	N/A
B.5.12. In case of applying step 2 / investment analysis of the additionality tool: Is the analysis method	DR	Yes, the analysis method has been identified appropriately.	OK	OK

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identified appropriately?				
<p>B.5.13. In case of Option I (simple cost analysis): Is it demonstrated that the activity produces no economic benefits other than CDM income?</p> <p>a. Are the assumptions for all alternatives compared consistent (including discount rates if applicable)?</p>	DR	Not applicable since Option I is not considered in the analysis.	N/A	N/A
<p>B.5.14. In case of Option II (investment comparison analysis): Is the most suitable financial indicator clearly identified (IRR, NPV, cost benefit ratio, or (levelized) unit cost)?</p> <p>a. Are the assumptions for all alternatives compared consistent (including discount rates if applicable)?</p>	DR	Not applicable since Option II is not considered in the analysis.	N/A	OK
<p>B.5.15. In case of Option III (benchmark analysis): Is the most suitable financial indicator clearly identified (IRR, NPV, cost benefit ratio, or (levelized) unit cost)?</p> <p>a. If an IRR indicator is used, is the choice of benchmark appropriate to the type of IRR calculated? b. Is the choice of benchmark or discount rate justified with supporting evidence for its appropriateness?</p>	DR	<p>Project IRR post-tax in real terms has been identified as financial indicator.</p> <p>Yes, the benchmark of 10% in real terms provided by Chilean government for transmission and generation activities is considered appropriate and reliable evidence has been provided</p>	OK	OK
B.5.16 If risk premiums are applied in the development of the benchmark, are they reasonable and justified?	DR	Not applicable	N/A	N/A
B.5.17 Do the project participants justify the period of	DR	A 20 year period of assessment has been considered in the PDD which is considered appropriate according to the 20 year	OK	OK

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assessment in the context of the underlying project activity?		expected operational lifetime of the project activity.		
<p>B.5.18 Regarding the assessment:</p> <p>a. Complete the following time periods (years):</p> <p>- Period of assessment:</p> <p>- Crediting period:</p> <p>- Technical lifetime of the project activity:</p> <p>b. Are these periods consistent with paragraph 3 of the "Guidelines on the assessment of investment analysis (version 05)".</p> <p>c. Is the period of assessment appropriate?</p>	DR	<p>Period of assessment: 20 years</p> <p>Crediting period: 10 years</p> <p>Technical lifetime: 20 years</p> <p>Above periods are consistent with paragraph 3 of Guidelines on the assessment of investment analysis version 05</p> <p>Yes, the period of assessment is appropriate.</p>	OK	OK
B.5.19 Is any residual value of the project activity assets included in the analysis? Are residual value calculations reasonable and justified and consistent with local accounting rules or international best practice?	DR	Residual value is considered zero in the analysis which is consistent with local accounting rules.	OK	OK
B.5.20 Are depreciation and other non-cash items related to the project activity deducted from net profits used for calculating the financial indicator (e.g. IRR, NPV)?	DR	Yes, they have been deducted in estimating gross profits but they have been added back for the purpose of calculating the project IRR post-tax	OK	OK
B.5.21 Is the treatment of taxation consistent with the chosen benchmark? (i.e. taxation should only be treated as an expense in the IRR/NPV calculation if the chosen	DR	Yes, it is consistent.	OK	OK



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benchmark is intended for post-tax calculations?				
<p>B.5.22 Recommended project: If the implementation of the project ceased and then recommenced due to consideration of the CDM, then:</p> <p>a. Are input values valid and applicable at the time of making the decision to recommence the project?</p> <p>b. Are capital costs incurred prior to the revised project activity start date input as the recoverable value of the assets (limited to the potential reuse/ resale of tangible assets)?</p> <p>c. How has the fair market value of the capital expenditures been calculated and validated? (e.g. by chartered specialists). Is this fair market value reasonable and justified?</p> <p>d.- Is the book value as well as the expectation of the potential profit or loss included in the fair value calculation?</p>	DR	Not applicable. The project activity is not a recommenced project.	N/A	N/A
B.5.23 Has the project participant supplied unprotected and traceable spreadsheet versions of all investment analysis?	DR	Yes, unprotected and traceable spreadsheets have been provided.	OK	OK
B.5.24 From the investment analysis provided, is it possible to reproduce the results?	DR	Yes, it is possible.	OK	OK

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B.5.25 Costs of financing expenditures (i.e. loan repayments and interest) should only be included in the cashflow as costs if an equity IRR is used, not if a project IRR is used.  Are interest payments taken into account in the calculation of tax, if the benchmark is for after-tax comparison?	DR	Not applicable. The project proponent uses Project IRR.	N/A	N/A
B.5.26 If an Equity IRR has been used, is the debt portion of the investment cost included as a cash outflow?  (i.e. as well as interest costs and principle repayments – double counting)	DR	Not applicable. The project proponent uses Project IRR.	N/A	N/A
B.5.27 Sensitivity analysis:  a. Are all variable and critical costs and revenues in the analysis included in the sensitivity analysis?  b. Is the assessed range of variations reasonable in light of the reliability of the estimated input values and the likely range?  c. Is the sensitivity analysis possible to reproduce?	DR	All critical costs and revenues are included in the sensitivity analysis. The assessed range of variation is reasonable and the sensitivity analysis is possible to reproduce.	<b>CAR 3</b> <b>CAR 4</b> <b>CAR 5</b>	OK
B.5.28 Are <b>input values</b> used in all the investment analysis valid and applicable at the time of the investment decision taken by the project participant?	DR	<b>CAR 3: Evidence about the appropriateness of the input values used (techno-economic parameters and assumptions) in the investment analysis shall be provided, i.e. tax rate used is not appropriate and firm capacity shall be determined according to the methodology established by CDEC-SIC.</b>	<b>CAR 3</b>	OK

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Is the time of investment decision appropriately justified by evidences?		Appropriate and reliable evidence has been provided. <b>CAR 3 is closed.</b> Yes, they are valid and applicable. The investment decision is appropriately justified.		
B5.29 Does the PDD present the investment analysis in a transparent manner and provide all the relevant assumptions (preferably in the CDM-PDD form, or in separate appendices to the CDM-PDD)?	DR	<b>CAR 4: Evidence and disaggregation of the called "Recurrent operational costs" shall be provided and analyzed in the PDD and financial spreadsheet and sensitivity analysis.</b> Recurrent operational costs have been disaggregated and analyzed in the final PDD and financial spreadsheet and appropriate and reliable evidence has been provided. <b>CAR 4 is closed.</b> Yes, the investment analysis is presented in a transparent manner.	<b>CAR 4</b>	OK
B.5.30 Have the listed input values been consistently applied in all calculations?	DR	Yes, they have been consistently applied.	<b>CAR 3</b> <b>CAR 4</b>	OK
B.5.31 Are all references made in the investment analysis correctly referenced/ sourced? Have these sources been verified?	DR	Yes, they are correctly referenced/ sourced and they have been verified. .	<b>CAR 3</b> <b>CAR 4</b>	OK
B.5.32 Have financial calculations been verified by: assessing all parameters and assumptions against the available evidence and expertise; crosschecking the parameters against 3rd party or publicly available sources; reviewing feasibility reports, public announcements and annual financial reports; assessing the correctness of computations and the sensitivity analysis?	DR	Yes, all the parameters and assumptions have been verified against available evidence and 3rd or public available sources	<b>CAR 3</b> <b>CAR 4</b>	OK

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B.5.33 Have values from a feasibility study report (FSR) approved by national authorities been used? If so:  a. Has the FSR been the basis of the decision to proceed with the investment in the project?  How has this been verified?  b. Are the values used in the PDD and associated annexes valid and consistent with the FSR?  c. At the time of the investment decision, are the input values from the FSR valid and applicable (based on specific local and sectoral expertise and knowledge)?	DR	Not applicable. The project activity does not use a FSR as a basis of the decision.	N/A	N/A
B.5.34. In case of applying step 3 (barrier analysis) of the additionality tool: Is a complete list of barriers developed that prevent the different alternatives to occur?	DR	Not applicable since barrier analysis has not been applied.	N/A	N/A
B.5.35. Do any such identified barriers have a clear and direct impact on the financial returns of the project activity? (these are not barriers and should be assessed in the investment analysis)	DR	Not applicable since barrier analysis has not been applied.	N/A	N/A
B.5.36 Are the identified barriers real and substantiated by independent sources of data such as relevant national legislation, surveys of local conditions and national or international statistics?	DR	Not applicable since barrier analysis has not been applied.	N/A	N/A

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B.5.37. Is it clearly explained how approval of the project in the CDM would enable the proposed project activity to surmount the barrier? Is the rationale reasonable and justified with evidence?	DR	Not applicable since barrier analysis has not been applied.	N/A	N/A
B.5.38. Does the review of relevant background information on the nature of the company(ies) and entity(ies) involved in the financing and implementation of the project sufficiently justify that the barriers related to the lack of access to capital, technologies and skilled labour are real?	DR	Not applicable, since barrier analysis has not been applied.	N/A	N/A
B.5.39 Has common practice analysis been undertaken? Mention the tool or guidelines applied for this analysis.	DR	Yes it has been undertaken as per the latest versions of the Tool for the demonstration and assessment of additionality and the Guidelines on common practice.	OK	OK
B.5.40 Is the geographical and temporal scope of the common practice analysis appropriate for the assessment related to the project activity's technology or industry type?  Which is the relevant geographical area assessed for the common practice analysis?	DR	<b>CAR 5: The selection of projects identified in the step 2 of the common practice analysis shall fulfill all the conditions required in the guidelines. Current selection identifies as similar project with different technologies and different energy sources.</b>  The final version of the PDD fulfills all the conditions required in the guidelines and appropriate evidence has been provided.  <b>CAR 5 is closed.</b>  Yes, the geographical and temporal scope of the analysis is appropriate.	<b>CAR 5</b>	OK
B.5.41 Have all similar projects regarding the same technology and industrial sector been included in the common practice analysis? Which are these projects? What sources of information have been used to assess	DR	Yes, all comparable projects have been included in the common practice analysis	<b>CAR 5</b>	OK

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the existence of similar projects? (Official sources, local and industry expertise).  If some projects have been excluded as non comparable or not similar, is the exclusion reasonable and justified?				
B.5.42 Have similar and operational projects other than CDM project activities been undertaken in the region?	DR	No other projects than CDM project activities have been undertaken in the region.	<b>CAR 5</b>	OK
B.5.43 Are these widely observed and commonly carried out?  If so:  a. How have the essential distinctions with the proposed CDM project activity been assessed?  b. Are such distinctions justified with sufficient evidence?  c. If inaccessibility of data is the reason why some projects have not been included in the analysis, is justification of this claim provided?	DR	No they are not commonly carried out.	<b>CAR 5</b>	OK
B.5.44 Overall, is the proposed CDM project activity considered common practice?	DR	No, the project activity cannot be considered common practice.	<b>CAR 5</b>	OK
B.5.45. Is it demonstrated/justified that the project activity is not a likely baseline scenario?	DR	Yes, it is demonstrated.	<b>CAR 3</b> <b>CAR 4</b> <b>CAR 5</b>	OK

B.6. Emissions reductions				
B.6.1. Explanation of methodological choices				
B.6.1.1. Is it explained how the procedures provided in the methodology are applied by the proposed project activity?	DR	Yes, the procedures provided by the methodology are properly described in the PDD and are correctly applied by the project activity.	OK	OK
B.6.1.2. Is every selection of options offered by the methodology correctly justified and is this justification in line with the situation verified on-site?	DR	Yes, options selected have been correctly justified according to the applied methodology.	OK	OK
B.6.1.3. Are the formulae required for the determination of emissions reductions correctly presented and used? (Open excel, traceability of data, etc)	DR	<p><b>CAR 6: Grid emission factor is not determined in accordance with applied methodology and tool. PP is requested to correct following inconsistencies:</b></p> <ul style="list-style-type: none"> <li>• Spreadsheet for Emission reduction calculation is not fully traceable and presents some undefined values.</li> <li>• Correct Justification for not using simple OM method (page 24 of PDD) shall be described; since the sum of low cost/must-run and no Low cost/must run sources totalize more than 100%.</li> <li>• It is not clearly described how was determined the intersection point for determining lambda value for calculating OM.</li> <li>• It not clearly described which power plants generations are considered as low-cost/must-run.</li> <li>• Build Margin is not properly determined: The parameters <math>AEG_{Total}</math> is not determined in accordance with applied tool. Therefore, <math>SET_{sample}</math> of power units considered in BM calculation are not properly determined.</li> </ul>	CAR 6	OK

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		<ul style="list-style-type: none"> <li>• There are some inconsistencies between NCV values listed in the PDD and evidence provided by CNE: i.e. LPG and Natural Gas.</li> <li>• Some values for the parameter <math>EF_{EL,m,y}</math> are overestimated. E.g. emission factor for the power plants: Newev Diesel-2010, San Isidro - 2011, Huasco TG - 2012, among others. Furthermore, measurement methods and procedures for determining this parameter shall clarify and described in relevant section of the PDD.</li> <li>• Source of data for the parameter <math>EF_{CO2,i,y}</math> is not correctly described in the PDD</li> </ul> <p>Grid emission factor spreadsheet and PDD, have been properly updated, taking into consideration previous comments. PDD refers properly to the evidence related to emission reduction calculation. Moreover, evidences and comments contained in the emission reduction calculation spreadsheet.</p> <p><b>CAR 6 is closed</b></p> <p>The updated spreadsheets for the calculation of the emission reductions have been provided to the validation team. The validation team considers that the formulae required are correctly presented and used.</p>		
B.6.1.4 Are all the data and assumptions listed in the PDD? Are they appropriate and do calculations result in a conservative estimate of emission reductions?	DR	In accordance with the evidences provided, the validation team considers that the data and assumptions listed are appropriate and calculations result in a conservative estimate of emission reductions.	<b>CAR 6</b>	OK
<i>B.6.2. Data and parameters that are available at validation</i>				
B.6.2.1. Is the list of parameters presented in chapter B.6.2 considered to be complete with regard to the requirements of the applied methodology? Is all the information required for each parameter included?	DR	Yes. The list of parameters presented in chapter B.6.2 is considered complete with regard to the requirements of the applied methodology and tool	<b>CAR 6</b>	OK



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B.6.2.2. Are all the data derived from official data sources or replicable records and have they been correctly quoted?	DR I	Data used for emission reductions calculations is publicly available in CDEC-SIC and CNE websites.	OK	OK
B.6.2.3. For parameter: <b><i>FC<sub>i,m,y</sub></i></b> a. Title in line with Methodology? b. Data unit correctly expressed? c. Appropriate description? d. Source clearly referenced? (and appropriate?) e. Correct value provided? f. Has this value been verified? g. Choice of data correctly justified? h. Measurement method correctly described? i. Purpose of data indicated?	DR	a. Yes b. Yes c. Yes d. Yes, data is provided by CNE (National Energy Commission) and dispatch centre yearbook CDEC-SIC. e. Yes f. Yes g. Yes h. Yes i. Yes	<b>CAR 6</b>	OK
B.6.2.3. For parameter: <b><i>NCV<sub>i,y</sub></i></b> a. Title in line with Methodology? b. Data unit correctly expressed? c. Appropriate description? d. Source clearly referenced? (and appropriate?) e. Correct value provided?	DR	a. Yes b. Yes c. Yes d. Yes, data is provided by CNE (National Energy Commission) in National Balance Energy Report e. Yes f. Yes g. Yes h. Yes	<b>CAR 6</b>	OK

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f. Has this value been verified? g. Choice of data correctly justified? h. Measurement method correctly described? i. Purpose of data indicated?		i. Yes		
B.6.2.3. For parameter: <b><i>EF<sub>CO2,i,y</sub></i></b> a. Title in line with Methodology? b. Data unit correctly expressed? c. Appropriate description? d. Source clearly referenced? (and appropriate?) e. Correct value provided? f. Has this value been verified? g. Choice of data correctly justified? h. Measurement method correctly described? i. Purpose of data indicated?	DR	a. Yes b. Yes c. Yes d. Yes, IPCC default values at the lower limit of the uncertainty at a 95 per cent confidence interval e. Yes f. Yes g. Yes h. Yes i. Yes	<b>CAR 6</b>	OK
B.6.2.3. For parameter: <b><i>EG<sub>m,y</sub></i></b> a. Title in line with Methodology? b. Data unit correctly expressed? c. Appropriate description? d. Source clearly referenced? (and appropriate?)	DR I	a. Yes b. Yes c. Yes d. Yes, data is provided by CNE (National Energy Commission) e. Yes f. Yes g. Yes	OK	OK

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e. Correct value provided? f. Has this value been verified? g. Choice of data correctly justified? h. Measurement method correctly described? i. Purpose of data indicated?		h. Yes i. Yes		
B.6.2.3. For parameter: <b><math>\eta_{m,y}</math></b> a. Title in line with Methodology? b. Data unit correctly expressed? c. Appropriate description? d. Source clearly referenced? (and appropriate?) e. Correct value provided? f. Has this value been verified? g. Choice of data correctly justified? h. Measurement method correctly described? i. Purpose of data indicated?	DR	a. Yes b. Yes c. Yes d. Yes, Default values, according to the tool to calculate grid emission factor. e. Yes f. Yes g. Yes h. Yes i. Yes	OK	OK
B.6.2.3. For parameter: <b><math>EF_{grid,CM,y}</math></b> a. Title in line with Methodology? b. Data unit correctly expressed? c. Appropriate description?	DR	a. Yes b. Yes c. Yes d. Yes, parameter based on tool to calculate the grid emission factor e. Yes	<b>CAR 6</b>	OK

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d. Source clearly referenced? (and appropriate?) e. Correct value provided? f. Has this value been verified? g. Choice of data correctly justified? h. Measurement method correctly described? i. Purpose of data indicated?		f. Yes g. Yes h. Yes i. Yes		
B.6.2.4. Will the data and parameters result in a conservative estimate of emissions reductions?	DR	Yes. In accordance with the evidence provided, the validation team considered the data and parameters will result in a conservative estimate of emissions reductions.	<b>CAR 6</b>	OK
<i>B.6.3 Calculation of GHG Emission Reductions – Baseline Emissions</i> <i>It is assessed whether the baseline emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>				
B.6.3.1 Are the calculations documented according to the approved methodology and in a complete and transparent manner?	DR	Yes. The calculations are according to the approved methodology and in a complete and transparent manner.	<b>CAR 6</b>	OK
B.6.3.2. Have conservative assumptions been used when calculating the baseline emissions?	DR	Yes. The validation team checked that the baseline emissions have been calculated using conservative assumptions.	<b>CAR 6</b>	OK
B.6.3.3 Are uncertainties in the baseline emission estimates properly addressed?	DR	Yes. The validation team checked that the uncertainties have been properly addressed.	<b>CAR 6</b>	OK
B.6.3.4. Is additional background information on baseline data provided in Appendix 4 of the PDD? Is this information consistent with data presented by	DR	Appendix 4 of the PDD includes a justification of the usage of CDEC-SIC information system data. The additional background information on baselines data provides is consistent with the other sections of the PDD.	<b>CAR 6</b>	OK

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other sections of the PDD?				
<b>B.6.4 Calculation of GHG Emission Reductions – Project Emissions</b> <i>It is assessed whether the project emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>				
B.6.4.1 Are the calculations documented according to the approved methodology and in a complete and transparent manner?	DR	N/A. The proposed project activity is a wind farm; therefore, project emissions are zero.	N/A	N/A
B.6.4.2. Have conservative assumptions been used when calculating the project emissions?	DR	N/A. The proposed project activity is a wind farm, project emissions are not considered	N/A	N/A
B.6.4.3 Are uncertainties in the project emission estimates properly addressed?	DR	N/A. The proposed project activity is a wind farm, project emissions are not considered	N/A	N/A
<b>B.6.5. Calculation of GHG Emission Reductions – Leakage</b> <i>It is assessed whether leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>				
B.6.5.1 Are the leakage calculations documented according to the approved methodology and in a complete and transparent manner?	DR	N/A According to the methodology applied, project activity does not need to consider leakage.	N/A	N/A
B.6.5.2. Have conservative assumptions been used when calculating the leakage emissions?	DR	N/A According to the methodology applied, project activity does not need to consider leakage.	N/A	N/A
B.6.5.3. Are uncertainties in the leakage emission	DR	N/A According to the methodology applied, project activity does not	N/A	N/A

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estimates properly addressed?		need to consider leakage.		
<i>B.6.6. Ex-ante calculation of emission reductions</i>				
B.6.6.1. Are the GHG calculations documented in a complete and transparent manner? Are all the calculations correct?	DR	Yes. The validation team checked that the GHG calculations are in a complete and transparent manner.	<b>CAR 6</b>	OK
B.6.6.2. Is the data provided in this section consistent with data as presented in other chapters of the PDD?	DR	The validation team checked that the data in the section is consistent with the data presented in other chapters.	<b>CAR 6</b>	OK
<i>B.6.7. Summary of the ex-ante estimation of emission reductions</i>				
B.6.7.1. Will the project result in fewer GHG emissions than the baseline scenario?	DR	The validation team checked that the project will result in a fewer GHG emissions than baseline scenario.	<b>CAR 6</b>	OK
B.6.7.2. Are the emissions reductions projected in line with the envisioned time schedule for the project' implementation and the indicated crediting period?	DR	The validation team checked that emissions reductions projected are in line with the time schedule for the project implementation and the indicated crediting period.	<b>CAR 6</b>	OK
<b>B.7. Application of the monitoring methodology and description of the monitoring plan</b>				
<i>B.7.1. Description of the monitoring plan</i>				
B.7.1.1 Is the monitoring plan documented according to the approved methodology and relevant tools and in a complete and transparent manner?	DR	The validation team checked that the monitoring plan documented is in accordance with using the methodology ACM0002 version 14.0 and the "Tool to calculate the emission factor for an electricity system".	<b>CAR 6</b>	OK
B.7.1.2. Does the monitoring methodology provide a consistent approach in the context of all parameters to be monitored and further information provided in the	DR	The validation team checked that the monitoring methodology provide a consistent approach.	<b>CAR 6</b>	OK

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PDD?				
B.7.1.3. Does the monitoring plan provide a clear description of the organization structure involved in monitoring activities and their responsibilities?	DR	Section B.7.3. of the PDD provided a clear description of the organization structure involved in monitoring activities.	<b>CAR 6</b>	OK
B.7.1.4. If applicable: Does appendix 5 provide useful information enabling a better understanding of the envisioned monitoring provisions?	DR	N/A PP has not completed appendix.	N/A	OK
B.7.1.5. Is the registration, monitoring, measurement and reporting procedure defined?	DR	Section B.7.3. of the PDD provided a clear description of registration, monitoring, measurement and reporting procedure involved in monitoring activities.	<b>CAR 6</b>	OK
<i>B.7.2 Compliance of the monitoring plan with the approved methodology</i>				
B.7.2.1 Is the list of parameters considered to be complete with regard to the requirements of the applied methodology? Are all of them clearly described in the monitoring plan and in accordance with the methodology and tools?	DR	Yes, there is only one parameter to be monitored, which is the net energy supplied to the grid ( <i>EGfacility</i> ). The audit team considers that it is in accordance with the applied methodology ACM0002 version 14.0 and the "Tool to calculate the emission factor for an electricity system".	OK	OK
B.7.2.2. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the emission reductions within the project boundary during the crediting period?		Yes. The validation team checked that the monitoring plan provides all relevant data necessary for the calculation of emission reductions.	<b>CAR 6</b>	OK
B.7.2.3. For parameter: <i>EGfacility</i> :	DR I	a. Yes b. Yes	OK	OK

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a. Title in line with methodology? b. Data unit correctly expressed? c. Parameter appropriately described? d. Source clearly referenced? e. Correct value provided for the purpose of PDD estimations? f. Has this value been verified? g. Measurement methods correctly described and in line with the methodology/tools? h. Correct reference to standards (i.e. for calibration and maintenance)? i. Indication of accuracy provided? j. QA/QC procedures appropriate and described? k. Purpose of data indicated?		c. Yes d. Yes e. Yes, net energy is estimated based on power plant capacity and load factor f. Yes, net energy is estimated based on power plant capacity and load factor g. Yes, during the crediting period the net energy will be registered by meters, which will be periodically calibrated and comply with local regulations. h. Yes, the meters will meet the requirements established by the grid operation (CDEC-SIC) i. Yes, the error of the meter shall not exceed 0.2% j. Yes, the energy will be double checked by receipts of electricity sales. k. Yes.		
<i>B.7.3 Implementation of the Monitoring Plan</i>				
B.7.3.1 Do the means of monitoring of each of the parameters included in the plan comply with the requirements of the methodology?	DR	Yes, the validation team has checked the means of monitoring, and concludes that it complies with the requirements of the methodology. All data gathered in the monitoring plan of the PDD provides sufficient information.	OK	OK
B.7.3.2. Is the measurement equipment described and deemed appropriate?	DR I	Yes, according to the PDD, there will be two meters, one working as main meter one another for check purposes. These meters will comply with local regulation, established by grid operator –	OK	OK



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		CDEC-SIC.		
B.7.3.3. Are procedures identified for maintenance of monitoring equipment and installations? Are provisions regarding the calibration intervals included in the monitoring plan?	DR I	Yes, the meter will comply with grid operator requirement. They will be periodically calibrated. Furthermore, PDD states that the meters will be 0.2% or higher accuracy class.	OK	OK
B.7.3.4. Is the measurement accuracy addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements or lack of data?	DR I	The measure equipment will be implemented according to grid operator requirements. According to the PDD, the class of the meters will be at least 0.2% or better.	OK	OK
B.7.3.5. Is the monitoring Plan sufficient to ensure the verification of a proper implementation of the monitoring plan?	DR	Yes. The monitoring plan is sufficient to ensure proper implementation of the monitoring. All data gathered in the monitoring plan of the PDD provides sufficient information for the estimation or measurement of emission reductions. Furthermore, the uncertainties and possible data adjustments are considered in the monitoring plan.	OK	OK
<b>C. DURATION OF THE PROJECT ACTIVITY / CREDITING PERIOD</b>				
<b>C.1. Duration of the project activity</b>				
C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable?	DR	The starting date is clearly defined and the operational lifetime is determined in accordance with <i>Guidelines On The Assessment Of Investment Analysis, version 05 (EB 62)</i> , which states that " <i>a minimum period of 10 years and a maximum of 20 years will be appropriate</i> "  Therefore, validation team considers reasonable the lifetime of 20 years for the project activity.	OK	OK
<b>C.2. Choice of the crediting period and related information</b>				
C.2.1. Is the assumed crediting period clearly defined and reasonable (renewable crediting period of max 7 years with potential for 2 renewals or fixed crediting	DR	The considered length of crediting period for the project activity is 10 years fixed and the starting date of crediting period is 01/01/2015 or date of registration (whichever is later)	OK	OK

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period of max. 10 years)? And, is the starting date of the crediting period corrected considered?				
<b>D. ENVIRONMENTAL IMPACTS</b>				
<b>D.1. Documentation on the analysis of the environmental impacts, including transboundary impacts</b>				
D.1.1. Has the analysis of the environmental impacts of the project activity been sufficiently described in the PDD?	DR I	The analysis of the environmental impact has been correctly described in the PDD in accordance with provided evidence by the PPs.	OK	OK
D.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if so, has an EIA been approved?	DR I	Yes, the environmental impact assessment is required by Chilean government.  Environmental Impact Assessment Evaluation had been developed by the project participant and it was approved by resolution N° 0122.	OK	OK
D.1.3. Will the project create any adverse environmental effects? Has any environmental impact identified as significant?	DR I	The project activity creates adverse environmental effects, but they are considered as not significant.	OK	OK
D.1.4. Are transboundary environmental impacts identified in the analysis?	DR I	No, they are not.	OK	OK
D.1.5. Does the project comply with any other environmental legislation in the host country?	DR I	Yes, the environmental impact assessment is required by Chilean government.  Environmental Impact Assessment Evaluation had been developed by the project participant and it was approved by resolution N° 0122.	OK	OK
<b>D.2. If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to support</b>				

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documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party.				
D.2.1. Have the identified environmental impacts been sufficiently addressed in the PDD?	DR	Yes, they are.	OK	OK
<b>E. STAKEHOLDERS' COMMENTS</b>				
<b>E.1. Brief description how comments by local stakeholders have been invited and compiled</b>				
E.1.1. Have relevant local stakeholders been consulted prior to the publication of the PDD? Is the exact date of the consultation process included in the PDD?	DR I	Yes, it is. The date is stated in the PDD.	OK	OK
E.1.2. Have appropriate media been used to invite comments by local stakeholders?	DR I	Yes. The stakeholders were invited by letters, which was verified during the on-site visit.	OK	OK
E.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	DR I	According to the Environmental Impact Assessment System procedures at the time of project evaluation, stakeholders should be duly informed. Therefore, project participant has been in permanent communication with the local stakeholders.)  Audit team concludes that the stakeholder consultation process has been carried out in accordance with requirements of the Host Party.	OK	OK
E.1.4. Is the undertaken stakeholder process that was carried out described in a complete and transparent manner?	DR I	Yes. Informational workshops and meetings with stakeholders are clearly described in the PDD.	OK	OK
<b>E.2. Summary of the comments received</b>				
E.2.1. Is a summary of the stakeholder comments received provided?	DR I	Yes. A summary of the stakeholders comments are described in the PDD	OK	OK

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Normalización y Certificación**E.3. Report on how due account was taken of any comments received**

E.3.1. Has due account been taken of any stakeholder comments received?

DR

The project participant has taken voluntary compromises and commitments with the community; they are listed in the PDD.

OK

OK

**E.4. Sampling**

E.4.1. Has sampling been applied as part of the validation activities? Explain where it has been applied.

DR

N/A

N/A

N/A

E.4.2. Has the standard for sampling currently in force been applied?

DR

N/A

N/A

N/A

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VALIDATION REPORT

"Punta Palmeras Wind Power Project"

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## **ANNEX 2: CERTIFICATES OF QUALIFICATION**

**CERTIFICATE OF QUALIFICATION**

**Subject:** Validation and Technical Review Team for “Punta Palmeras Wind Power Project”

Madrid, 24 November 2014

Hereby I confirm the following records of qualification, according with AENOR internal instruction “Validation, Verification and Certification of Clean Development Mechanism (CDM) project activities” IE-DTC-039, and in relation with the validation process of the above mentioned project activity:

Name: Freddy Garro Flores

CDM Chief Validator: Yes

CDM Validator: Yes

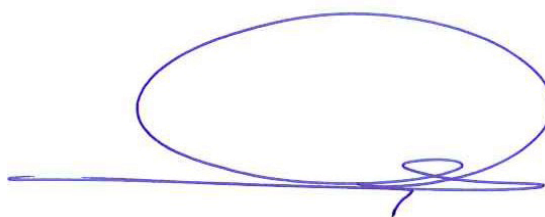
CDM Chief Verifier: N.A.

CDM Verifier: N.A.

External Technical Expert: N.A.

Technical areas related with the project activity:

TA 1.2 Energy generation from renewable energy sources



Luis Robles Olmos  
Climate Change Manager

**CERTIFICATE OF QUALIFICATION**

**Subject:** Validation and Technical Review Team for “Punta Palmeras Wind Power Project”

Madrid, 24 November 2014

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Name: Marcelino Pellitero Martinez

CDM Chief Validator: Yes

CDM Validator: Yes

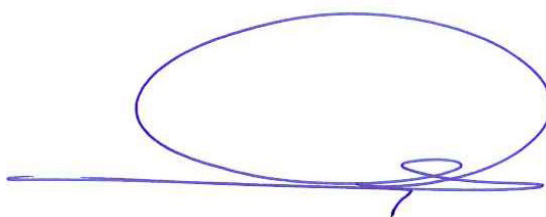
CDM Chief Verifier: N.A.

CDM Verifier: N.A.

External Technical Expert: N.A.

Technical areas related with the project activity:

TA 1.2 Energy generation from renewable energy sources



Luis Robles Olmos  
Climate Change Manager

**CERTIFICATE OF QUALIFICATION**

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Name: Richard Gonzales Toledo

CDM Chief Validator: N.A.

CDM Validator: Yes

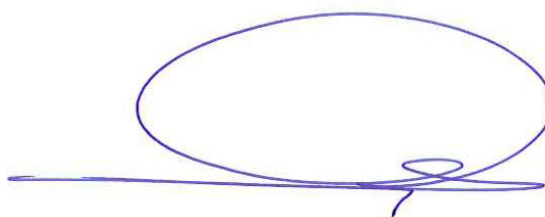
CDM Chief Verifier: N.A.

CDM Verifier: N.A.

External Technical Expert: N.A.

Technical areas related with the project activity:

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Luis Robles Olmos  
Climate Change Manager



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Name: Jose Antonio Gesto Vilacoba

CDM Chief Validator: Yes

CDM Validator: Yes

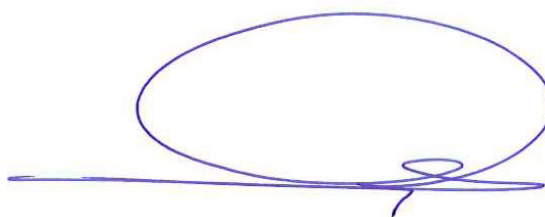
CDM Chief Verifier: N.A.

CDM Verifier: N.A.

External Technical Expert: N.A.

Technical areas related with the project activity:

TA 1.2 Energy generation from renewable energy sources



Luis Robles Olmos  
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Name: Mercedes Garcia Madero

CDM Chief Validator: Yes

CDM Validator: Yes

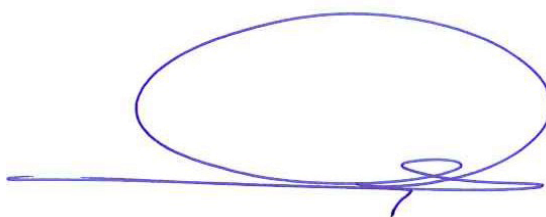
CDM Chief Verifier: N.A.

CDM Verifier: N.A.

External Technical Expert: N.A.

Technical areas related with the project activity:

TA 1.2 Energy generation from renewable energy sources



Luis Robles Olmos  
Climate Change Manager