CLEAN DEVELOPMENT MECHANISM
PROGRAMME OF ACTIVITIES DESIGN DOCUMENT FORM
(CDM-PoA-DD) Version 01

CONTENTS

Annexes

NOTE:

This form is for the submission of a CDM PoA whose CPAs apply a large scale approved methodology.

At the time of requesting registration this form must be accompanied by a CDM-CPA-DD form that has been specified for the proposed PoA, as well as by one completed CDM-CPA-DD (using a real case).

SECTION A. General description of programme of activities (PoA)

A.1 Title of the programme of activities:

"Wind Programme of Activities in Chile"
Version: 6
Date: 09/10/2012

A.2. Description of the programme of activities:

The Wind Programme of Activities in Chile will develop grid connected wind projects located in Chile.

1. General operating and implementing framework of PoA

The PoA will improve the Chilean conditions to develop wind projects connected to the Central Interconnected System (*Sistema Interconectado Central,* SIC) or the Great North Interconnected System (Sistema Interconectado del Norte Grande). CPAs will be new facilities (Greenfield). This PoA is a voluntary action being coordinated and managed by Ingeniería Seawind Sudamérica Ltda (Seawind).

In Chile, the total electric market is developed by the private sector, and then the decision to invest in wind power plants is from a private company. In this context the economic attractiveness of the projects is a very important criterion for the decision making. So far in Chile, wind energy generation is only a minor part of the total installed capacity and the projects in operation are developed by the help of incentive regulations and the additional incomes of CDM. As reflected in the following table, at 2011 the wind energy capacity only represented 1.2 % of the total country installed capacity (198.68 MW over 16,480.3 MW).

Installed Capacity in Chile, 2011 (MW)

SYSTEM	Thermal	Hydro	Wind	Total
SING	3,948.8	14.9	0.0	**3,963.8**
SIC	6,309.6	5,858.8	196,7	**12,365.2**
AYSEN/ LOS LAGOS	29.3	20.4	1.98	**51.7**
MAGALLANES	99.6	0.0	0.0	**99.6**
TOTAL	**10,387.3**	**5,894.1**	**198.68**	**16,480.3**

Source: Comisión Nacional de Energía (CNE) [1]

During the last years the government has impulse regulatory modifications intended to diversify the electricity matrix, diversify the companies participating in the electricity system and to promote the use of renewable energy sources[2].

[1] "Capacidad Instalada de Generación", CNE http://www.cne.cl/estadisticas/energia/electricidad

[2] Law 20.257 (NCRE Law), enacted in April 1, 2008 that also introduced modifications to General Law of Electricity Services (LGSE) regarding the generation of electricity using Non Conventional Renewable Energy (NCRE)

2. Policy/measure or stated goal of the PoA

The main objective of the PoA is to contribute to the development and promotion of grid connected wind farms, by building a framework to secure carbon revenue for those projects that need additional income from CERs for its implementation because they are economically or financially unattractive or because they face institutional, financial and/or structural barriers.

By means of additional incomes, the PoA aims to increase the feasibility of such wind energy projects which otherwise would not be feasible. The PoA will also help to ensure a more efficient monitoring, report and verification process for project developers. All CPAs within the PoA will consist of wind energy facilities. By replacing electricity from fossil fuel based power plants, this project will directly contribute to reduce greenhouse gas (GHG) emissions. The proposed PoA will improve the energy use in Chile avoiding the use of fossil fuels and hence, promoting the sustainable development.

3. Confirmation that the proposed PoA is a voluntary action by the coordinating/managing entity.

The PoA is a voluntary action being coordinated and managed by Ingeniería Seawind Sudamérica Ltda. (Seawind). There are no mandatory laws or regulations in place in the host country that require wind project to seek CDM services. Likewise, no mandatory laws or regulations exist requiring the coordinating/managing entity (CME) to develop a PoA for wind projects in the host country.

A.3. Coordinating/managing entity and participants of POA:

1. Coordinating and/or managing entity of the PoA as the entity which communicates with the Board. The coordinating or managing entity of the proposed PoA will be Ingeniería Seawind Sudamérica Ltda (Seawind).

2. Project participants being registered in relation to the PoA. Project participants may or may not be involved in one of the CPAs related to the PoA.

Name of Party involved (*) ((host) indicates a host Party)	Private and/or public entity(ies) project participants (*) (as applicable)	Kindly indicate if the Party involved wishes to be considered as project participant (Yes/No)
Chile (host)	Ingeniería Seawind Sudamérica Ltda (Seawind).	NO

A.4. Technical description of the programme of activities:

A.4.1. Location of the programme of activities:

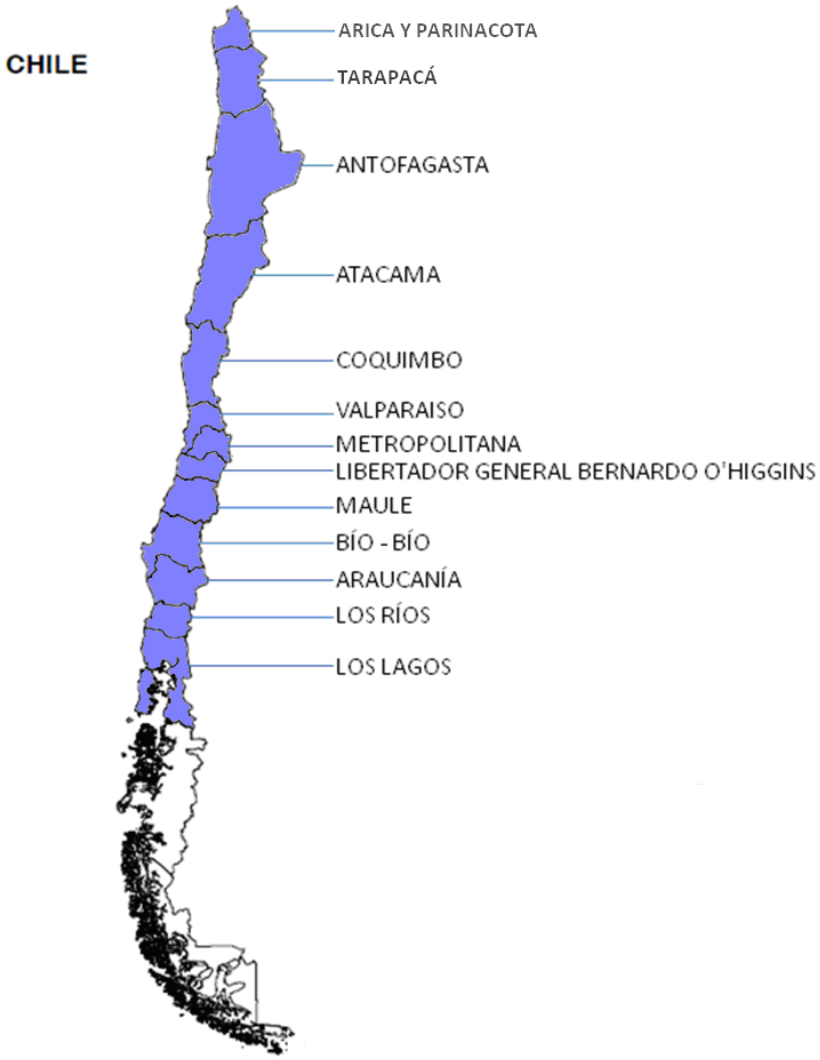
A.4.1.1. Host Party(ies):

Chile

A.4.1.2. Physical/ Geographical boundary:

The geographical area within which all CPAs included in this PoA will be implemented is defined as those regions of Chile that are covered by the Central Interconnected System (Sistema Interconectado Central, SIC) and by the Great North Interconnected System (Sistema Interconectado del Norte Grande, SING). These regions are: Región de Arica y Parinacota, Región de Tarapacá, Región de Antofagasta, Región de Atacama, Región de Coquimbo, Región de Valparaíso, Región Metropolitana, Región del Libertador General Bernardo O'Higgins, Región del Maule, Región del Bio Bio, Región de la Araucanía, Región de Los Ríos, Región de Los Lagos. The following figure shows the PoA location.

Figure 1: Geographical boundary



A.4.2. Description of a typical CDM programme activity (CPA):

A.4.2.1. Technology or measures to be employed by the CPA:

A typical CPA under this PoA comprises one or more newly constructed wind farm, which will deliver the electricity to the Central Interconnected System (Sistema Interconectado Central, SIC) or to the Great North Interconnected System (Sistema Interconectado del Norte Grande, SING).

A wind farm consists of a wind turbine or multiple wind turbines connected with each other to produce electricity. A wind turbine captures the kinetic energy of the wind to drive a generator located within the wind turbine where this energy is subsequently converted into electricity.

A wind turbine is made up of the following components:

(1) Foundation
(2) Tower
(3) Nacelle
(4) Rotor blade
(5) Hub
(6) Transformer (this is not a part of the wind turbine)

Source: World Wind Energy Association

A.4.2.2. Eligibility criteria for inclusion of a CPA in the PoA:

Every CPA to be included in the present PoA shall:

1. Be located inside the Geographical Boundary of the PoA, as defined in section A.4.1.2 of the PoA-DD.
2. Be a greenfield on shore or off shore wind power plant (new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity).

3. Not: (i) have been registered as a CDM project activity, or (ii) be included as a CPA under another PoA.
4. No energy generating equipment is transferred from another activity, located in a non-annex I party and no existing equipment is transferred from the project to another activity.
5. Confirm with a writing statement that the CPA will not:
    a. Be registered as a CDM project activity
    b. Be included as a CPA under another PoA.
6. During the operation phase, be connected to the Central Interconnected System (SIC) or to the Great North Interconnected System (SING) of Chile.
7. To avoid double counting of emission reductions each CPA will be uniquely identified and defined in an unambiguous manner by providing geographic information (e.g. coordinates).
8. Have a project starting date after the date on which the PoA-DD is uploaded for Global Stakeholder Consultation.
9. Demonstrate the compliance with the additionality requirements stated on section E.5 of the present PoA-DD.
10. Comply with the conditions of the methodology ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" version 12.3.0 as listed in section E.2 of the present PoA – DD.
11. Have the Environmental Approval (Resolución de Calificación Ambiental, RCA), if the project is required to assess their environmental impacts by going through the SEIA ("Sistema de Evaluación de Impacto Ambiental" or Environmental Impact Assessment System) by the Law 19,300 (See section C.3 of the PoA-DD).
12. Have conducted a stakeholder consultation process as described in section D of the PoA-DD.
13. The CPA implementer must provide a notarized statement confirming that funding from Annex I parties, if any, does not result in a diversion of official development assistance.

There is no applicability conditions related to sampling because the monitoring plan considers direct measurement for all CPAs.

There is no applicability conditions related to "conditions that ensure that every CPA in aggregate meets the small-scale or microscale threshold criteria and remains within those thresholds throughout the crediting period of the CPA" because the PoA-DD uses a large scale methodology.

There is no applicability conditions related to debundling because the PoA-DD uses a large scale methodology.

A.4.3. Description of how the anthropogenic emissions of GHG by sources are reduced by a CPA below those that would have occurred in the absence of the registered PoA (assessment and demonstration of additionality):

(i) The proposed PoA is a voluntary coordinated action;

In Chile private electricity generators are free to choose the technology to be deployed in their projects as long as all required environmental, construction and operational permits are in place. Although there are three laws in Chile with the objective to foster the implementation of Non-Conventional Renewable Energy (NCRE) projects, the Law 19.940 (known as "Short Law I"), Law 20.018 (known as "Short Law II") and Law 20.257, neither of these laws constitutes an obligation to the managing entity to implement the measures laid out in section A.2. Nor do these laws constitute any obligation to the implementing entities of any of the CPAs under the PoA. Therefore, the PoA is a voluntary coordinated action.

(ii) If the PoA is implementing a voluntary coordinated action, it would not be implemented in the absence of the PoA;

Paragraph 7 of Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities (version 01.0, EB 65) states that "additionality shall be demonstrated by establishing that in the absence of CDM, none of the implemented CDM Project Activity (CPA) would occur". Then the additionality will be demonstrated at the CPA level, as reflected on the criteria for inclusion of a CPA in the PoA stated on Section A.4.2.2. Considering that the PoA will include one or more large-scale projects as CPA, eligibility criteria is derived from all the relevant requirements contained in the additionality section of the large-scale methodology as detailed in section E.5.

(iii) If the PoA is implementing a mandatory policy/regulation, this would/is not enforced;

Not applicable.

(iv) If mandatory a policy/regulation are enforced, the PoA will lead to a greater level of enforcement of the existing mandatory policy/regulation.

Not applicable.

A.4.4. Operational, management and monitoring plan for the programme of activities:

A.4.4.1. Operational and management plan:

The coordinating/managing entity will put in place the necessary operational and management arrangements for the implementation of the PoA, comprising the following aspects:

(i) a record keeping system for each CPA under the PoA,

The coordinating/managing entity will maintain an electronic database with the following information for each CPA to be included in the PoA:

a. Name and identification number of the CPA
b. Implementing entity of the CPA, including contact information
c. General Location of the project: Region, Province, Commune.
d. Specific Location of the power plant (coordinates of each wind turbine)

e. Commissioning date

f. Scheme/description of the connection to the grid, and the location of electricity meters.

g. Verification status for each monitoring period

h. Reference to the Environmental Approval of the project, if applicable (the Environmental Approval "Resolución de Calificación Ambiental", RCA; is only applicable for those projects which needs formally analyze their environmental impacts based on the requirements stated in Law 19,300, as detailed in Section C)

(ii) a system/procedure to avoid double accounting e.g. to avoid the case of including a new CPA that has been already registered either as CDM project activity or as a CPA of another PoA,

As the PoA only includes stationary activity (construction and operation of wind power plants), geographic reference (as stated in Section A.4.1.2.of every specific CPA-DD) are applicable for the unique identification of the CPA, then avoiding the case of including a new CPA that has been already registered either as CDM Project activity or as a CPA of another PoA.

For this purpose prior to the inclusion of a new CPA the coordinating/managing entity will check the UNFCCC database to identify the registered (or under validation) wind power CDM project activities and the wind power CPAs already included into another PoA, that are located in the same Chilean Region (as identify in Section A.4.1.2.of the new CPA-DD); the specific project locations of the projects will be compared. If the new CPA corresponds to another CDM project activity or a CPA included into another PoA, the CME will not proceed with inclusion of the corresponding CPA.

(iii) the provisions to ensure that those operating the CPA are aware and have agreed that their activity is being subscribed to the PoA;

As part of the inclusion of a CPA under the PoA, every CPA Operator of a specific CPA under this programme shall provide a formal letter of consent, stating that:

1) They are aware and have agreed that their activity is being subscribed to the PoA.
2) The CPA will not be registered as a single CDM project activity nor as a CPA under another PoA.

A.4.4.2. Monitoring plan:

(i) Description of the proposed statistically sound sampling method/procedure to be used by DOEs for verification of the amount of reductions of anthropogenic emissions by sources or removals by sinks of greenhouse gases achieved by CPAs under the PoA.

Not applied.

(ii) In case the coordinating/managing entity opts for a verification method that does not use sampling but verifies each CPA (whether in groups or not, with different or identical verification periods) a transparent system is to be defined and described that ensures that no

double accounting occurs and that the status of verification can be determined anytime for each CPA;

The method for verification does not consider sampling. Monitoring will be carried out individually for each CPA added to the proposed PoA, as described in Section E.7.2. The monitoring reports will be prepared and submitted to the DOE for verification by the CME. The CPAs included in a monitoring report may have different or identical verification periods. Then, in order to avoid double accounting among the CPAs included in the PoA, the CME will have a control spreadsheet to register the verification period of each CPA covered by every monitoring report. The spreadsheet will be similar to the following example:

CPA	Monitoring Report N1 Version X Date: dd/mm/yyyy	Monitoring Report N2 Version X Date: dd/mm/yyyy	Monitoring Report N3 Version X Date: dd/mm/yyyy
"CPA 1"	dd/mm/yy to dd/mm/yy	dd/mm/yy to dd/mm/yy	dd/mm/yy to dd/mm/yy
"CPA 2"	dd/mm/yy to dd/mm/yy	dd/mm/yy to dd/mm/yy	dd/mm/yy to dd/mm/yy
"CPA 3"	dd/mm/yy to dd/mm/yy	dd/mm/yy to dd/mm/yy	dd/mm/yy to dd/mm/yy

A.4.5. Public funding of the programme of activities:

The PoA does not receive public funding.

SECTION B. Duration of the programme of activities

B.1. Starting date of the programme of activities:

09/01/2012 (start date of validation, uploading for global stakeholder comment period)

B.2. Length of the programme of activities:

28 years.

SECTION C. Environmental Analysis

C.1. Please indicate the level at which environmental analysis as per requirements of the CDM modalities and procedures is undertaken. Justify the choice of level at which the environmental analysis is undertaken:

1. Environmental Analysis is done at PoA level ☐
2. Environmental Analysis is done at CPA level **X**

C.2. Documentation on the analysis of the environmental impacts, including transboundary impacts:

N/A

C.3. Please state whether in accordance with the host Party laws/regulations, an environmental impact assessment is required for a typical CPA, included in the programme of activities (PoA),:

In Chile, the assessment of the environmental impacts and the environmental approval of a specific project are regulated by the Law N° 19,300[3] and the Supreme Decree No 95 (S.D. No 95)[4]. Article 10 of Law 19,300 and Article 3 of the S.D. No 95 list the types of projects that require formally analyze their environmental impacts; the categories that might be applicable for a typical CPA are the following:

- Letter (b). High voltage transmission lines (over 23 kV) and their substations[5].
- Letter (c). Power plants with an installed capacity higher than 3MW.

[3] "Ley de Bases Generales del Medio Ambiente" (Environmental General Basis Law). The current version of law 19,300, which includes the modifications introduced by Law Nº 20,417, is available at: http://www.leychile.cl/Consulta/Exportar?radioExportar=Normas&exportar_formato=pdf&nombrearchivo=LEY-19300_09-MAR-1994&exportar_con_notas_bcn=True&exportar_con_notas_originales=True&exportar_con_notas_al_pie=True&hddResultadoExportar=30667.2010-11-13.0.0%23

[4] "Reglamento del Sistema de Evaluación de Impacto Ambiental (SEIA)" (Environmental Impact Assessment System Regulation). Available at: http://www.leychile.cl/Navegar?idNorma=205385&idVersion=2008-11-29

[5] The Supreme Decree is available at http://www.leychile.cl/Navegar?idNorma=205385

Any CPA which does not meet the conditions stated in letters (b) or (c) will not require a formal environmental impact assessment.

Those CPAs which meet the conditions stated in letters (b) or (c) above will need to assess their environmental impacts by going through the SEIA ("Sistema de Evaluación de Impacto Ambiental" or Environmental Impact Assessment System). In such cases the assessment might be done through an Environmental Impact Statement ("Declaración de Impacto Ambiental", DIA) or through an Environmental Impact Assessment ("Estudio de Impacto Ambiental", EIA), based on the effects, characteristics and circumstances of the project as described in Article 11 of Law 19,300 and Articles 4 to 11 of the S.D. No 95.

SECTION D. Stakeholders' comments

D.1. Please indicate the level at which local stakeholder comments are invited. Justify the choice:

1. Local stakeholder consultation is done at PoA level ☐
2. Local stakeholder consultation is done at CPA level **X**

The Local Stakeholder Consultations will be held at a CPA level, taking into consideration the different circumstances and opinions of communities in the vicinity of each CPA.

In the case of projects which (in compliance with Chilean regulations, as described in Section E) must formally analyse its environmental impacts through an Environmental Impact Assessment (EIA), a formal stakeholder consultation must be included as part of the assessment process by the environmental authority. This stakeholder consultation is defined in articles 49 to 53 of the Environmental Impact Assessment System Regulation [4]. The coordination of the process is in charge of the Environmental Authority, who defined specific mechanisms to ensure an informed participation of the community based on the characteristics of the project. The project developer must publish a summary of the project in the Official Gazette and in a local or national newspaper; any person affected by the project can submit comments to the Environmental Authority during the following 60 days. These observations are to be weighted by the Environmental Authority and taken into account in the environmental approval process. In addition he Environmental Authority will develop workshops and then the invitations (e.g. newspapers), internal reports/resumes of the process (comments and how they were considered in the EIA) and list of participants will be requested by the project developer in order to complete the CPA – DD and submit the documentation to the DOE. Even with this formal consultation process, the project owner will publish a resume of the project and the willing to be part of the carbon market through the present CDM PoA.

In the case of CPAs which assess its environmental impacts through an Environmental Impact Statement ("Declaración de Impacto Ambiental", DIA) and those which don't need to go through the Environmental Impact Assessment System (SEIA), the stakeholder consultation process before mentioned is not required. In these cases, the invitation and compilation of comments by local stakeholders will be defined by the CPA implementer, taking into account the CPA's local circumstances. The invitation for comments by local stakeholders shall be made in an open and transparent manner, in a way that facilitates comments to be received from local stakeholders. In this context the project developer may develop workshops, send letters, make interviews, publications in local or national newspapers, among others.

D.2. Brief description how comments by local stakeholders have been invited and compiled:

N/A

D.3. Summary of the comments received:

N/A

D.4. Report on how due account was taken of any comments received:

N/A

SECTION E. Application of a baseline and monitoring methodology

E.1. Title and reference of the approved baseline and monitoring methodology applied to each CPA included in the PoA:

The approved baseline and monitoring methodology applied to each CPA included in this PoA is ACM0002 **"Consolidated baseline methodology for grid-connected electricity generation from renewable sources" Version 12.3.0.**

The usage of this methodology for the project activity includes the use of:

- Tool to calculate the emission factor for an electricity system (Version 02.2.1).
- Tool for the demonstration and assessment of additionality (Version 06.0.0).

E.2. Justification of the choice of the methodology and why it is applicable to each CPA:

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).) since the other conditions don´t mentioned the fact of "a site where no renewable power plant was operated prior to the implementation of the project activity". As the PoA considers CPAs with Greenfield projects, the general condition of the methodology applies.

The methodology ACM0002 Version 12.3.0 is applicable under the following conditions:

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.*

   Each CPAs will consist in the installation of a wind power plant.

2. *In the case of capacity additions, retrofits or replacements (except for capacity addition projects for which the electricity generation of the existing power plant(s) or unit(s) is not affected: 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 addition or retrofit of the plant has been undertaken between the start of this minimum historical reference period and the implementation of the project activity*

This condition does not apply since the CPAs will be grid-connected wind power plants.

3. *In case of hydro power plants. At least one of the following conditions must apply:*
   - *The project activity is implemented in an existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or*

- *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^2 after the implementation of the project activity; or*
- *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^2 after the implementation of the project activity.*

Not applicable: all CPAs will consist of wind power plants.

4. *In case of hydro power plants using multiple reservoirs where the power density of any of the reservoirs is lower than 4 W/m^2 after the implementation of the project activity all of the following conditions must apply:*
   - *The power density calculated for the entire project activity using equation 5 is greater than 4 W/m^2;*
   - *All reservoirs and hydro power plants are located at the same river and* were *designed together to function as an integrated project that collectively constitutes the generation capacity of the combined power plant;*
   - *The water flow between the multiple reservoirs is not used by any other hydropower unit which is not a part of the project activity;*
   - *The total installed capacity of the power units, which are driven using water from the reservoirs with a power density lower than 4 W/m^2, is lower than 15MW;*
   - *The total installed capacity of the power units, which are driven using water from reservoirs with power density lower than 4 W/m^2, is less than 10% of the total installed capacity of the project activity from multiple reservoirs.*

   Not applicable: all CPAs will be wind power plants.

5. *The methodology is not applicable to the following:*
   - *Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site;*
   - *Biomass fired power plants;*
   - *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 reservoir is less than 4 W/m^2.;*

   All the CPAs will be wind Greenfield power plants, so there will be no fuel switching.

6. *In the case of retrofits, replacements, or capacity additions, the methodology is only applicable if the most plausible baseline scenario is P2: "The continuation of the current situation, i.e. to use all power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance.*

   Not applicable: all CPAs will be wind Greenfield power plants.

Applicability conditions included in the "Tool to calculate the emission factor for an electricity system" v.02.2.1; methodological tool "Tool for the demonstration and assessment of additionality" v.06.0.0 apply:

7. *The Tool to calculate the emission factor for an electricity system is applicable to projects that substitutes grid electricity, i.e. where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects)".*

   All CPAs will supply electricity to a grid (SIC or SING).

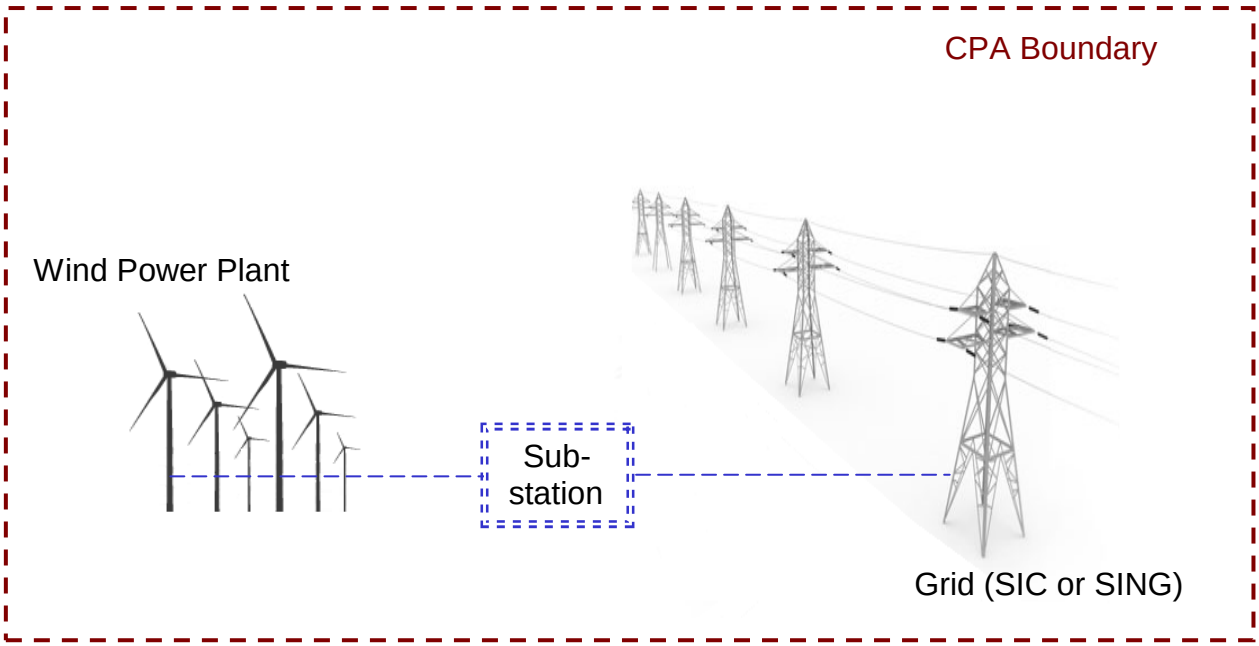
8. *The Tool for the demonstration and assessment of additionality states "Once the additionally tool is included in an approved methodology, its application by project participants using this methodology is mandatory" As the methodology ACM0002 states that the additionality of the project activity shall be demonstrated and assessed using the latest version of this tool than its use is mandatory.*

   As is stated in Section E.5 of the PoA-DD all CPA will demonstrate the additionality using latest approved version of the "Tool for the demonstration and assessment of additionality"

The "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion" v.02 is not applicable since all the CPAs are wind power plants.

E.3. Description of the sources and gases included in the CPA boundary

As per ACM0002 Version 12.3.0, the spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to. The following figure shows a schematic representation of a typical CPA's boundary.



As stated in ACM0002 version 12.3.0, the GHG emission sources included in or excluded from the project boundary are as follows:

Source		Gas	Included ?	Justification / Explanation
Baseline	CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity	CO_2	Yes	Main emission source
		CH_4	No	Minor emission source
		N_2O	No	Minor emission source
Project activity	For geothermal power plants, fugitive emissions of CH_4 and CO_2 from non-condensable gases contained in geothermal steam	CO_2	Yes	Not applicable
		CH_4	Yes	
		N_2O	No	
	CO_2 emissions from combustion of fossil fuels for electricity generation in solar thermal power plants and geothermal power plants	CO_2	Yes	Not applicable
		CH_4	No	
		N_2O	No	
	For hydro power plants, emissions of CH_4 from the reservoir	CO_2	No	Not applicable
		CH_4	Yes	
		N_2O	No	

E.4. Description of how the baseline scenario is identified and description of the identified baseline scenario:

According to the methodology ACM0002 version 12.3.0, for project activities that comprise the installation of a new grid-connected renewable power plant/unit , the baseline scenario is:

"Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system" version 02.2.1.

Given that the PoA is limited to Greenfield projects, the baseline scenario described shall be applied for each CPA. As all CPAs will be connected to the SIC or SING therefore, in the absence of the PoA, the electricity delivered to the grid by each CPA would have been supplied by the power plants connected to the SIC or SING, respectively (existing power plants and future additions).

E.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the CPA being included as registered PoA (assessment and demonstration of additionality of CPA): >>

E.5.1. Assessment and demonstration of additionality for a typical CPA:

The demonstration of additionality in the present PoA is demonstrated at the CPA level based on the requirements of the applied methodology. For this purpose the methodology ACM0002 (Version 12.3.0)

states the use of the latest approved version of the "Tool for the demonstration and assessment of additionality" (version 06.0.0).

The additionality tool provides a general step-wise framework for demonstrating and assessing additionality. These steps are:

Step 1: Identification of alternatives to the project activity
Step 2: Investment analysis
Step 3: Barrier analysis
Step 4: Common practice analysis

E.5.2. Key criteria and data for assessing additionality of a CPA:

The application of the tool is as follows:

Step 1: Identification of Alternatives to the Project Activity Consistent with Current Laws and Regulations

Since the selected methodology prescribes the baseline scenario the identification of credible and realistic alternatives is not required (paragraph 105 of the Validation and Verification Manual, version 1.2).

Step 2: Investment Analysis

Sub-step 2a: Determine appropriate analysis method:

The analysis method to be used is a benchmark analysis (Option III). This is suited because the baseline does not require investment, and the choice of the developer is to invest or not to invest:

Sub-step 2b: Option III. Apply benchmark analysis

The financial indicator for this analysis is the Internal Rate of Return (IRR). The project participant will have the option of using the internal rate of return project (project IRR) or the expected return on equity **(**equity IRR).

- If the selected option is to use the internal rate of return project (project IRR), a suitable benchmark value for power generation projects is 10.0%[6] (pre-tax), which is used to determine node prices, transmission line and distribution investment according to DFL 4/2006, "Ley General de Servicios Eléctricos" (Electricity Services General Law)[7], Article 165, letter (d). In agreement to this regulation, the 10% discount rate must be seen as an opportunity cost, and is defined by the government for common energy transmission and generation activities. Therefore, it represents a general benchmark for the energy generation sector on Chile. The CME, as part of the CPA evaluation and PoA management system will assess the law in order to confirm the applicability of the value and the latest version of the benchmark value. Any CPA part of the

[6] Tool for the demonstration and assessment of additionality, version 06.0.0: Option (d) *"Government/official approved benchmark where such benchmarks are used for investment decisions"*
[7] http://www.bcn.cl/carpeta_temas/temas_portada.2006-12-18.7650530977/leyes/pdf/actualizado/258171.pdf.

PoA shall use the benchmark with the guidance of the CME and the DOE in charge of the inclusion process will assess the suitability of the benchmark if the law is updated or if the benchmark is modified.

- If the selected option is to use the expected return on equity (equity IRR), it shall be used the default values for the expected return on equity for Chile of 10.3 % (after tax)[8] in real terms or the equivalent in nominal terms.

Sub-step 2c: Calculation and comparison of financial indicators

The calculation of the project or equity IRR of a typical CPA shall be presented in excel format and will be submitted along with the CPA DD. All assumptions of critical parameters have to be substantiated

The main typical parameters to be included the project or equity IRR calculations can be[9]:

- Load Factor (%)
- Electricity generation (MWh/year)
- Firm capacity (KW/months)
- Investment (US$)
- Transmission costs (US$ / year)
- O&M costs (US$/year)
- Contingencies (US$/year)
- Energy price (US$/MWh)
- Firm capacity price (US$/KW/months)
- Residual Value (%)
- Operational Lifetime (Years)
- Income tax (%)
- Loan lifetime (years)
- Loan interest rate (%)
- Debt financing (%)
- others

Values that were known at the moment of the investment decision should be used. Additional parameters can be included when they better reflect the characteristics and circumstances of a specific CPA.

The results of the calculations of the project or equity IRR should be compared to the applicable benchmark.

As a result of the benchmark analysis it should be demonstrated that the power plant included in the CPA is not financially attractive (the project or equity IRR is lower than the selected benchmark).

[8] Guidelines on the Assessment of Investment Analysis, version 05: *The default values for the expected return on equity shown below are calculated after taxes.*

[9] The list of parameters and units shall be adjusted for every CPA considering the specific project conditions and IRR assessment (project or equity).

Sub-step 2d: Sensitivity analysis

The variables to be included in the sensitivity analysis are all variables that constitute more than 20% of total costs or revenues, including the initial investment. For a typical CPA they may be:

- Energy generation
- Energy price
- Investment
- O&M

The typical range of variation for each variable is +/- 10%. Nevertheless if such range does not reflect the characteristics and circumstances of a specific CPA, a more suitable range can be used.

Project or equity IRR considering variations in the critical assumptions

	-10%	0%	10%
Investment			
Energy generation			
Energy price			
O&M			

For a typical CPA to be additional it is expected that the project or equity IRR is under the benchmark even for the realistic range of variations in the critical assumptions. In cases where a scenario will result in the CPA passing the benchmark an assessment of the probability of the occurrence of this scenario (taking into consideration correlations between the variables as well as the specific context of the CPA) should be provided in order to confirm that the project activity is unlikely to be economically attractive.

Step 3: Barrier analysis

Alternatively additionality can be demonstrated using a Barrier Analysis if the project faces one or more barrier that would prevent potential project proponents from carrying out the proposed project activity undertaken without being registered as a CDM project activity. The "Guidelines for objective demonstration and assessment of barriers" version 01 shall be taken into account when applying this step.

The following sub-steps must by applied providing transparent and documented evidence and doing a conservative interpretation of this documented evidence. The type of evidence to be provided should include at least one of the following:

(a) Relevant legislation, regulatory information or industry norms;

(b) Relevant (sectoral) studies or surveys (e.g. market surveys, technology studies, etc) undertaken by universities, research institutions, industry associations, companies, bilateral/multilateral institutions, etc;

(c) Relevant statistical data from national or international statistics;

(d) Documentation of relevant market data (e.g. market prices, tariffs, rules);

(e) Written documentation of independent expert judgments from industry, educational institutions (e.g. universities, technical schools, training centres), industry associations and others.

Sub-step 3a: Identify barriers that would prevent the implementation of the proposed CDM project activity

Considering the specific characteristics and circumstances of the CPA, it must be established that there are realistic and credible barriers that would prevent the implementation of the project from being carried out if the project activity was not included in the PoA.

Outcome of Step 3a: Identified barriers that may prevent one or more alternative scenarios to occur or conclusion that the project is additional.

Sub-step 3b: Show that the identified barriers would not prevent the implementation of at least one of the alternatives (except the proposed project activity)

It must be demonstrated that the identified barriers do not prevent the implementation of at least one of the alternatives. If the identified barriers also affect other alternatives, explain how they are affected less strongly than they affect the proposed CPA.

Step 4: Common practice analysis

Step 1: Calculate applicable output range as +/-50% of the design output or capacity of the proposed project activity.

Step 2: In the applicable geographical area, identify all plants that deliver the same output or capacity, within the applicable output range calculated in Step 1, as the proposed project activity and have started commercial operation before the start date of the project. Note their number N_{all}. Registered CDM project activities and projects activities undergoing validation shall not be included in this step. For applicable geographical area consider the entire country.

Step 3: Within plants identified in Step 2, identify those that apply technologies different that the technology applied in the proposed project activity. Note their number N_{diff}.

Step 4: Calculate factor $F=1-N_{diff}/N_{all}$ representing the share of plants using technology similar to the technology used in the proposed project activity in all plants that deliver the same output or capacity as the proposed project activity.

The proposed project activity is a .common practice. within a sector in the applicable geographical area if both the following conditions are fulfilled:

(a) the factor F is greater than 0.2, and

(b) $N_{all}-N_{diff}$ is greater than 3.

E.6. Estimation of Emission reductions of a CPA:

E.6.1. Explanation of methodological choices, provided in the approved baseline and monitoring methodology applied, selected for a typical CPA:

Project emissions

Considering that all CPAs to be included in the present PoA will be wind power plants, no project emissions are considered.

For CPAs will not result in project emissions according to the methodology, $PE_y = 0$.

Baseline emission

As all CPAs to be included in the present PoA will be new grid-connected power plants, in determining the quantity of net electricity generation that is produced and fed into the grid, only the equation for (a) "Greenfield renewable energy power plants" will be applied (equation 7 of ACM0002 version 12.3.0).

The grid emission factor will be calculated applying the latest version of the "Tool to calculate the emission factor for an electricity system" version 02.2.1. The methodological choices for the six steps included in this tool are as follows:

Step 1: Identify the relevant electricity system

The project electricity system can be:
- The Central Interconnected System (SIC), or
- The North Interconnected System (SING).

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

For the calculation of the emission factor of the grid for all CPAs under this PoA, only grid-connected power plants will be considered (Option I).

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

For SIC connected projects:

The OM emission factor method selected is (b) Simple Adjusted OM because in the SIC low-cost/must-run resources typically constitutes more than 50% of the total generation of the SIC:

SIC Low Cost and No Low Cost generation 2006-2010 (GWh)

	2006	2007	2008	2009	2010	Average	%
Low cost/must run	28,574	22,932	24,430	25,534	22,428	**24,780**	**59%**
No low cost/must run	11,765	19,111	17,444	16,256	21,652	**17,246**	**41%**

Source: based on the files "Operación Real Anual" (Real Annual Operation), available at CDEC-SIC website (https://www.cdec-sic.cl/est_opera_privada.php). Low cost/must run includes all hydro, biomass and wind power plants. No low cost/must run includes all the fossil fuel power plants.

The Simple Adjusted OM will be determined applying *ex ante* option, using a 3-year generation-weighted average, based on the most recent data available at the time of submission of the CPA to the DOE.

Power plants registered as CDM project activities will be included in the sample group that is used to calculate the operating margin.

For SING connected projects:

The OM emission factor method selected is (a) Simple OM because in the SING low-cost/must-run resources typically constitutes less than 50% of the total generation of the SING:

SING Low Cost and No Low Cost generation 2006-2010 (GWh)

	2006	2007	2008	2009	2010	Average	%
No Low cost/must run	13,166	13,878	14,434	14,845	15,047	**14,274**	**99.55%**
Low cost/must run	70	68	68	62	57	**65**	**0.45%**

Source: CDEC-SING yearbook 2010, page 43-44http://www.cdec-sing.cl/html_docs/anuario2010/pdf/SING2010ES.pdf . Low cost/must run includes the 3 existing hydro power plants: Chapiquiña, Cavancha 1 ("CAVA 1") and Cavancha 2 ("CAVA 2"); all other power plants are fossil fuel fired, and considered No low cost/must run

The Simple OM will be determined applying *ex ante* option, using a 3-year generation-weighted average, based on the most recent data available at the time of submission of the CPA to the DOE. The Simple OM will be used only if low-cost/must-run resources constitute less than 50% of total grid generation, if this condition changes in the future, the CPA shall calculate the OM emission factor using the Simple Adjusted OM (determined applying the *ex ante* option).

Power plants registered as CDM project activities will be included in the sample group that is used to calculate the operating margin.

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

Both Simple and Simple Adjusted emission factor will be calculated using Option (A): Based on the net electricity generation and a CO_2 emission factor of each power unit.

The emission factor of each power unit will be determined following either of the options A1, A2 orA3, depending on the availability of fuel consumption and/or efficiency data (details in section E.6.2).

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

In terms of data vintage, Ex Ante option will be applied, using the most recent information available on units already built for sample group *m* at the time of CPA submission to the DOE.

Step 6: Calculate the combined margin emissions factor

The calculation of the combined margin (CM) emission factor ($EF_{grid,CM,y}$) will be based on Option (a) Weighted Average CM.

For each CPA the default values for wind projects will be used: $w_{OM} = 0.75$ and $w_{BM} = 0.25$ for the first and subsequent crediting periods.

Leakage Emission

As per ACM0002 version 12.3.0 no leakage emission are considered.

Emission Reductions:

As no leakage emission are considered, then Emission Reductions are the baseline emissions minus project emissions.

E.6.2. Equations, including fixed parametric values, to be used for calculation of emission reductions of a CPA:

Project Emissions (PE_y)

Project emissions are 0.

Baseline Emissions (BE_y)

The baseline emissions are to be calculated as follows (equation 6 of ACM0002 version 12.3.0):

$$BE_y = EG_{PJ,y} \cdot EF_{grid,CM,y} \qquad \text{Equation [1]}$$

Where:

BE_y = Baseline emissions in year *y* (tCO_2)

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

$EF_{grid, CM,y}$ = Combined Margin CO_2 emission factor for grid connected power generation in year *y* calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (tCO_2/MWh)

Calculation of $EG_{PJ, y}$

As per option (a) "Greenfield renewable energy power plants" the quantity of net electricity generation is determined as follows (equation 7 of ACM0002 version 12.3.0):

$$EG_{PJ,y} = EG_{facility,y}$$ Equation [2]

Where:

$EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the 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).

Calculation of the $EF_{grid,CM,y}$

As explained in section E.6.1., both the operating and the build margin emission factors will be calculated on an *ex ante* basis according to the EF tool.

Step 1 - Identify the relevant electricity systems

As stated in section E.6.1. the electricity power systems is:

- Central Interconnected System (SIC), or
- North Interconnected System (SING)

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

As stated in section E.6.1. only grid-connected power plants will be considered (Option I).

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

As stated in section E.6.1. the Simple Adjusted Method will be applied for the SIC connected projects and Simple Method will be applied for the SING connected projects. In both cases *ex ante* option will be applied thus no monitoring and recalculation of the emissions factor during the crediting period is required.

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

For SING connected projects:

The Simple Method Operating Margin emission factor will be calculated using equation 1 of the Emission Factor Tool:

$$EF_{grid,OMsimple,y} = \frac{\sum_{m} EG_{m,y} \times EF_{EL,m,y}}{\sum_{m} EG_{m,y}}$$ Equation [3]

Where:

$EF_{grid,OMsimple,y}$ = Simple operating margin CO_2 emission factor in year *y* (tCO_2/MWh)
$EG_{m,y}$ = Net quantity of electricity generated and delivered to the grid by power unit *m* in year *y* (MWh)
$EF_{EL,m,y}$ = CO_2 emission factor of power unit *m* in year *y* (tCO_2/MWh)
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 chosen in Step 3

Determination of $EF_{EL,m,y}$

If for a power unit *m* data on fuel consumption and electricity generation is available, the emission factor ($EF_{EL,m,y}$) will be determined using Option A.1 (equation 2 of the Emission Factor Tool):

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

Equation [4]

Where:

$EF_{EL,m,y}$ = CO_2 emission factor of power unit *m* in year *y* (tCO_2/MWh)
$FC_{i,m,y}$ = Amount of fossil fuel type *i* consumed by power unit m in year *y* (Mass or volume unit)
$NCV_{i,y}$ = Net calorific value (energy content) of fossil fuel type *i* in year *y* (GJ/mass or volume unit)
$EF_{CO2,i,y}$ = CO_2 emission factor of fossil fuel type *i* in year *y* (tCO_2/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 fossil fuel types combusted in power unit *m* in year *y*
y = The relevant year as per the data vintage chosen in Step 3

If for a power unit *m* only data on electricity generation and the fuel types used is available, the emission factor will be determined based on the CO_2 emission factor of the fuel type used and the efficiency of the power unit (Option A.2), as follows (equation 3 of the Emission Factor Tool):

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

Equation [5]

Where:

$EF_{EL,m,y}$ = CO_2 emission factor of power unit *m* in year *y* (tCO_2/MWh)
$EF_{CO2,m,i,y}$ = Average CO_2 emission factor of fuel type *i* used in power unit m in year *y* (tCO_2/GJ)
$\eta_{m,y}$ = Average net energy conversion efficiency of power unit *m* in year *y* (%)
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 chosen in Step 3

Where several fuel types are used in a power unit, the fuel type with the lowest CO_2 emission factor for $EF_{CO2,\,m,\,i,\,y}$. will be used.

If for a power unit *m* only data on electricity generation is available, an emission factor of 0 tCO_2/MWh will be assumed as a simple and conservative approach (Option A3).

For SIC connected projects:

The Simple Adjusted Operation Margin emission factor will be calculated using equation 7 of the Emission Factor Tool:

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

Equation [6]

Where:

$EF_{grid,OM\text{-}adj,y}$	=	Simple adjusted operating margin CO_2 emission factor in year *y* (tCO_2/MWh)
λ_y	=	Factor expressing the percentage time (number of hours) for which low-cost/must-run sources are on the margin in year *y*
$EF_{EL,k,y}$	=	CO_2 emission factor of power unit *k* in year *y* (tCO_2/MWh)
$EF_{EL,m,y}$	=	CO_2 emission factor of power unit *m* in year *y* (tCO_2/MWh)
k	=	All low-cost/must run grid power units serving the grid in year *y*
m	=	All grid power units serving the grid in year *y* except low-cost/must-run power units
$EG_{k,y}$	=	Net electricity generated and delivered to the grid by power units *k* serving the system in year *y* (MWh)
$EG_{m,y}$	=	Net electricity generated and delivered to the grid by power units *m* serving the system, in year *y* (MWh)
y	=	The relevant year as per the data vintage chosen in Step 3

Determination of $EF_{EL,m,y}$

The CO_2 emission factor of power unit will be determined in the same way as described for SING connected projects

Determination of λ_y

The parameter λ_y is defined as follows (equation 8 of the Emission Factor Tool):

$$\lambda_y\,(\%) = \frac{\text{Number of hours low - cost / must - run sources are on the margin in year y}}{\text{8760 hours per year}}$$

Equation [7]

And it will be calculated as per the following steps:

Step (i) Plot a load duration curve. Collect chronological load data (typically in MW) for each hour of the year y, and sort the load data from the highest to the lowest MW level. Plot MW against 8760 hours in the year, in descending order.

Step (ii) Collect power generation data from each power plant/unit. Calculate the total annual generation (in MWh) from low-cost/must-run power plants/units (i.e. $\Sigma_k EG_{k,y}$).

Step (iii) Fill the load duration curve. Plot a horizontal line across the load duration curve such that the area under the curve (MW times hours) equals the total generation (in MWh) from low-cost/must-run power plants/units (i.e. $\Sigma_k EG_{k,y}$).

Step (iv) Determine the "Number of hours for which low-cost/must-run sources are on the margin in year y". First, locate the intersection of the horizontal line plotted in Step (iii) and the load duration curve plotted in Step (i). The number of hours (out of the total of 8760 hours) to the right of the intersection is the number of hours for which low-cost/must-run sources are on the margin. If the lines do not intersect, then one may conclude that low-cost/must-run sources do not appear on the margin and λ_y is equal to zero.

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

As stated in section E.6.1 for each CPA the build margin will be calculated ex-ante.

The sample group *m* will be determined as per the following procedure:

(a) Identify the set of five power units, excluding power units registered as CDM project activities, that started to supply electricity to the grid most recently ($SET_{5\text{-}units}$) and determine their annual electricity generation ($AEG_{SET\text{-}5\text{-}units}$, in MWh);

(b) Determine the annual electricity generation of the project electricity system, excluding power units registered as CDM project activities (AEG_{total}, in MWh). Identify the set of power units, excluding power units registered as CDM project activities, that started to supply electricity to the grid most recently and that comprise 20% of AEG_{total} (if 20% falls on part of the generation of a unit, the generation of that unit is fully included in the calculation) ($SET_{\geq 20\%}$) and determine their annual electricity generation ($AEG_{SET\text{-}\geq 20\%}$, in MWh);

(c) From $SET_{5\text{-}units}$ and $SET_{\geq 20\%}$ select the set of power units that comprises the larger annual electricity generation (SET_{sample});

Identify the date when the power units in SET_{sample} started to supply electricity to the grid.

If none of the power units in SET_{sample} started to supply electricity to the grid more than 10 years ago, then use SET_{sample} to calculate the build margin. Ignore steps (d), (e) and (f).

Otherwise:

(d) Exclude from SET_{sample} the power units which started to supply electricity to the grid more than10 years ago. Include in that set the power units registered as CDM project activity, starting with power units that started to supply electricity to the grid most recently, until the electricity generation of the new set comprises 20% of the annual electricity generation of the project electricity system (if 20% falls on part of the generation of a unit, the generation of that unit is fully included in the calculation) to the extent is possible. Determine for the resulting set($SET_{sample\text{-}CDM}$) the annual electricity generation ($AEG_{SET\text{-}sample\text{-}CDM}$, in MWh); If the annual electricity generation of that set is comprises at least 20% of the annual electricity generation of the project electricity system (i.e. $AEG_{SET\text{-}sample\text{-}CDM} \geq$

0.2 × AEG_{total}), then use the sample group $SET_{sample-CDM}$ to calculate the build margin. Ignore steps (e) and (f).

Otherwise:

(e) Include in the sample group $SET_{sample-CDM}$ the power units that started to supply electricity to the grid more than 10 years ago until the electricity generation of the new set comprises 20% of the annual electricity generation of the project electricity system (if 20% falls on part of the generation of a unit, the generation of that unit is fully included in the calculation);

f) The sample group of power units m used to calculate the build margin is the resulting set ($SET_{sample-CDM->10yrs}$).

The build margin emissions factor is the generation-weighted average emission factor (tCO_2/MWh) of all power units *m* during the most recent year *y* for which electricity generation data is available, calculated as follows (equation 12 of the Emission Factor Tool):

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

Equation [8]

Where:

$EF_{grid,BM,y}$	=	Build margin CO_2 emission factor in year *y* (tCO_2/MWh)
$EG_{m,y}$	=	Net quantity of electricity generated and delivered to the grid by power unit *m* in year *y* (MWh).
$EF_{EL,m,y}$	=	CO_2 emission factor of power unit *m* in year *y* (tCO_2/MWh).
m	=	Power units included in the build margin.
y	=	Most recent historical year for which electricity generation data is available.

The CO_2 emission factor of each power unit *m* ($EF_{EL,m,y}$) will be determined as per the guidance in Step 4, using options A1, A2 or A3, using for *y* the most recent historical year for which electricity generation data is available, and using for *m* the power units included in the build margin.

If the power units included in the build margin *m* correspond to the sample group $SET_{sample-CDM->10yrs}$, then, as a conservative approach, only option A2 from guidance in Step 4 can be used and the default values provided in Annex 1 of the EF tool will be used to determine the parameter $\eta_{m,y}$.

Step 6: Calculate the combined margin emission factor:

The calculation of the combined margin (CM) emission factor ($EF_{grid,CM,y}$) is based on the weighted average CM method, and calculated as follows (equation 13 of the Emission Factor Tool):

$$EF_{grid,CM,y} = EF_{grid,OM,y} \times w_{OM} + EF_{grid,BM,y} \times w_{BM}$$ Equation [9]

Where:
$EF_{grid,BM,y}$ = Build margin CO_2 emission factor in year *y* (tCO_2/MWh) .
$EF_{grid,OM,y}$ = Operating margin CO_2 emission factor in year *y* (tCO_2/MWh.)
w_{OM} = Weighting of operating margin emissions factor (%).
w_{BM} = Weighting of build margin emissions factor (%).

For all CPAs, the values will be 0.75 for w_{OM} and 0.25 for w_{BM}.

Leakage (L_Y)

The methodology (ACM0002 version 12.3.0) states that no leakage emissions are considered.

Emission Reduction (ER_Y)

Emission Reductions are calculated as per equation 11 of ACM0002 (version 12.3.0):

$$ER_y = BE_y - PE_y$$ Equation [10]

Where:
ER_y = Emissions reductions in year *y* (t CO_2e).
BE_y = Baseline emissions in year *y* (t CO_2).
PE_y = Project emissions during in year *y* (t CO_2e).

E.6.3. Data and parameters that are to be reported in CDM-CPA-DD form:

Data / Parameter:	$FC_{i,m,y}$
Data unit:	Tonnes (mass) or m^3 (volume)
Description:	Amount of fossil fuel type *i* consumed by power plant/unit *m* in year *y*
Source of data used:	Public records: CDEC-SIC or CDEC – SING yearbook
Value applied:	To be specified by each CPA at the moment of presentation for inclusion in the PoA
Justification of the choice of data or description of measurement methods and procedures actually applied :	Official data
Any comment:	Data will be kept for at least 2 years after the end of the crediting period of the CPA or the last issuance of CERs for the CPA, whatever occurs later.

Data / Parameter:	$NCV_{i,y}$
Data unit:	GJ/mass or volume unit

Description:	Net calorific value (energy content) of fossil fuel type *i* in year *y*.
Source of data used:	Last version of National Energy Balance available at the moment of presentation of the CPA for inclusion in the PoA
Value applied:	To be specified by each CPA at the moment of presentation for inclusion in the PoA
Justification of the choice of data or description of measurement methods and procedures actually applied :	NCV for each fuel will be taken from National Energy Balance. For the specific fuel for which no information is contained in National Energy Balance, IPCC default values (default values at the lower limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter1 of Vol. 2 -Energy- of the 2006 IPCC Guidelines on National GHG Inventories) will be used.
Any comment:	Data will be kept for at least 2 years after the end of the crediting period of the CPA or the last issuance of CERs for the CPA, whatever occurs later.

Data / Parameter:	$EF_{CO2,i,y}$ and $EF_{CO2,m,i,y}$
Data unit:	tCO_2/GJ
Description:	CO_2 emission factor of fossil fuel type *i* used in power unit *m* in year *y*
Source of data used:	IPCC default values at the lower limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories.
Value applied:	To be specified by each CPA at the moment of presentation for inclusion in the PoA
Justification of the choice of data or description of measurement methods and procedures actually applied :	Values provided by the fuel supplier of the power plants in invoices and Regional or national average default values are not available.
Any comment:	Data will be kept for at least 2 years after the end of the crediting period of the CPA or the last issuance of CERs for the CPA, whatever occurs later.

Data / Parameter:	$EG_{m,y}$ and $EG_{k,y}$
Data unit:	MWh
Description:	Net electricity generated by power plant/unit *m* or *k* in year *y*
Source of data used:	CDEC-SIC or CDEC-SING statistics
Value applied:	To be specified by each CPA at the moment of presentation for inclusion in the PoA
Justification of the choice of data or description of measurement methods and procedures actually applied :	Official data
Any comment:	Data will be kept for at least 2 years after the end of the crediting period of the CPA or the last issuance of CERs for the CPA, whatever occurs later.

Data / Parameter:	$\eta_{m,y}$
Data unit:	-
Description:	Average net energy conversion efficiency of power unit *m* in year *y*
Source of data used:	Default values provided in Annex 1 of the last version of "Tool to calculate the emission factor for an electricity system" at the moment of presentation of the CPA for inclusion in the PoA
Value applied:	To be specified by each CPA at the moment of presentation for inclusion in the PoA
Justification of the choice of data or description of measurement methods and procedures actually applied :	Documented manufacturer's specifications and data from the utility, the dispatch center or official records are not available.
Any comment:	Data will be kept for at least 2 years after the end of the crediting period of the CPA or the last issuance of CERs for the CPA, whatever occurs later.

E.7. Application of the monitoring methodology and description of the monitoring plan:

D.7.1. Data and parameters to be monitored by each CPA:

Data / Parameter:	$EG_{facility,y}$
Data unit:	MWh
Description:	Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y*.
Source of data to be used:	CPA project site
Value of data applied for the purpose of calculating expected emission reductions in section B.5	To be specified by each CPA at the moment of presentation for inclusion in the PoA
Description of measurement methods and procedures to be applied:	The electricity supplied to the grid by each CPA will be measured by continuous meters. Data will be electronically recorded and aggregated on a daily basis. The electricity meters will be ANSI class 2, in compliance with Chilean applicable regulation 'Norma Tecnica de Seguridad y Calidad de Servicio, Comisión Nacional de Energía'[10].
QA/QC procedures to be applied:	Values will be checked against official information (CDEC-SIC or CDEC-SING monthly statistics) and/or invoices. Meters will be calibrated according with the Chilean applicable regulation or, in

[10] Available https://www.cdec-sic.cl/imagenes/contenidos/File/NTSyCS_actualizada_2010.zip

	absence of applicable regulation, following the manufacturer specifications.
Any comment:	Data will be kept for at least 2 years after the end of the crediting period of the CPA or the last issuance of CERs for the CPA, whatever occurs later.

E.7.2. Description of the monitoring plan for a CPA:

1. Management Structure and Responsibilities

The CPA implementer is the overall responsible for the monitoring and reporting of net electricity generation. Before the start of the first crediting period the CPA implementer will designate a CDM project manager, who will be the responsible person for reporting the monitoring data in a monthly basis to the CME and assure the correct maintenance and operation of the measuring and monitoring equipments, including the existence of appropriate calibration certificates.

Data Collection: The electricity supplied by the project activity to the grid will be measured by calibrated electricity meters. The parameter will be monitored at the project site. Data will be monitored continuously, electronically recorded consolidated in a daily basis.

The CPA implementer will kept data for at least 2 years after the end of the crediting period of the CPA or the last issuance of CERs for the CPA, whatever occurs later.

Accuracy and calibration: electricity meters will ANSI class 2 in compliance with Chilean applicable regulation and will be calibrated at appropriate intervals according to manufacturer specifications or Chilean regulations. CDM project manager will provide the CME with a calibration schedule and the calibration certificates.

Data Report: Data recorded (from main and secondary meters) will be monthly consolidated by the CDM project manager and will be checked for quality control. If there are discrepancies in the data, the source of the variation will be identified. CDM project manager will provide the monthly consolidated data to the CME; if discrepancies in the data were found it will be informed to the CME indicating the source of the variation.

The CME will keep data for at least 2 years after the end of the crediting period of the CPA or the last issuance of CERs for the CPA, whatever occurs later.

2. Data Quality Control
CME will check electricity generation values against official information (CDEC-SIC and CDEC-SING monthly statistics) and/or invoices.

3. Training and Monitoring Personnel
All people that participate in the monitoring process will be suitably qualified and trained in the operation and maintenance of the plant. They will also receive a training session on the application of the monitoring plan.

4. Monitoring Reports and Verification

Monitoring reports will be prepared and submitted to the DOE for verification by the CME, as described in section A.4.4.2.

E.8. Date of completion of the application of the baseline study and monitoring methodology and the name of the responsible person(s)/entity(ies)

Date of completion: 26/12/2011

Responsible person: TRIE Ltda. Mr. Roberto Posch
rposch@trieprojects.com

Annex 1

CONTACT INFORMATION ON COORDINATING/MANAGING ENTITY and PARTICIPANTS IN THE PROGRAMME of ACTIVITIES

Organization:	INGENIERÍA SEAWIND SUDAMERICA LTDA.
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Annex 2

INFORMATION REGARDING PUBLIC FUNDING

The PoA does not receive public funding.

Annex 3

BASELINE INFORMATION

To be provided at CPA level

Annex 4

MONITORING INFORMATION

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