

GENNEIA WIND PROJECTS IN ARGENTINA

Document Prepared by Swiss Carbon Value Ltd.

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1 PROJECT DETAILS

1.1 Summary Description of the Project

The proposed project consists of the implementation of six wind farms located in different regions in Argentina (Table 1). The implementation of these project instances (hereafter collectively called the “project” or “project activity”) ensures energy security, diversification of the grid generation mix and sustainable growth of the electricity sector.

The project consists of the installation of 71 wind turbines provided by Vestas and Nordex (Table 1), with a total installed capacity of 223.38 MW and an expected generation of 1,093.9 GWh per year. The electricity is dispatched to the Argentinian power grid SADI¹. Prior to project implementation, no wind turbines or any other generation devices are installed at the sites.

The energy that will be delivered to the grid is generated by a mix of thermal and renewable power generation as reflected in the combined margin emissions factor (as per the tool applied).

In the baseline scenario, the energy that will be delivered to the grid is generated by a mix of thermal and renewable power generation as reflected in the combined margin emissions factor (as per the tool applied). Hence, the project will reduce thermal power generation and GHG emissions from fossil fuel-based generation in the grid by increasing the share of renewable energy. The project does not generate any project emissions or leakage.

As a result of the implementation of the project activity, annual GHG emission reductions of approximately 444,180 tCO₂ per year on full implementation are expected and a total of 4,262,298 tCO₂ for the first entire crediting period.

A summary of individual project instances of the project is shown in Table 1.

Table 1: Summary of individual wind project instances on full implementation

Project Instance	Location	(Expected) op. start	Install capacity (MW)	Average generation (GWh/yr)	Wind turbines	Wind Turbine Type	Estimated ERs (tCO ₂ /yr)
Chubut Norte I	Chubut province	12/12/2018	28.80	128.40	8	Vestas V126	57,580
Chubut Norte II	Chubut province	01/01/2020	26.28	120.50	6	Nordex N149	54,037
Pomona I	Rio Negro Province	12/07/2019	101.4	401.10	26	Nordex N131	179,869
Pomona II	Rio Negro Province	29/08/2019	11.7	46.00	3	Nordex N131	20,628
Villalonga I	Buenos Aires province	19/12/2018	51.75	280.20	15	Vestas V126	125,653
Villalonga II	Buenos Aires province	22/02/2019	3.45	14.30	1	Vestas V126	6,413
Total			223.38	1,093.9	71		444,180

¹ In Spanish: “Sistema Argentino de Interconexión” (Argentinian Interconnected System)

1.2 Sectoral Scope and Project Type

Sectoral Scope: 01 – Energy industries (renewable / non-renewable sources)

Project Type: Renewable Energy Projects

Project Category: Large-scale

The project is not a grouped power activity.

1.3 Project Proponent

Organization name	Genneia S.A.
Contact person	Edwin King
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1.4 Other Entities Involved in the Project

Organization name	Swiss Carbon Value Ltd.
Role in the project	Consultant
Contact person	Christian Ehrat
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1.5 Project Start Date

The first instance of the project under consideration started operations on 12 December of 2018. This project instance is Chubut Norte I wind farm. Hence the project start date is 12 December 2018.

1.6 Project Crediting Period

Project crediting period for the project activity is taken as 10 years from the start date.

Accordingly, to the start date of the project activity, the first crediting period starts on 12/12/2018 and will finish on 11/12/2028.

First crediting period: 12/12/2018 - 11/12/2028.

Type of crediting period: Renewable. It is planned to be renewed twice, adding up 30 years in total.

1.7 Project Scale and Estimated GHG Emission Reductions or Removals

Project Scale	
Project	
Large project	x

Year	Estimated GHG emission reductions or removals (tCO ₂ e)
2018	7,630
2019	281,387
2020	444,180
2021	444,180
2022	444,180
2023	444,180
2024	444,180
2025	444,180
2026	444,180
2027	444,180
2028	419,841
Total estimated ERs	4,262,298
Total number of crediting years	10
Average annual ERs	387,482

1.8 Description of the Project Activity

The renewable energy generation technologies planned to be employed under the project activity instances correspond to wind projects.

The activity of the proposed project consists of the installation of six wind grid-connected power plants located in different regions of the country of Argentina. The total installed capacity of the six wind power plants is 223.38 MW, with an average power generation of 1,093.9 GWh per year. The projects will be implemented at a site where no renewable power plant was operating prior to the implementation of the project activity (green-field plant).

The electricity generated by the project will be exported to the SADI. Therefore, the project will displace an equivalent amount of electricity that would otherwise have been generated based on fossil fuels. In the baseline scenario, all the electricity supplied to the grid by the project activity would otherwise have been generated by the operation of grid-connected power plants. The full implemented project will reduce approximately 444,180 tCO₂ per year, by displacing partially fossil fuel based generation of conventional power plants in the Argentine Interconnection System, as reflected in the grid emission factor.

The project activity applies the approved CDM methodology ACM0002 (Version 19) as the methodology is also applicable for small-scale projects.

In the following, further details of the individual instances included in the project activity are provided.

Chubut Norte I Wind Farm

Chubut Norte I Wind Farm (PECN I) is a project to generate electricity through wind energy. The contracted power is 28.35 MW and the Plant will have a total installed nominal capacity of 28.8 MW. The generation will be carried out through a set of 8 wind turbines distributed on a plot of around 880 hectares located northwest of the city of Puerto Madryn, Province of Chubut. The connection to the SADI will be made by means of a 16.5 km long and 132kV high voltage line to the TRANSPSA's 132 / 330kV Transformer Station Puerto Madryn.

Table 2: Chubut Norte I Wind Farm

Wind Turbine Manufacturer	Vestas
Wind Turbine Types	V126
Wind Turbine Capacity	3.60 MW
No. of turbines	8
Total Capacity	28.8 MW
Average generation	128.4 GWh/year

Chubut Norte II Wind Farm

With an installed capacity of 26.28 MW, Chubut Norte II wind farm (PECN II) is in the same plot of land of Chubut Norte I. It comprises 6 Nordex wind turbines. The connection to the SADI will be made through a double terna LAT 132kV, of which one terna will be connected at TRANSENER's ET 132/330kV Puerto Madryn and the other terna will be connected at TRANSENER's ET 132/500kV Puerto Madryn.

Table 3: Chubut Norte II Wind Farm

Wind Turbine Manufacturer	Nordex
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Wind Turbine Types	N149-4.5
Wind Turbine Capacity	4.38 MW
No. of turbines	6
Total Capacity	26.28 MW
Average generation	120.5 GWh/year

Pomona I Wind Farm

Pomona I Wind Farm (PEPOM I) constitutes an electricity generation project using wind energy. In the development of the project is of 26 wind turbines of 3.9 MW, totaling 101.4 MW of wind power. The generation will be carried out through a set of wind turbines distributed on a property of about 2,440 hectares located in the vicinity of the town of Pomona, Province of Río Negro.

The connection to the SADI will be made through a new 33 / 132kV Transformer Station and a sectioning of the 132kV LAT linking the Choele Choel and Luis Transformer Stations Beltran.

Table 4: Pomona I Wind Farm

Wind Turbine Manufacturer	Nordex
Wind Turbine Types	N131
Wind Turbine Capacity	3.90 MW
No. of turbines	26
Total Capacity	101.4 MW
Average generation	401.10 GWh/year

Pomona II Wind Farm

Pomona II Wind Farm (PEPOM II) is a project that generates electricity through wind energy. In the development of PEPOM II, 11.7 MW of wind power will be installed. The generation will be carried out by means of a set of 3 wind turbines distributed over an area of around 500 hectares located within a total of 4,500 hectares in the vicinity of the city of Choele Choel, Province of Río Negro. The PEPOM II will be adjacent to the Pomona I Wind Farm, awarded in the RenovAr program - Round 1.5.

The connection to the SADI will be made through the 33 / 132kV Transformer Station of the Pomona I Wind Farm awarded in the RenovAr program - Round 1.5.

Table 5: Pomona II wind farm

Wind Turbine Manufacturer	Nordex
Wind Turbine Types	N131
Wind Turbine Capacity	3.90 MW
No. of turbines	3
Total Capacity	11.7 MW
Average generation	46.0 GWh/year

Villalonga I Wind Farm:

The " Villalonga I Wind Farm" consists of the construction and operation of a wind farm with 15 wind turbines and an installed capacity of 51.75 MW. It is expected to generate 280.2 GWh per year on average. The wind turbines will be interconnected with each other by a medium voltage (33 kV) underground electrical grid, from which the energy will be conducted to the internal transformer stations (ET PEVI)². At the substation, the voltage will be increased to 132 kV and from there connecting project to the SADI between ET Pedro Luro and ET Carmen de Patagones

Table 6: Villalonga I Wind Farm

Wind Turbine Manufacturer	Vestas
Wind Turbine Types	V126
Wind Turbine Capacity	3.45 MW
No. of turbines	15
Total Capacity	51.75 MW
Average generation	280.2 GWh/year

Villalonga II Wind Farm:

The Villalonga II Wind farm's generation will be carried out by means of a wind turbine distributed over an area of around 60 hectares located within a 727-hectare site in the vicinity of the city of Villalonga, Province of Buenos Aires. The project will be located next to the Villalonga I Wind Farm. It is expected to generate 14.3 GWh per year on average. The connection to the SADI will be made through the Transformer Station 33/132kV of the Villalonga Wind Farm I.

Table 7: Villalonga II Wind Farm

Wind Turbine Manufacturer	Vestas
Wind Turbine Types	V126
Wind Turbine Capacity	3.45 MW
No. of turbines	1
Total Capacity	3.45 MW
Average generation	14.3 GWh/year

Below are the technical specifications of each type of technology according to manufacturer:

Table 8: Technical specifications "Vestas-V126-3.60 MW" turbine

Vestas-V126-3.60 MW	
Rotor	
Diameter	126 m
Swept area	12,469m ²
Air brake	Full rotation of the blades

² 33/132 kV transformer station inside the Villalonga wind farm (PEVI)

Blades	
Type	Infused structural airfoil shell
Length	61.65 m
Material	Carbon fibre pultrusions, glass fibre fabrics, balsa and PET foam core
Hub	
Type	Cast ball shell hub
Material	Cast iron
Hub high	117 m
Main Shaft	
Type	Cast hollow shaft
Material	EN GJS-500-14 cast iron
Generator	
Type	Asynchronous with cage rotor
Rated Power [PN]	3,650 kW
Voltage	3x750 V
Rated speed	1450 rpm
Protection system	IP 54
Transformer	
Type	Dry-type transformer (ECO)
Nominal Voltage (HV)	33 kV
Frequency	50 Hz

Table 9: Technical specifications “Nordex–N149-4.35 MW” turbine

Nordex–N149-4.0-4.5 MW	
Rotor	
Diameter	141.1 m
Swept Area	17,460 m ²
Blades	
Length	72.40 m
Material	Glass-fiber and carbon-fiber reinforced plastic
Hub	
Type	Stiff cast structure
Material	Cast iron
Hub high	120 m
Main Shaft	
Type	Forged hollow shaft
Material	42CrMo4 or 34CrNiMo6
Generator	

Type	doubly-fed induction
Rated Power [PN]	4,380 kW
Voltage	660 V
Protection system	IP 54
Transformer	
Type	Ester transformer
Primary / Secondary voltage	33 kV
Frequency	50/60 Hz

Table 10: Technical specifications “Nordex - N131-3.90” turbine

Nordex - N131-3.90	
Rotor	
Diameter	131 m
Swept Area	13,478 m ²
Blades	
Type	Prepreg or Infused structural airfoil shell
Length	64.4 m
Material	Glass-fiber and carbon-fiber reinforced plastics
Hub	
Hub high	120 m
Main Shaft	
Type	Forged part
Material	42CrMo4 or 34CrNiMo6
Generator	
Type	Doubly fed induction asynchronous
Rated Power [PN]	3,900 kW
Voltage, Stator [U _{NS}]	660 V
Rated speed	730 – 1325 rpm
Protection system	IP 54
Transformer	
Type	Dry-type
Frequency	50 Hz

Table 11: Technical specifications “Vestas–V126-3.45 MW” turbine

Vestas – V126-3.45 MW	
Operating data	
Rated power	3.450 kW

Cut-in wind speed	3 m/s
Cut-out wind speed	22.5 m/s
Re cut-in wind speed	20 m/s
Wind class	IEC IIB/IEC IIIA
Rotor	
Diameter	126 m
Swept Area	12,469 m ²
Air brake	Full blade feathering with 3 pitch cylinders
Electrical	
Frequency	50/60 Hz
Converter	Full scale
Blades	
Type	Prepreg or Infused structural airfoil shell
Length	61.7 m
Material	Fibreglass reinforced epoxy, carbon fibres and Solid Metal Tip (SMT)
Hub	
Type	Cast ball shell hub
Material	Cast iron
Hub high	87 m
Main Shaft	
Type	Hollow shaft
Material	Cast iron or forged steel
Generator	
Type	Asynchronous with cage rotor
Rated Power [PN]	3,300 kW
Power factor	0.98 Cap – 0.96 Ind (default: 1.00)
Voltage, Stator [U _{NS}]	Stator: 690 V, Rotor: 480 V
Rated rpm	1,680 – 2,016
Protection system	IP 54
Transformer	
Type	Dry-type cast resin transformer
Primary / Secondary voltage	0.69 / 33 kV
Frequency	50 Hz

1.9 Project Location

All the project activity instances in the proposed project activity would be located within geographical boundaries of Argentina. Thus, geographical area of the project is Argentina.

Table 12 presents the geographic coordinates summary of each wind power plant.

Table 12: Project activity instances coordinates

Power plant name	X	Y
Chubut Norte I	324,200	5,284,728
Chubut Norte II	320,172	5,280,304
Pomona I	262,600	5,616,937
Pomona II	261,325	5,613,239
Villalonga I	528,981	5,566,731
Villalonga II	529,190	5,567,732

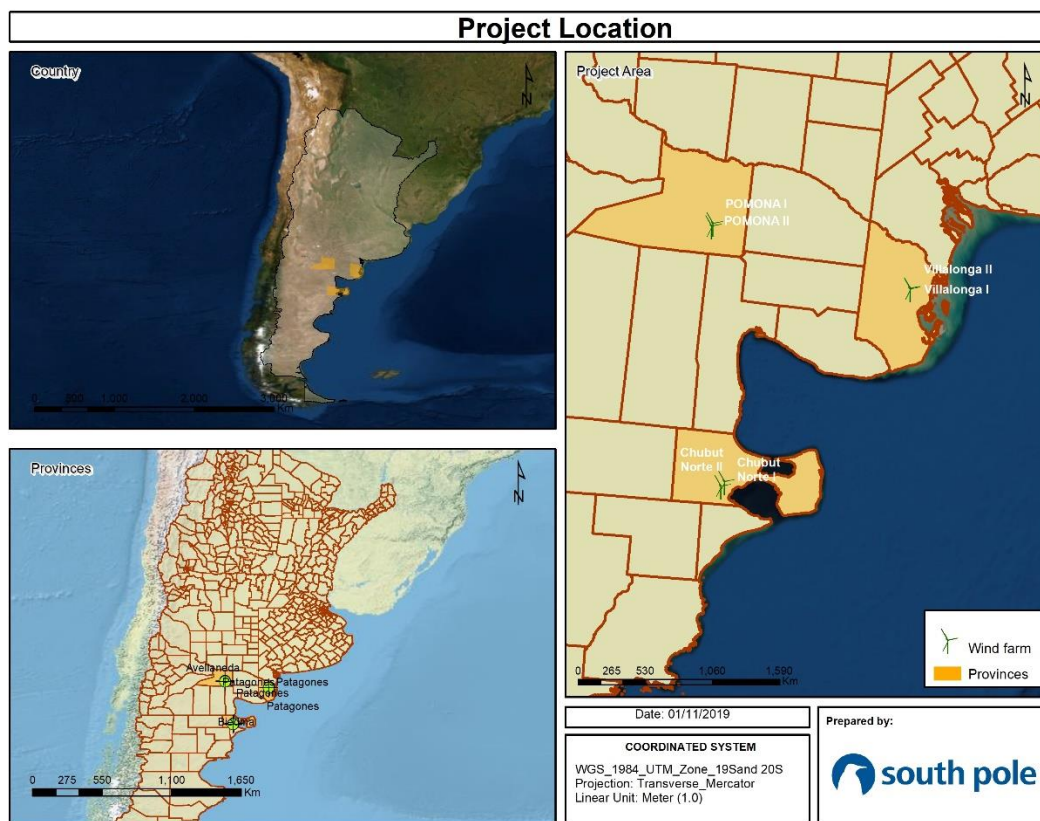


Figure 1: Project location

Chubut Norte I Wind Farm

The generation will be carried out through a set of wind turbines distributed on a plot of around 880 hectares located in the Northeast of the city of Puerto Madryn, Province of Chubut, on National Route N°3 KM 1,300, approximately 20 km north of the junction between National Route 3 and provincial Route 4. The site is framed in a rural area, the terrain is open and relatively flat. In the area where the property is located the elevations of the land are between 122 and 102 meters above sea level.

Table 13: Wind turbines coordinates Chubut Norte I wind farm

Aero ID	X	Y
1	324,200	5,284,728
2	324,711	5,284,256
3	325,234	5,283,727
4	325,705	5,283,303
5	326,279	5,285,109
6	326,753	5,284,582
7	327,333	5,283,990
8	328,015	5,283,434

Chubut Norte II Wind Farm

Chubut Norte II wind farm (PECN II) is in the same plot of land of Chubut Norte I.

Table 14: Wind turbines coordinates Chubut Norte II wind farm

Aero ID	X	Y
41	320,172	5,280,304
42	319,494	5,280,883
43	318,757	5,281,596
44	319,901	5,278,031
45	319,373	5,278,539
46	318,878	5,279,166

Pomona I Wind Farm

The PEPOM 1 project is located in the Department of Avellaneda, Province of Río Negro, 3 km from Provincial Route 4, approximately 2 km west of the Choele Choele 500kV Transformer Station.

The site is framed in a rural area, the terrain is open and relatively flat. In the area where the property is located the elevations of the land are between 140 and 144 meters above sea level.

Table 15: Wind turbines coordinates Pomona I wind farm

Aero ID	X	Y
1	262,600	5,616,937
2	262,952	5,617,605
3	263,386	5,618,134
4	262,072	5,614,269
5	263,855	5,618,642
6	264,357	5,619,120
7	264,849	5,619,640

8	265,271	5,620,139
9	265,742	5,620,623
10	266,492	5,620,919
11	262,345	5,615,518
12	263,281	5,615,827
13	264,041	5,616,549
14	264,943	5,617,594
15	265,834	5,618,625
16	266,558	5,619,281
17	267,293	5,619,887
18	263,003	5,614,522
19	263,890	5,614,487
20	264,705	5,615,231
21	265,472	5,616,074
22	266,084	5,616,709
23	266,746	5,617,423
24	267,289	5,617,953
25	267,754	5,618,431
26	268,178	5,618,914

Pomona II Wind Farm

The generation will be carried out by means of a set of 3 wind turbines distributed over an area of around 500 hectares located within a total of 4,500 hectares in the vicinity of the city of Choele Choel, Province of Río Negro.

Table 16: Wind turbines coordinates Pomoma II wind farm

Aero ID	X	Y
1	261,325	5,613,239
2	261,294	5,612,612
3	261,403	5,611,677

Villalonga I&II Wind Farms:

Villalonga I&II Wind Farms are located in an area of about 727 hectares on National Route 3, approximately 90 km north of the city of Carmen de Patagones, province of Buenos Aires.

The site is framed in a rural area, which is also currently carried out in most of the property itself. The terrain is open and relatively flat. In the area where the property is located the elevations of the land are between 12 and 25 meters above sea level.

Table 17: Wind turbines coordinates Villalonga I wind farm

Aero ID	X	Y
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V1	528,981	5,566,731
V2	529,250	5,567,185
V3	529,674	5,567,621
V4	530,055	5,567,955
V5	529,785	5,568,743
V6	530,726	5,568,917
V7	528,970	5,569,992
V8	529,071	5,570,578
V9	528,982	5,568,308
V10	528,970	5,569,236
V11	529,906	5,569,742
V12	529,565	5,566,060
V13	529,956	5,566,502
V14	530,396	5,566,915
V15	530,717	5,567,345

Table 18: Wind turbine coordinates Villalonga II wind farm

Aero N°	X	Y
V16	529,190	5,567,732

1.10 Conditions Prior to Project Initiation

Prior to project implementation, no wind turbines are installed at the sites. The energy that will be delivered to the grid is generated by a mix of thermal and renewable power generation as reflected in the combined margin emissions factor (as per the tool applied).

Since the project does not generate any GHG emissions by itself, but reduces emissions that would be generated from other power plants, it is clear that it has not been implemented to generate GHG emissions for the purpose of their subsequent reduction, removal or destruction.

1.11 Compliance with Laws, Statutes and Other Regulatory Frameworks

The following list summarizes the applicable regulatory framework met by the project:

National level

- National Constitution
- Law N° 24,065 “Electric Energy Regime” and its Decree N°1,398/92
- Law N°25,675 “General Environment Law”
- Law N°25,019 “National Regime of Solar and Wind Energy” and its Decrees N°1,220/98 and N°1,597/99.
- Law N°26,190 “Renewable Sources of Energy Promotion Regime”

The Project complies with all national law and regulations applicable since the Environmental Impact Assessments (EIA) of each wind power plant and the transmission line between the project and the substation were approved by the Ministry of Environment and Sustainable Development.

The following table presents each of the provisions by which the Ministry of Environment and Sustainable Development approved the EIAs for each of the power plants.

Table 19: EIA Approval

Power plant name	Document
Chubut Norte I	Disposición N°166/16-SGAyDS. modified by Disposición N°142_17-SGAyDS.
Chubut Norte II	Disposición N°166/16-SGAyDS. modified by Disposición N°142_17-SGAyDS.
Pomona I	Resolución N°376/17-SGAyDS.
Pomona II	Resolución N°965/17-SGAyDS.
Villalonga I	Resolución N°837/16-SGAyDS.
Villalonga II	Resolución N°021/18-SGAyDS.

Additionally, in the context of the Argentinean electricity market, all new agents (generators, selfgenerators, cogenerators or transmission agent) that aim to participate in the Wholesale Electricity Market (MEM) have to present the request to be a MEM agent in conjunction with the Environmental Impact Assessment to the Argentinean Ministry of Energy.

The Project is in compliance with this requirement given that it obtained the authorization to be a MEM agent by the following documents of the Secretariat of Electric Energy of the Argentinean Government.

Table 20: MEM Agent authorization

Power plant name	Document
Chubut Norte I	Resolución SEE 0399/2017
Chubut Norte II	Expediente 18297525/2017 ³
Pomona I	Resolución 19-E/2018
Pomona II	Disposición 41/2019
Villalonga I	Resolución 249 - E/2016
Villalonga II	Disposición DI-2019-4-APN-SSME#MHA

1.12 Ownership and Other Programs

1.12.1 Project Ownership

The renewable energy technology, i.e. the wind turbines including all relevant equipment and installations for its operation are under the ownership of Genneia S.A.

The verified carbon units (VCUs) of the project will be under the ownership of Genneia S.A.

1.12.2 Emissions Trading Programs and Other Binding Limits

³ The project does not yet have the authorization to be agent of the MEM, this document is the application that was made and is still under review, however, it is expected to obtain the authorization.

Net GHG emission reductions or removals generated by the project activity will not be used for compliance with any emissions trading program or to meet binding limits on GHG emissions in any Emission Trading program or other binding limits.

1.12.3 Other Forms of Environmental Credit

The project activity neither has nor intends to generate any other form of GHG related environmental credit for GHG emission reductions or removals claimed under any type of standards.

1.12.4 Participation under Other GHG Programs

The Project Proponent hereby confirms that they have not applied or will apply to any other GHG program to generate, certify or verify emission reductions achieved from this project activity while it is active under the VCS program.

1.12.5 Projects Rejected by Other GHG Programs

The project has not been rejected by other GHG programs.

1.13 Additional Information Relevant to the Project

Eligibility Criteria

This is not a grouped project activity. Thus, this section is not applicable for this project.

Leakage Management

Since the project activity is a renewable energy project based on wind technology, no leakage emissions are considered as per the applied methodology.

Thus, leakage management plan and implementation of leakage and risk mitigation measures are not applicable for this project activity.

Commercially Sensitive Information

No commercially sensitive information has been excluded from the public version of the project description.

Sustainable Development

In line with the Sustainable Development Goals and the 2030 Agenda for Sustainable Development that Argentina adopted in 2015, the project contributes to sustainable development by contributing to several of its environmental, social, economic and technological objectives, both directly and indirectly, such as:

- Increasing the percentage of renewable energy from the energy mix.

- Expanding infrastructure and improving technology to provide modern and sustainable energy service.
- Achieving levels of economic productivity through diversification and technological modernization.
- The project will decrease emissions of sulphur oxides (SOx), nitrogen oxides (NOx), carbon monoxide, particulate matter, other pollutants, as well as carbon dioxide associated with the combustion of fossil fuels.
- The project will reduce the dependence on fossil fuels, which are non-renewable and limited in supply.
- During construction, the project will provide employment opportunities. To the extent practical, these jobs will be filled by local residents. Besides, employment will also be generated for operation and maintenance activities.
- Ensuring sustainable production and the efficient use of natural resources.
- As renewable energy projects produce no end products in the form of solid waste (ash etc.), they address the problem of solid waste disposal encountered by most other sources of power. Being a renewable resource, to generate electricity contributes to resource conservation and therefore, responsible consumption.

Further Information

Not applicable.

2 APPLICATION OF METHODOLOGY

2.1 Title and Reference of Methodology

For this project, the approved large-scale CDM methodology ACM0002 “*Grid-connected electricity generation from renewable sources*”. Version 19.0. Sectoral Scope 01. Available at: <https://cdm.unfccc.int/methodologies/DB/VJI9AX539D9MLOPXN2AY9UR1N4IYGD>

The identification of the baseline scenario and the demonstration of additionality are assessed by applying the latest versions of the CDM “Tool for the demonstration and assessment of additionality” (version 7.0.0). Available at: https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf/history_view

The emission factor of the relevant power-grid is determined based on the procedures of the CDM “Tool to calculate the emission factor for an electricity system” (version 7.0). Available at: https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf/history_view.

The investment analysis is based on the tool methodological tool “Investment analysis” (Version 9.0). Available at: https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v9.0.pdf/history_view

The analysis of common practice is based on the tool "Common practice" (Version 3.1). Available at: https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-24-v1.pdf/history_view

2.2 Applicability of Methodology

The project activity complies with all the applicability conditions established by the approved CDM methodology ACM0002: "Grid-connected electricity generation from renewable sources" (version 19.0). and listed in the following table:

Table 21: Methodology applicability

Applicability Conditions	Project Activity
This methodology is applicable to grid-connected renewable energy power generation project activities that: a) Install a Greenfield power plant; b) Involve a capacity addition to (an) existing plant(s); c) Involve a retrofit of (an) existing operating plants/units; d) Involve a rehabilitation of (an) existing plant(s)/unit(s); e) Involve a replacement of (an) existing plant(s)/unit(s).	The project activity consists of the installation of six wind Greenfield power plants. Thus, this condition is met.
The project activity may include renewable energy power plant/unit of one of the following types: hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit	The proposed project activity involves renewable energy power generation through the installation of six wind power plants. Thus, this condition is met.
In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects) the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.	The proposed project activity involves the installation of six wind Greenfield power plants. Thus, this condition is not applicable.

In case of hydro power plants, one of the following conditions shall apply: a) The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or b) The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density, calculated using equation (3), is greater than 4 W/m²; or c) The project activity results in new single or multiple reservoirs and the power density, calculated using equation (3), is greater than 4 W/m²; or d) The project activity is an integrated hydro power project involving multiple reservoirs, where the power density for any of the reservoirs, calculated using equation (3), is lower than or equal to 4 W/m², all of the following conditions shall apply: i. The power density calculated using the total installed capacity of the integrated project, as per equation (4), is greater than 4 W/m²; ii. Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity; iii. Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m² shall be: a. than or equal to 15 MW; and b. Less than 10 per cent of the total installed capacity of integrated hydro power project.	The project activity involves the installation of six wind power plants. Thus, these criteria are not relevant.
In the case of integrated hydro power projects, project proponent shall: a) Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or b) Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This demonstration has to be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore, this water balance will take into account seasonal flows from river, tributaries (if any), and rainfall for minimum five years prior to implementation of CDM project activity.	The project activity involves the installation of six wind power plants. Thus, these criteria are not relevant.
The methodology is not applicable to: a) Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity,	The proposed project activity does not involve switching from fossil fuels to renewable energy sources

since in this case the baseline may be the continued use of fossil fuels at the site; b) Biomass fired power plants/units.	at the project site or the installation of biomass fired power plants. Thus, this condition is met.
In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is “the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance”.	The proposed project activity involves the installation of six wind Greenfield power plant. Thus, this condition is not applicable.
In addition, the applicability conditions included in the tools referred to below apply.	The applicability criteria of the “Tool to calculate the emission factor for an electricity system” are analysed below.
This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is 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).	The proposed project activity supplies electricity to the local grid, avoiding part of the electricity generated by the grid connected power plants. Thus, this condition is met.
Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants. In the latter case, the conditions specified in —Appendix 2: Procedures related to off-grid power generationll should be met. Namely, the total capacity of off-grid power plants (in MW) should be at least 10 per cent of the total capacity of grid power plants in the electricity system; or the total electricity generation by off-grid power plants (in MWh) should be at least 10 per cent of the total electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity.	In this case, the emission factor for the project electricity system is calculated for grid power plants only. Thus, this condition is met.
The tool is not applicable if the project electricity system is located partially or totally in an Annex I country.	In this case, the project electricity system is located totally in Argentina. Thus, this condition is met.

Thus, the methodology is applicable to the proposed project activity.

2.3 Project Boundary

According to the guidance specified in the Methodology ACM0002 (version 19.0), the spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system, which will be connected to each of the wind power plants (see Figure 2). The measuring equipment of each wind farm will be located at the interconnection point of the project instances with the SADI, which will be their respective substations.

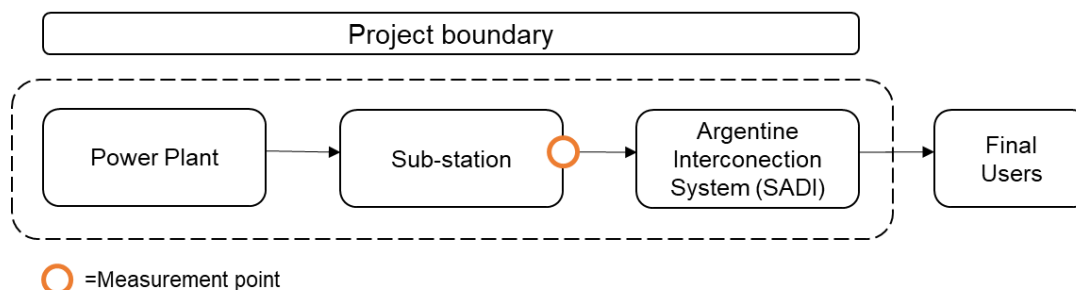


Figure 2: Project boundary

The spatial extent of the project boundary is the Argentine Interconnected System (SADI). Therefore, all GHG emissions generated by the power plants connected to the SADI are accounted for the baseline emissions.

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 ₂ O	No	Minor emission source
		Other	No	No other emission sources
Project	The project will generate zero emissions (renewable energy to the grid)	CO ₂	No	No CO ₂ emissions are envisaged
		CH ₄	No	No CH ₄ emissions are envisaged
		N ₂ O	No	No N ₂ O emissions are envisaged
		Other	No	No other emissions are envisaged

2.4 Baseline Scenario

As stated in the approved methodology ACM0002 “Grid-connected electricity generation from renewable sources” (version 19.0): If the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following:

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”.

Therefore, the baseline scenario consists of the electricity that would have been generated and delivered to the grid in the absence of the proposed project activity by:

- a) Other plants currently connected to the SADI; and
- b) New capacity additions to the SADI.

Hence, the baseline scenario is identified as the continuation of the common practice of power generation, i.e. mainly thermal power stations that emit large quantities of carbon dioxide (CO₂) to the atmosphere.

2.5 Additionality

The additionality of the project activity is demonstrated and assessed applying the CDM “Tool for the demonstration and assessment of additionality” (version 7.0.0), as stated in the methodology ACM0002 (version 19.0.0) and accepted by the VCS Standard 3 (version 3).

The tool provides a step-wise approach to demonstrate and assess additionality:

- Step 0. Demonstration whether the proposed project activity is the first-of-its-kind;
- Step 1. Identification of alternatives to the project activity;
- Step 2. Investment analysis to determine that the proposed project activity is either: (1) not the most economically or financially attractive, or (2) not economically or financially feasible;
- Step 3. Barriers analysis; and
- Step 4. Common practice analysis.

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

This step is optional. It is not applied for this project activity and therefore it is considered that the proposed project activity is not the first-of-its-kind.

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

Realistic and credible alternatives to the project activity(s) are defined through the following sub-steps:

Sub-step 1a: Define alternatives to the project activity

According to the Tool for the demonstration and assessment of additionality, project activities applying this tool in context of approved consolidated methodology ACM0002, only need to identify that there is at least one credible and feasible alternative that would be more attractive than the proposed project activity.

Outcome of Step 1a: For the project proponent, the possible alternatives to the proposed project include:

Alternative 1: The proposed project activity undertaken without being registered as a VCS project activity.

Alternative 2: Continuation of the current situation: In this case, the project activity will not be constructed, and the power will be solely supplied by the operation of power plants connected to the SADI and by the addition of new power plants.

Sub-step 1b: Consistency with mandatory laws and regulations

The implementation and operation of the project activity affects two different groups of power plants in the interconnected national system as represented in the baseline scenario by the combined margin:

- Existing power plants whose current electricity generation would be affected by the proposed VCS project activity; and
- Prospective power plants whose construction and future operation would be affected by the proposed VCS project activity.

Both alternatives, i.e. the proposed project activity undertaken without being registered as a CDM, VCS project and the continuation of the current situation, are in compliance with all of the mandatory laws and regulations.

In the following, it is shown that the proposed project is additional as per the latest guidelines of the CDM. In order to assess additionality, the corresponding CDM tool is applied as explained step by step.

Outcome of Step 1b: Both alternatives identified in sup-step 1a are in compliance with mandatory laws and regulations:

Alternative 1: The proposed project activity undertaken without being registered as a CDM, VCS project activity.

Alternative 2: Continuation of the current situation: In this case, the project activity will not be constructed, and the power will be solely supplied by the operation of power plants connected to the SADI and by the addition of new power plants.

Step 2: Investment analysis

To conduct the investment analysis, following Sub-steps are used:

Sub-step 2a: Determine appropriate analysis method

According to CDM “Tool for the demonstration and assessment of additionality” (version 7.0.0), three options can be applied for the investment analysis:

- Simple cost analysis;
- investment comparison analysis; or
- benchmark analysis.

Since this project does generate income, the first option of a simple cost analysis would not apply. Since the project owner does not have alternative and comparable choices, benchmark analysis is considered as the most appropriate.

Investment analysis is carried out to demonstrate the additionality of the project using benchmark analysis and considering the latest “Methodological Tool - Investment Analysis, version 9.0, Annex 11 of EB 101 In order to demonstrate that the proposed project activity is not economically or financially feasible without the revenue from the sale of carbon credits

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

The purpose of the investment analysis is to determine if the proposed project activity is financially attractive without the revenues of VCUs. This has been proven by comparing the financials returns from the project to that of a suitable benchmark, and if the return of the project activity is less than the benchmark, it is concluded that is not a suitable investment option.

Selection of Financial Indicator

According to Paragraph 15 from the Tool for demonstration and assessment of Additionality, the following guidelines can be used for choosing the benchmark: The applied benchmark shall be appropriate to the type of IRR calculated. Local commercial lending rates or WACC are appropriate benchmarks for a project IRR. Required/expected returns on equity are appropriate benchmarks for an equity IRR. Benchmarks supplied by relevant national authorities are also appropriate.

Given that the project IRR has been selected as the financial indicator for the investment analysis and that the project could have been developed by an entity other than the project participant, the WACC based on parameters that are standard in the market has been selected as the appropriate benchmark.

Cost of equity

Sub-section 6.1 of the additionality tool states that: “If the benchmark is based on parameters that are standard in the market, the cost of equity should be determined either by: (a) selecting the values provided in the Appendix; or by (b) calculating the cost of equity using CAPM.”

Based on this provision, the present project activity utilizes the default value for the expected return on equity, expressed in real terms, for Argentinean energy industry projects provided in the Appendix of the tool: **13.94 %**.

Cost of debt

The cost of debt was selected according to paragraph 24 of the tool Version 09.0: “If the benchmark is based on parameters that are standard in the market, the cost of debt should be calculated as the cost of financing in the capital markets (e.g. commercial lending rates and guarantees required for the country and the type of project activity concerned), based on documented evidence from financial institutions with regard to the cost of debt financing of comparable projects. In cases where this data is not available, use the commercial lending rate in the host country to calculate the cost of debt.”

Given that there is no documented evidence from financial institutions with regard to the cost of debt of financing comparable projects, the average interest rate is based on the 2014-2016 period of World Bank⁴ commercial lending interest rate in Argentina (latest data available by the time of the investment decision taken by the project participant: 12 January 2017) has been utilized to determine the cost of debt. Based on the World Bank statistics, the pre-tax cost of debt in real terms is 26.72%.

To transform the pre-tax rate in a post-tax rate, a conversion based on best practices is utilized:

$$k_{\text{post-tax}} = k_{\text{pre-tax}} * (1 - \text{tax})$$

The Argentinean income tax rate is 35%.

The result is a post-tax cost of debt in real terms of 20.0%.

WACC

According to the additionality tool Version 09.0, paragraph 26: “If the benchmark is based on parameters that are standard in the market, then the typical debt/equity finance structure observed in the sector of the country should be used. If such information is not readily available, 50 per cent debt and 50 per cent equity financing may be assumed as a default.”

At the time of decision making, the percentage of installed capacity for wind projects was very low. Even today the capacity installed of wind projects is below 3% in Argentina, therefore, no information about the debt/equity finance structure of these projects comparable to the project activity, was found. Thus, the debt/equity finance structure of 50/50 has been assumed as a default. The result is a post-tax WACC in real terms of **15.65%**, which is the benchmark for investment analysis of the project activity.

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

⁴ World Bank Indicators;
<https://data.worldbank.org/indicator/FR.INR.LEND?contextual=default&end=2018&locations=AR&start=1994&view=chart%3B> (Original source: IMF)

The wind projects receive financial income from electricity delivered to the public grid and is purchased through PPAs and on the spot market. The structure is as follows:

Project details	Units	Chunor I	Chunor II	Pomona I	Pomona II	Villalonga I	Villalonga II	Reference
Size of the projects	<i>MW</i>	28.8	26.28	101.4	11.7	51.75	3.45	See document "Technical memory" of each wind farm
Wind Turbines type	-	Vestas V126	Nordex N149	Nordex N131	Nordex N131	Vestas V126	Vestas V126	See document "Technical memory" of each wind farm
N° wind turbines	-	8	6	26	3	15	1	See document "Technical memory" of each wind farm
Generation								
Load factor	%	53,80%	50,90%	45,10%	44,90%	52,30%	49,00%	Evaluation of the energy yield of each wind farm
Net Generation (10 years)	<i>MWh</i>	128,400	120,500	401,100	46,000	237,100	14,300	Evaluation of the energy yield of each wind farm
CAPEX								
CAPEX	<i>T-USD</i>	49900	38900	135100	14400	80800	4600	See page 149 of the document "Genneia Prospecto.pdf"
OPEX								
Basic Annual Fee per wind turbine	<i>T-USD/yr</i>	68	57.34	60.19	60.19	68.00	68.00	O&M contract
O&M + IVA per each wind turbine	<i>T-USD</i>	82.28	69.39	72.83	72.83	82.28	82.28	O&M contract
Total O&M	<i>T-USD</i>	658.24	416.31	1,893.58	218.49	1,234.20	82.28	O&M contract
Insurance	<i>T-USD</i>	130.79	101.96	301.53	16.52	183.77	6.65	Insurance contract
Total OPEX	<i>T-USD</i>	789.03	518.27	2.195,11	235.01	1,417.97	88.93	
EnergyTariff Details								
Energy Tariff	<i>USD/MWh</i>	66	58,9	54,88	58,9	54,96	58,9	PPAs for each wind farm (See page 11 for Chubut I, page 12 for Pomona I and page 11 for villalonga I. Also see appendices B and C (Anexo B y C in the PPA) for the assigned values to adjust the tariff according to the year). For the Pomona II and Villalonga II projects, an average of the PPAs signed with private buyers was calculated and its fixed; this value was projected for Chunor II since it does not currently have PPAs.
Taxes								
Corporate Tax Rate	%	35%	35%	35%	35%	35%	35%	Argentina law
IVA	%	21%	21%	21%	21%	21%	21%	Argentina law
Exchange rate	<i>ARS= 1USD</i>	31.79	31.79	31.79	31.79	31.79	31.79	Average for the year 2018 when the O&M contracts were signed, the data were downloaded from the website of the Argentine central bank https://www.bcra.gob.ar/PublicacionesEstadisticas/Evolucion_moneda.asp

In the 20 years operation of these projects, as it can be seen from the attached spreadsheet, that the IRR without the VCUs income is **8.863%**, which is under the **15.65%** benchmark to make it economically feasible. Hence it can be concluded that the income that will be generated from VCUs sales will make these projects more attractive.

Sub-step 2d. Sensitivity analysis

When analysing the Sensitivity Analysis, we also find that all the scenarios that were investigated are not attractive since they are under the 15.65% benchmark:

Table 22: Summary of the results of the sensitivity analysis

Variable analysed	IRR result
-10% Total Investment	10.266 %
+10% OPEX	8.745 %
-10% OPEX	8.982 %
+10% Energy income	10.242 %
-10% Tax	9.552 %

Step 3: Barrier analysis

The project activity does not apply a barrier analysis.

Step 4: Common practice analysis

For the assessment of common practice analysis, the “Common Practice” (version 03.1) tool provided in Annex 8 of the EB Report 62 are applied. The applicable geographical area for the assessment of common practice analysis corresponds to the host country Argentina.

According to the tool for common practice analysis, the following steps are applied⁵:

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

For the common practice analysis, the installed capacity of each wind farm is used, and therefore the applicable range as +/-50% of the capacity is:

Table 23: +/-50% capacity range

Power plant name	Capacity	-50%	+50%
Combined capacity	28.80	14.4	43.2
Chubut Norte II	26.28	13.14	39.42
Pomona I	101.4	50.7	152.1
Pomona II	11.7	5.85	17.55
Villalonga I	51.75	25.875	77.625
Villalonga II	3.45	1.725	5.175
Combined capacity	223.38	111.69	335.07

⁵ For the detailed analysis, see Excel file “191029_CommonPractice”

Step 2: Identify similar projects (both CDM and non-CDM).

The information about all operational power plants connected to the Argentine Interconnection System (SADI) is obtained from the electricity wholesale market management company (CAMMESA)⁶. The participants of the SADI are differentiated by a code, for more information in the name of each plant corresponding to each code see the file of common practical analysis. Similar projects (both CDM and non-CDM) that meet all the following conditions must be identified:

- (a) The projects are located in the applicable geographical area;
- (b) The projects apply the same measure as the proposed project activity;
- (c) The projects use the same energy source/fuel and feedstock as the proposed project activity, if a technology switch measure is implemented by the proposed project activity;
- (d) The plants in which the projects are implemented produce goods or services with comparable quality, properties and applications areas (e.g. clinker) as the proposed project plant;
- (e) The capacity or output of the projects is within the applicable capacity or output range calculated in Step 1;
- (f) The projects started commercial operation before the project design document (CDM-PDD) is published for global stakeholder consultation or before the start date of proposed project activity, whichever is earlier for the proposed project activity.

Identification of the similar projects (CDM and non-CDM) is carried out as per sub-steps of Step (2) as follows:

- (a) The project is implemented and connected to the Argentinean electric grid; therefore, this is defined as the geographical boundaries of the project.
- (b) The project activity is a green-field wind power project and uses measure (b) "Switch of technology with or without change of energy source including energy efficiency improvement as well as use of renewable energies". Therefore, projects applying same measure (b) are candidates for similar projects.
- (c) The energy source used by the project activity is wind energy. Hence, only wind energy projects have been considered for analysis.
- (d) The project activity produces electricity; therefore, all power plants that produce electricity are candidates for similar projects.
- (e) The capacity range of the projects is within the applicable capacity range from 111.69 MW to 335.07 MW.
- (f) The start date of the project activity is 12 December of 2018. Therefore projects, which have started commercial operation before 12 December of 2018, have been considered for analysis.

Numbers of Similar projects identified, which fulfil above-mentioned conditioned are

N_{wind} = 0

Step 3: Within the projects identified in Step 2, identify those that are neither registered CDM, VERRA or GS project activities, project activities submitted for registration, nor project activities undergoing validation. Note their number N_{all}.

CDM project activities, which have got registered or are under validation have been excluded in this step. The list of the wind projects identified is provided to the DOE.

N_{all} = 0

⁶ CAMMESA web site: <http://portalweb.cammesa.com/memnet1/Pages/descargas.aspx>

Step 4: Within plants identified in Step 3, identify those that apply technologies that are different to the technology applied in the proposed project activity wind farms. Note their number as N_{diff} .

As per the tool, different technologies are technologies that deliver the same output and differ by at least one of the following (as appropriate in the context of the measure applied in the proposed VCS project and applicable geographical area):

- (i) Energy source/fuel (example: energy generation by different energy sources such as wind and hydro and different types of fuels such as biomass and natural gas);
- (ii) Feed stock (example: production of fuel ethanol from different feed stocks such as sugar cane and starch, production of cement with varying percentage of alternative fuels or less carbon-intensive fuels);
- (iii) Size of installation (power capacity) / energy savings:
 - Micro (as defined in paragraph 24 of decision 2/CMP.5 and paragraph 39 of decision 3/CMP.6);
 - (Small (as defined in paragraph 28 of decision 1/CMP.2);
 - Large.
- (iv) Investment climate in the date of the investment decision, inter alia:
 - Access to technology;
 - Subsidies or other financial flows;
 - Promotional policies;
 - Legal regulations;
- (v) Other features, inter alia:
 - Nature of the investment (example: unit cost of capacity or output is considered different if the costs differ by at least 20 %).

Since there are not non-CDM wind power plants in the same capacity range as the proposed project.

$N_{diff}=0$

Step 5: 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.

As per the tool, a project is considered a common practice within a sector in the applicable geographical area if the factor F is greater than 0.2 and $N_{all} - N_{diff}$ is greater than 3.

Combined project instances: $N_{all} = 0$ and $N_{diff} = 0$; $N_{all} - N_{diff} = 0$ is not greater than 3; the factor F is not greater than 0.2;

$$F = 1 - \frac{N_{diff}}{N_{all}} = 1 - \frac{0}{0} = \text{Indetermined}$$

Therefore, this project isn't a common practice.

2.6 Methodology Deviations

Not applicable. No methodology deviations are made.

3 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

3.1 Baseline Emissions

The baseline scenario and the emission rate calculation are based on the electricity that otherwise would have been generated by the plants connected to the grid and by addition of future plants. According to the methodology, no leakage emissions are considered.

Baseline emissions are calculated by multiplying the combined margin emission factor ($EF_{grid,y}$, in tCO_2e/MWh) by the electricity generated by the proposed project activity during the year y (EG_y , in MWh).

Baseline emissions include only CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation by the project activity would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants.

The detailed calculations and data of the baseline emissions are presented in the emission factor Excel spreadsheet. In the following, the relevant methodological approaches and equations are presented.

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

Equation 1
(Equation 11 of the
ACM0002 v.19.0)

Where:

BE_y	=	Baseline emissions in year y (tCO_2/yr)
$EG_{PJ,y}$	=	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)
$EF_{grid,CM,y}$	=	Combined margin CO_2 emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system” (tCO_2/MWh) ⁷

Since it is a green-field project, according to Equation (12) of ACM0002 (version 19.0),

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

The expression $EG_{PJ,y}$ is used in this Project Document Design (PDD).

The combined margin emission factor ($EF_{grid,CM,y}$) is calculated following the guidance in the “Tool to calculate the emission factor for an electricity system” (version 7.0) by applying the following steps:

- STEP 1. Identify the relevant electricity systems;
- STEP 2. Choose whether to include off-grid power plants in the project electricity system (optional);
- STEP 3. Select a method to determine the operating margin (OM);
- STEP 4. Calculate the operating margin emission factor according to the selected method;
- STEP 5. Calculate the build margin (BM) emission factor;
- STEP 6. Calculate the combined margin (CM) emissions factor.

The following explains how each step is applied:

⁷ Calculated by equation 6 of this document

STEP 1. Identify the relevant electricity systems.

For determining the electricity emission factors, the project electricity system is defined by the spatial extent of the power plants that are physically connected (Including imports) through transmission and distribution lines to the multiple project instances (i.e., Chubut Norte I&II, Pomona I&II, Villalonga I&II wind farms) and that can be dispatched without significant transmission constraints. In this case, the project electricity system is given as the Argentine Interconnection System (SADI⁸).

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

In accordance with the tool, this step is optional. For the proposed project activity, off-grid power plants are not included in the project electricity system (Option 1).

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

In accordance with the tool, the calculation of the operating margin emission factor ($EF_{grid,OM,y}$) is based on one of the following methods:

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

For the project activity, the simple OM is applied, using the ex ante data vintage:

Ex ante option: if the ex ante option is chosen, the emission factor is determined once at the validation stage, thus no monitoring and recalculation of the emissions factor during the crediting period is required. For grid power plants, use a 3-year generation-weighted average, based on the most recent data available at the time of submission of the PDD to the DOE for validation. For off-grid power plants, use a single calendar year within the five most recent calendar years prior to the time of submission of the PDD for validation.

The Operating Margin was calculated using the Simple Operating Margin method (**Option A**), because as stated in the methodology the “Tool to calculate the emission factor for an electricity system” (Version 07.0) the following requirement is satisfied:

Low-Cost/Must-Run resources constitute less than 50% of total grid generation (excluding electricity generated by off-grid power plants) in average of the five most recent years.

As seen in the following table, the average of the five most recent years is below 50%:

Table 24: Percentage of LCMR Participation⁹

	2014	2015	2016	2017	2018	Average
LCMR (GWh)	47.940	50.245	47.720	48.362	50.099	
Total (GWh)	131.205	136.870	138.070	137.200	137.825	
%	37%	37%	35%	35%	36%	

⁸ In spanish: Sistema Argentino de Interconexión

⁹ See Excel “191023_EG_SADI_Argentina_2018” spreadsheet for more details

All power plants connected to the SADI are included for the simple OM calculation. Power plants registered as CDM, VERRA or GS project activities are also included as suggested by the tool. Historical data of the three most recent years is available at the Wholesale Electricity Market Management Company web page¹⁰.

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

The simple OM emission factor is calculated as the generation-weighted average CO₂ emissions per unit net electricity generation (tCO₂/MWh) of all generating power plants serving the system, not including the low-cost/must-run power plants/units.

According to the “Tool to calculate the emission factor for an electricity system” (Version 07.0), the simple OM may be calculated by one of the following options:

- **Option A:** Based on the net electricity generation and a CO₂ emission factor of each power unit.
- **Option B:** Based on the total net electricity generation of all power plants serving the system and the fuel types and total fuel consumption of the project electricity system.

As data for option A is actually available, this option will be used for the calculation. Under this option, the simple OM emission factor is calculated based on the net electricity generation and an emission factor for each power unit, as follows:

$$EF_{grid,OMsimple,y} = \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}} \quad \text{Equation 2 (Equation 3 of the TOOL07 v. 7.0)}$$

Where:

$EF_{grid,OMsimple,y}$	= Simple Operating Margin CO ₂ emission factor in a 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 grid power units serving the grid in year y except LC/MR power units.
y	= The relevant year as per the data vintage chosen in step 3.

Ex ante $EF_{grid,OMsimple,y}$ is calculated as an annual generation weighted average of: $EF_{grid,OMsimple,2016}$, $EF_{grid,OMsimple,2017}$, $EF_{grid,OMsimple,2018}$.

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

The emission factor of each power unit m should be determined as follows:

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:

$$EF_{EL,m,y} = \frac{\sum_i FC_{i,m,y} \times NCV_{i,y} \times EF_{CO2,i,y}}{EG_{m,y}} \quad \text{Equation 3 (Equation 4 of the TOOL07 v. 7.0)}$$

Where:

$EF_{EL,m,y}$	= CO ₂ emission factor for power unit m in year y (tCO ₂ /MWh).
$FC_{i,m,y}$	= Amount of fuel type i consumed by power unit m in year y (mass or volume unit)

¹⁰ Information available at: <http://portalweb.cammesa.com/memnet1/Pages/descargas.aspx>

NCV _{i,y}	= Net calorific value (energy content) of fuel type <i>i</i> in year <i>y</i> (GJ/mass or volume unit).
EF _{CO₂,i,y}	= CO ₂ emission factor of fuel type <i>i</i> in year <i>y</i> (tCO ₂ /GJ).
EG _{m,y}	= Net quantity of electricity generated and delivered to the grid by power unit <i>m</i> in year <i>y</i> (MWh).
<i>m</i>	= All power units serving the grid in year <i>y</i> except LC/MR power units.
<i>i</i>	= All fuel types combusted in power unit <i>m</i> in year <i>y</i>
<i>y</i>	= The relevant year as per the data vintage chosen in step 3.

However, for the calculation of the emission factor of each power unit *m*, the following options should be considered as well according to the availability of information:

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:

$$EF_{El,m,y} = \frac{EF_{CO_2,m,i,y} \times 3.6}{\eta_{m,y}}$$

Equation 4
(Equation 5 of the
TOOL07 v. 7.0)

Where:

EF _{EL,m,y}	= CO ₂ emission factor for power unit <i>m</i> in year <i>y</i> (tCO ₂ /MWh).
EF _{CO₂,m,i,y}	= Average CO ₂ emission factor of fuel type <i>i</i> used in power unit <i>m</i> in year <i>y</i> (tCO ₂ /GJ).
η _{m,y}	= Average net energy conversion efficiency of power unit <i>m</i> in year <i>y</i> (ratio).
<i>m</i>	= All power units serving the grid in year <i>y</i> except LC/MR power units.
<i>y</i>	= The relevant year as per the data vintage chosen in step 3.
3.6	= Conversion factor (GJ/MWh)

Option A3: If for a power unit *m* only data on electricity generation is available, an emission factor of 0 tCO₂/MWh can be assumed as a simple and conservative approach.

Determination of EG_{m,y}

For grid power plants, EG_{m,y} has been determined according to the data collected by the monitoring systems of each power generation plant, these data are referenced in the emission factor Excel spreadsheet. Using the data from the emission factor Excel spreadsheet it is possible to calculate the OM for the required 3 years (2016, 2017, 2018).

- EF_{grid,OM 2016}: 0.5038 tCO₂/MWh
- EF_{grid,OM 2017}: 0.4887 tCO₂/MWh
- EF_{grid,OM,2018}: 0.4726 tCO₂/MWh

Therefore the weighted average EF_{grid,OM,2016,2017,2018} remains as:

EF _{grid,OM 2016,2017,2018}	0.4885 t CO ₂ /MWh
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STEP 5. Calculate the build margin (BM) emission factor

In terms of vintage of data, option 1 of the tool is chosen, i.e. the *ex ante* approach:

Option 1: For the first crediting period, calculate the build margin emission factor *ex ante* based on the most recent information available on units already built for sample group *m* at the time of PDD submission for validation. For the second crediting period, the build margin emission factor should be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period. For the third crediting period, the build margin emission factor calculated

for the second crediting period should be used. This option does not require monitoring the emission factor during the crediting period.

Capacity additions from retrofits of power plants are not included in the calculation of the build margin emission factor.

The sample group of power units m used to calculate the build margin is determined as per the following procedure:

- (a) Identify the set of five power units, excluding power units registered as CDM, VCS or GS project activities, that started¹¹ to supply electricity to the grid most recently ($SET_{5-units}$) and determine their annual electricity generation ($AEG_{SET-5-units}$, in MWh);
- (b) Determine the annual electricity generation of the project electricity system, excluding power units registered as CDM, VCS or GS project activities (AEG_{total} , in MWh). Identify the set of power units, excluding power units registered as CDM, VCS or GS 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 ($AEG_{SET-\geq 20\%}$, in MWh);
- (c) From $SET_{5-units}$ 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 than 10 years ago. Include in that set the power units registered as CDM, VCS or GS 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 ($SET_{sample-CDM}$) the annual electricity generation ($AEG_{SET-sample-CDM}$, in MWh); If the annual electricity generation of that set is comprising at least 20% of the annual electricity generation of the project electricity system (i.e. $AEG_{SET-sample-CDM} \geq 0.2 \times AEG_{total}$), 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

¹¹ The date on which the plants started to supply electricity to the grid is available on:
<http://portalweb.cammesa.com/memnet1/Pages/descargas.aspx>

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 ($SET_{\text{sample-CDM} \rightarrow 10\text{yrs}}$).

As can be seen in the emission factor Excel spreadsheet, in this case all steps (a) to (f) need to be applied and the resulting sample group of power units m is the $SET_{\text{sample-CDM} \rightarrow 10\text{yrs}}$.

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 power generation data is available, i.e. in this case the year 2018. The calculation is made as follows:

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

Equation 5
(Equation 15 of the
TOOL07 v. 7.0)

Where:

$EF_{\text{grid,BM},y}$	= 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 power generation data is available

The emission factor of each power unit m in the build margin is determined analogous as for the operating margin by Equation 3 or other listed methods depending on the available information.

The detailed calculations are provided in the worksheet "Build Margin (BM)" of the emission factor Excel spreadsheet.

The resulting BM emission factor is (rounded):

$EF_{\text{BM},2018}$	0.3282 t CO_2/MWh
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Step 6: Calculate the combined margin (CM) emissions factor

The combined margin emission factor is calculated as follows:

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

Equation 6
(Equation 16 of the
TOOL07 v. 7.0)

Where:

$EF_{\text{grid,OM},y}$	= Operating margin CO_2 emission factor in year y (tCO_2/MWh)
$EF_{\text{grid,BM},y}$	= Build 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 wind projects the weighting of operating and build margin is done as indicated in the tool for the first crediting period, i.e. $w_{\text{OM}} = 0.75$ and $w_{\text{BM}} = 0.25$.

The combined margin emission factor is (rounded):

$EF_{\text{grid,CM,y}}$	0.4484 t CO ₂ /MWh
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The rounded emission reductions ex-ante for each instance of the project result in:

Table 25: Summary of the expected annual emission reduction

Power plant	Estimated ERs (tCO ₂ /yr)
Chubut Norte I	57,580
Chubut Norte II	54,037
Pomona I	179,869
Pomona II	20,628
Villalonga I	125,653
Villalonga II	6,413

3.2 Project Emissions

Since the project activity are the installation of six wind farms, the project emissions are zero.

$$PE_y = 0$$

3.3 Leakage

No leakage emissions are considered as provided in the methodology:

$$LE_y = 0$$

3.4 Net GHG Emission Reductions and Removals

Since project emissions and leakage emissions are zero, emission reductions are directly given as the baseline emissions as follows:

$$ER_y = BE_y - PE_y$$

Equation 7
(Equation 17 of the
ACM0002 v. 19.0)

Where:

- ER_y = Emission reductions in year y (tCO₂e/yr)
- BE_y = Baseline emissions in year y (tCO₂/yr)
- PE_y = Project emissions in year y (tCO₂e/yr)

See more details in the attached emission factor Excel spreadsheet.

As shown in the attached spreadsheet, the value of annual emission reductions estimated for the project activity is rounded.

Year	Estimated baseline emissions or removals (tCO ₂ e)	Estimated project emissions or removals (tCO ₂ e)	Estimated leakage emissions (tCO ₂ e)	Estimated net GHG emission reductions or removals (tCO ₂ e)
2018	7,630	0	0	7,630
2019	281,387	0	0	281,387
2020	444,180	0	0	444,180
2021	444,180	0	0	444,180
2022	444,180	0	0	444,180
2023	444,180	0	0	444,180
2024	444,180	0	0	444,180
2025	444,180	0	0	444,180
2026	444,180	0	0	444,180
2027	444,180	0	0	444,180
2028	419,841	0	0	419,841
Total	4,262,298	0	0	4,262,298

4 MONITORING

4.1 Data and Parameters Available at Validation

Data / Parameter	EF _{grid,CM,y}
Data unit	tCO ₂ /MWh
Description	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”
Source of data	Calculated based on information provided by the electricity wholesale market management company (CAMMESA ¹²)
Value applied	0.4484
Justification of choice of data or description of measurement methods and procedures applied	As per the most recent “Tool to calculate the emission factor for an electricity system”
Purpose of Data	Calculation of baseline emissions

¹² Information available at: <http://portalweb.cammesa.com/memnet1/Pages/descargas.aspx>

Comments	Since the OM and BM emission factor was set ex-ante, as a result The CM emission factor is also set ex-ante for the first crediting period, for further details see Section 3.1.
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4.2 Data and Parameters Monitored

Data / Parameter	EG_{facility,y}																
Data unit	MWh/yr																
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y																
Source of data	Measurement in the power plant																
Description of measurement methods and procedures to be applied	The following parameters will be measured: The meters installed will be bi-directional, taking into account both the quantity of electricity supplied by the project plant to the grid and the quantity of electricity delivered to the project plant from the grid. In this case the individual values are not required																
Frequency of monitoring/recording	Continuous measurement and at least monthly recording. Typically, the measured data is read once every 24 hours using tele-metering technology (remotely).																
Value applied	<table border="1"> <thead> <tr> <th>Power plant</th><th>Generation (MWh/yr)</th></tr> </thead> <tbody> <tr> <td>Chubut Norte I</td><td>128,400</td></tr> <tr> <td>Chubut Norte II</td><td>120,500</td></tr> <tr> <td>Rawson III</td><td>103,400</td></tr> <tr> <td>Pomona I</td><td>401,100</td></tr> <tr> <td>Pomona II</td><td>46,000</td></tr> <tr> <td>Villalonga I</td><td>280,200</td></tr> <tr> <td>Villalonga II</td><td>14,300</td></tr> </tbody> </table>	Power plant	Generation (MWh/yr)	Chubut Norte I	128,400	Chubut Norte II	120,500	Rawson III	103,400	Pomona I	401,100	Pomona II	46,000	Villalonga I	280,200	Villalonga II	14,300
Power plant	Generation (MWh/yr)																
Chubut Norte I	128,400																
Chubut Norte II	120,500																
Rawson III	103,400																
Pomona I	401,100																
Pomona II	46,000																
Villalonga I	280,200																
Villalonga II	14,300																
Monitoring equipment	A main and a backup meter will be installed for each power plant.																
QA/QC procedures to be applied	The verification of the meters will be done as established by the national authorities or alternatively at least once every three years. In addition, the generation values will be crosschecked with the information available on the website of the electricity wholesale market management company.																
Purpose of data	Calculation of baseline emissions.																
Calculation method	Not applicable.																

Comments	All data collected as part of the monitoring process is archived electronically and kept at least for two years after the end of the last crediting period.
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4.3 Monitoring Plan

The monitoring plan, which is implemented by the Project Proponent, describes about the monitoring organisation, parameters to be monitored, monitoring practices, quality assurance, quality control procedures, data storage and archiving, etc., according to the approved methodology ACM0002. The continuous monitoring of electricity generation ensures that the net electricity delivered to the grid is completely monitored along the whole crediting period, given the fact that the total generation measured will affect the amount of emission reductions obtained.

Electricity generation of the project activity

Due to the project participant's choice of an ex-ante emission factor, the most important variable to monitor is the project's electricity generation. It will be measured according to the national standards and regulations for the wholesale market participants (rules from the CAMMESA – Compañía Administradora del Mercado Mayorista Eléctrico¹³). Two 0.2s precision meters will be installed for each wind farm, one of them acting as a backup unit. All units will be connected at the interconnection point where they inject energy to the transmission system.

All the meters will be provided with built-in registers, and generation data will be ready to download both remotely and/or locally by CAMMESA and the project developer. The information will be acquired on programmable intervals ranging from a minimum of one minute to a maximum of an hour.

The information is backed up by the operational team frequently. The data is included in an excel spreadsheet for emission reductions calculations on a monthly basis. All data collected as part of the monitoring process are archived electronically and kept at least for two years after the end of the last crediting period.

The following scheme shows the power plants, the substation and the metering points:

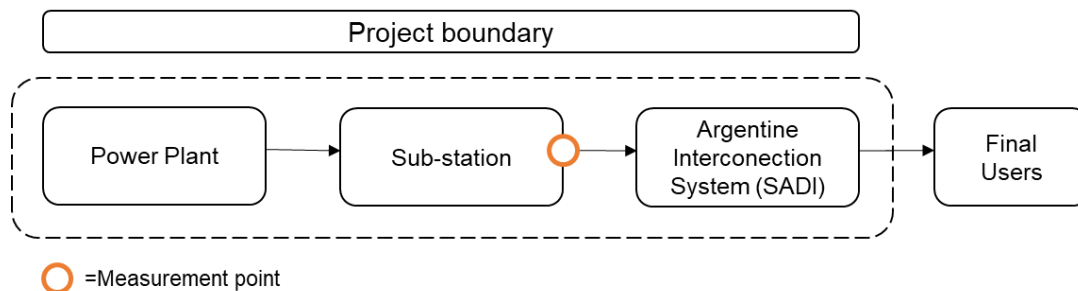


Figure 3: Simplified scheme of the monitoring

QA/QC measures

¹³ Additional relevant information available at <https://smec.cammesa.com/normativa/>

As indicated, there is a main and a backup electricity meters for each wind farm, which assures correct measurement in case of failures of the main electricity meters. Moreover, in case of failure of any of the meters, the project developer will proceed according to the “Sistema de Medición Comercial” (SMEC) and CAMMESA regulations¹⁴.

If any other emergency would not allow measuring correctly the power generation of the plants or if data would be missing as a result of a failure in the monitoring process, no emission reductions shall be claimed during that period until guaranteeing again correct function of the meters and having reliable data.

Personnel responsible for monitoring

Figure 4 shows the organizational chart of the monitoring.

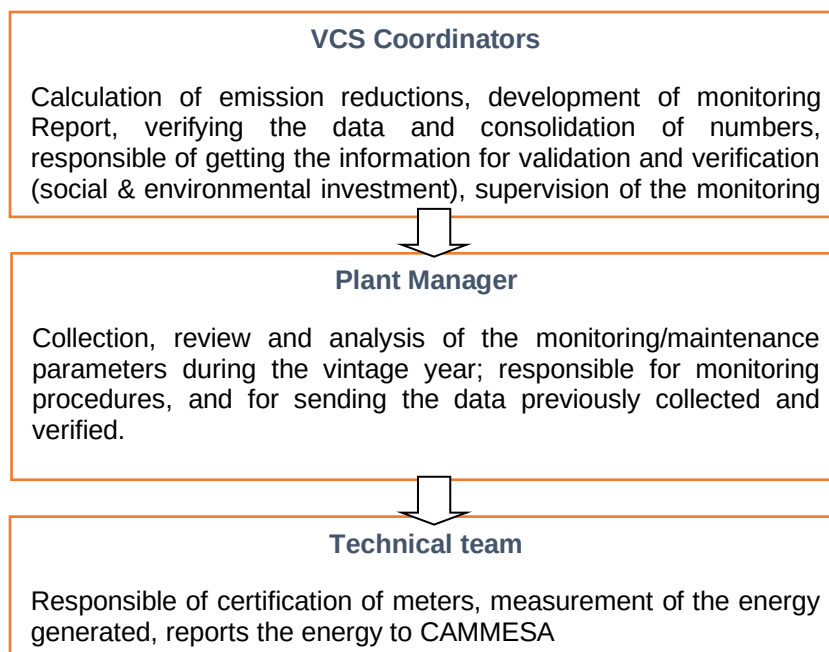


Figure 4: Operational structure of the monitoring plan

Responsible personnel:

- The **VCS Coordinators** supervise the monitoring process and are in charge of compiling the monitoring data in an excel spreadsheet and calculating the emission reductions of the monitoring period. They also develop the monitoring report in accordance with the VCS rules.
- The **Plant Manager** is responsible for verification of energy measurement. The Plant Manager is responsible for checking and verifying the meter readings.
- The **Instrumentation and Control Engineers** are responsible for electricity generation reading and for processing the energy produced by the project from the meters installed at the substation. Records of the meter are downloaded in a spreadsheet for measurement control and the data discharged from the meter is stored electronically and sent to CAMMESA.

¹⁴ Technical regulations available at <https://smec.cammesa.com/normativa/>

Personnel who carry out monitoring tasks are familiar with the basic monitoring requirements and structures. New personnel have to participate in a basic training in order to get familiarized with the monitoring procedures. Since the main monitoring tasks, i.e. the measurement of the energy production, the calibration of energy meters, and the reporting of the energy generation, are carried out independently from the VCS as part of the daily operation, no specific training is required. The VCS Coordinators are supported by an external consultant if necessary, in order to assure correct application of the monitoring procedures. They also carry out corrective actions if any inconsistency is identified and train the Plant Manager and the Technical team, if necessary.

All data collected as part of monitoring will be archived electronically and be kept at least for 2 years after the end of the last crediting period.

5 SAFEGUARDS

5.1 No Net Harm

The project does not involve any potential negative environmental and socio-economic impacts and hence these criteria is not applicable to this project activity.

5.2 Environmental Impact

According to the Environmental Licences of the projects approved by the environmental authority through:

Power plant name	Document
Chubut Norte I	Disposición N°166/16-SGAYDS.
Chubut Norte II	Disposición N°166/16-SGAYDS.
Pomona I	Resolución N°376/17-SGAYDS.
Pomona II	Resolución N°965/17-SGAYDS.
Villalonga I	Resolución N°837/16-SGAYDS.
Villalonga II	Resolución N°837/16-SGAYDS.

This Resolution certified that the project does not generate any type of harmful actions according to:

- Ley 5.439 “Código Ambiental de la Provincia del Chubut”, and “Decreto Reglamentario 185/09” with its modification 1476/11.
- Regulations of the Secretariat of Energy (SE) of the nation and of the National Electricity Regulatory Body (ENRE¹⁵).
- Ley 3266 “Evaluación de Impacto Ambiental” and “Decreto 656/2004” of the province of Rio Negro.
- Ley 11.723 “Ley Integral del Medio Ambiente y de los Recursos Naturales” of the Buenos Aires’ province.
- Resolución 304/99 of the Secretaria de Energía de la Nación

In addition, with these resolutions the projects were authorized to be developed since they comply with the environmental and specific applicable regulations of the host country, including eventual mitigation and restoration works.

The following are all the areas covered in the EIA:

- Physical environment

¹⁵ In spanish: Ente Nacional Regulador de la Electricidad

- Biological environment
- Socioeconomic environment
- Landscape

Based on the research and the different studies in all relevant areas, the team of professionals in charge of the EIA concluded that the projects are environmentally and socially feasible, and that it will contribute to the sustainable development of the Republic of Argentina.

5.3 Local Stakeholder Consultation

Chubut Norte I and II wind farms

Since these two parks are on the same geographical area, the local stakeholder consultation was held for both. Here's a list of the showings of the construction to different the different stakeholders:

Organization	Date	Description	Place of Meeting
Inst. Ballester	24/09/2013	3° Class A y B	Buenos Aires
Colegio San Andrés	03/10/2013	4° Class Ciencias	Olivos, Bs. As.
Colegio E.A.O.	09/10/2013	6° grado A, B y C	San Justo, Buenos Aires
Esc. 138	14/10/2013	6° grado C y D	Trelew, Chubut
Escuela del Sol	24/10/2013	6° grado	Trelew, Chubut
Esc. 138	25/10/2013	6° grado A y B	Trelew, Chubut
Esc. 775	28/10/2013	9° Class EGB	Puerto Madryn, Chubut
Esc. 710	30/10/2013	4° Class	Puerto Madryn, Chubut
Dirección Turismo Rawson	31/10/2013	Equipo técnico	Rawson, Chubut
Esc. 733	01/11/2013	9° Class EGB A y B	Bryn Gwyn, Gaiman Chubut
Esc. 733	01/11/2013	9° Class EGB C y D	Bryn Gwyn, Gaiman Chubut
Esc. 730	04/11/2013	5° Class	Trelew, Chubut
Esc. Técnica N° 21	20/11/2013	4° Class	San Martín de los Andes, Neuquén
Estudio de Arq. Villalobos	05/02/2014		Rawson, Chubut
Biólogos de la UPSJB	07/04/2014		Trelew, Chubut
CREE	07/04/2014		Rawson, Chubut
IMA Secundario	05/05/2014	2° Class A	Rawson, Chubut
Capacitación CREE y UPSJB	12/05/2014		Salta, Río Negro, Santa Cruz, Chubut, Santa Fe, Mendoza, Bs. As.
Capacitación CREE y UPSJB	13/05/2014		
Capacitación CREE y UPSJB	14/05/2014		Capacitador de España
IMA Secundario	16/05/2014	2° Class B	Rawson, Chubut
Esc. 47	30/05/2014	6° grado A y B	Rawson, Chubut
DGER	12/06/2014		Rawson, Chubut
IMA Primario	27/06/2014	6° grado A y B	Rawson, Chubut
Canal CCTV para CNN	05/07/2014		Buenos Aires

Dirección Turismo Rawson	15/07/2014	Conting. Turístico	Rawson, Chubut
Dirección Turismo Rawson	17/07/2014	Conting. Turístico	Rawson, Chubut
Esc. N° 50	08/09/2014	6° A, B y C	Trelew, Chubut
ISFD N° 808.	25/09/2014	1°, 2° y 3° Class	Anexo Rawson, Chubut
St. Brendan's	26/09/2014	1° Class A y B	Buenos Aires
St. Brendan's	26/09/2014	6° A, B y C	Buenos Aires
Instituto Ballester	29/09/2014	3° Class	Villa Ballester, Bs. As.
San Andrés	01/10/2014	4° Class Ciencias	Olivos, Bs. As.
E.A.O	09/10/2014	6° grado A, B y C	San Justo, Buenos Aires
Esc. N° 24	17/10/2014	5° Class	Rincón de los Sauces, Neuquén
Esc- N° 773	21/10/2014	5° y 6° Class	28 de Julio, Chubut
Esc. N° 94	12/11/2014	5° y 6° grado	Lago Blanco, Chubut
Productora Gomotion	24/11/2014		Trelew, Chubut
TELECOM Argentina	03/12/2014		Bs. As.
Familia empleados	19/12/2014		Rawson y Trelew
Argentina Visión	29/04/2015	Turismo educativo	Puerto Madryn, Chubut
UPSJB y JOREIC	05/05/2015	Estud. Ingen.	Patagonia
Canal 7	20/05/2015	Locutora, camar.	Rawson, Chubut
IMA Primario	26/06/2015	6° A y B	Rawson, Chubut

During the tours, it was given to the local stakeholders all sort of communication channels with the project. Until now no negative comments have been received.

Pomona I and II

On 8th of March 2018, a stakeholder consultation was held on a meetings room in Pomona, Viedma, Río Negro. Over 75 people attended between local authorities, interested locals and the press.

Among the present guests where:

- Jorge Brito, president of Genneia
- Marcos Leonard and José Cortes, in representation of Nordex Windpower SA
- Alberto Weretilneck, Governor of de Río Negro
- Miguel Jara, intendent of Pomona
- Lucas Pica, labor secretary of de Río Negro
- Ricardo Diclerico, general secretariat of UOCRA in Río Negro
- Representatives of Parliament María Maldonado, Elsa Inchassendague y Leandro Tozzi
- Luis Di Giacomo, Minister of local government of Río Negro
- Carlos Valeri, minister of public projects of Río Negro
- Fabián Zgaib, health minister of Río Negro
- Intendents of Valle Medio.
- Community of Pomona y surroundings.

During this meeting a presentation was made of the project, the investment and the localization of the wind turbines to be installed. Also, the structure of local labour to be employed in line with the objective to have at least 70% of locals employed.

For a direct communication with the community, a post box has been left on the side of the main road into the project.



Figure 5: Mailbox implemented at the project site for communications with stakeholders

It was given to the local stakeholders all sort of communication channels with the project. Until now no negative comments have been received.

Villalonga I y II wind farms

These two projects during the month of September 2017 had a few meetings with the local authorities and representatives of the community. In total 23 contacts have been made with 13 in depth meetings. Topics such as construction phase, functioning of a wind farm, how this project will not affect the environment and neighbors was addressed.

The following chart shows photos of such meetings and the list in Spanish from the open sourced brochure of GENNEIA:

Parque Eólico Villalonga

VECINOS / RADIO GEOGRÁFICO

- **Pablo Campos** (campo vecino casa rosa)
- **Jacobo y Diego Waserman** (ex-dueños)
- **Adelia Scheppe** (campo vecino arrendado a Graft).
- **Néstor Fibiger** (campo vecino cruzando ruta 3)
- **Gustavo Eberling** (campo vecino)
- **Gonzalo Reisvig** (campo vecino)
- **María Rita Moreno** (campo vecino). Su marido es Errecart
- **Fabián Leonhart** (campo vecino. Vive en Bahía Blanca)

GESTIÓN PÚBLICA

Jose Luis Zara Intendente de Carmen de Patagones



Juan Carlos Ricca, Subsecretario de Planificación.
Guido Bergandi, Subsecretario de Servicios Públicos.
Daniel Paredes, Jefe de Gabinete.
Marcelo Castro Novo, Asuntos Aeroportuarios.

Romina Becker Delegada Stroeder
Fabio Betrinelli Delegado Villalonga
Gabriel Escobar (Obras Particulares Patagones)
Arquitecta Verónica (Obras Particulares Patagones)

FUERZAS DE SEGURIDAD Y PREVENCIÓN



Miguel Esquivel y Ramón Juárez (Cuartel de Bomberos de Villalonga)
Oficial Principal Mella Manuel (Comisaría de Villalonga)
Subinspectora Keller Silvana (Destacamento Policial de Stroeder)

ORGANIZACIONES DE LA COMUNIDAD

● **HOSPITAL LUÍS URIZAR STROEDER**
 ● **HOSPITAL ARANCIBIA VILLALONGA**

CONTRATISTAS

José Cantini, de Milicic, empresa que tiene contrato formal para construir el PE. ABB (eléctrica).

It can be observed that neighbors, local authorities, local forces and hospitals have been addressed and contacted. It was given to them all sort of communication channels with the project. Until now no negative comments have been received.

5.4 Public Comments

The project was open for public comment from 11 November – 11 December 2019 and no comments were received.