



**Verified Carbon
Standard**

PARQUE EÓLICO MALDONADO

2nd Monitoring Report

Document Prepared by NTT DATA EUROPE & LATAM GREEN ENGINEERING

Project Title	Parque Eólico Maldonado
Version	3.0
Report ID	1
Date of Issue	03-November-2022
Project ID	1308
Monitoring Period	01-October-2016 to 31-December-2021
Prepared By	R del Sur S.A.: Diego Bonacchi NTT Data: Alfonso Medrano Gutierrez
Contact	R del Sur S.A.: Gabriel Otero 6462 / 207 - Montevideo - Uruguay dbonacchi@rdelsur.com.uy , https://www.rdelsur.com.uy/ NTT Data: Camino Fuente de la Mora nº 1. 28050 Madrid alfonso.medrano.gutierrez@nttdata.com , es.nttdata.com

1	PROJECT DETAILS.....	1
1.1	Summary Description of the Implementation Status of the Project	1
1.2	Sectoral Scope and Project Type	2
1.3	Project Proponent	2
1.4	Other Entities Involved in the Project	3
1.5	Project Start Date	3
1.6	Project Crediting Period	3
1.7	Project Location	3
1.8	Title and Reference of Methodology	6
1.9	Participation under other GHG Programs.....	6
1.10	Other Forms of Credit.....	6
1.11	Sustainable Development Contributions	7
2	SAFEGUARDS	10
2.1	No Net Harm	10
2.2	Local Stakeholder Consultation	11
2.3	AFOLU-Specific Safeguards	12
3	IMPLEMENTATION STATUS	13
3.1	Implementation Status of the Project Activity	13
3.2	Deviations	14
2.1.1	Methodology Deviations	14
2.1.2	Project Description Deviations	14
3.3	Grouped Projects	14
4	DATA AND PARAMETERS.....	15
4.1	Data and Parameters Available at Validation	15
4.2	Data and Parameters Monitored.....	17
4.3	Monitoring Plan	19
5	QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS	23
5.1	Baseline Emissions	23
5.2	Project Emissions	28
5.3	Leakage.....	28
5.4	Net GHG Emission Reductions and Removals.....	29

1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The purpose of the project is the generation of electricity from renewable sources through the construction and operation of a 50 MW wind farm, located at the department of Maldonado, in the Southeast region of Uruguay. This wind farm consists of 25 turbines with a capacity of 2 MW each. The energy generated by the project is supplied to the national grid of Uruguay through the substation “Estación Francisco Veira” annexed to the wind farm.

Purchase of main equipment happened on July 20th, 2012, when the wind turbines were bought. The wind farm started its construction on November 19th, 2012 and got its environmental authorization on November 7th 2012. Commercial operation started on April 10th, 2014. Since then, has been in continued operation.

The relevant implementation dates of the Parque Eólico Maldonado, are set out in the following table:

Table 1. Relevant implementation dates of the Project activity

Date	Key Events	Document
20/07/2012	Purchase of main equipment	20120720 Equipos - Contrato compraventa aerogeneradores
19/11/2012	Start of Works / Date of construction	20121116 Nota DINAMA previo inicio obras
07/11/2012	Environmental authorization	20130730 Resolución de unificación del Parque Eólico 20121116 Nota DINAMA previo inicio obras
10/04/2014	Commissioning date	20140414 Acta habilitación
10/04/2014 – to date (it will continue operating)	Continued operation period	Generation records (Provided for the first and second monitoring periods)

Date	Key Events	Document
10/04/2014	Starting date of the crediting period	VCS Homepage: Home / Verified Carbon Standard / Project 1308 ¹
05/04/2016	VCS Registration date	VCS Homepage: Home / Verified Carbon Standard / Project 1308
15/03/2017	1st Monitoring Report	VCS Homepage: Home / Verified Carbon Standard / Project 1308

The power plant has an expected operating life of 20 years, having started operating in 2014, and it was estimated that it would displace around 190,500 MW-h/year from the national power grid, generating, on average, annual emission reductions of 109,818 tCO₂ and amounting to 1,098,180 tCO₂ for first crediting period.

During the second monitoring period (01/10/2016 to 31/12/2021), the project has operated continuously and satisfactorily. No relevant event or situations have been reported during the monitoring period. In this period, presented from October 2016 to December 2021, the total amount of emission reductions is 483,557 t CO₂e, because of displacement the electricity generated in fossil fuel fired power plants of the grid.

1.2 Sectoral Scope and Project Type

Sectoral scope 1. VCS sectoral scope: Energy (renewable/non-renewable).

Approved consolidated baseline methodology ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”; Version 16.0.

The proposed project activity is not a grouped project.

1.3 Project Proponent

Organization name	R del Sur, S.A.
Contact person	Diego Bonacchi
Title	General Manager
Address	Gabriel Otero 6462 / 207 – Montevideo – Uruguay

¹ Parque Eólico Maldonado, VCS registry home page: <https://registry.verra.org/app/projectDetail/VCS/1308>

Telephone	+598 2 6007201
Email	dbonacchi@rdelsur.com.uy

1.4 Other Entities Involved in the Project

There are no other entities involved in the Project.

1.5 Project Start Date

The project start date was on April 10th, 2014. This is the date of commencement for the commercial operation of the project.

1.6 Project Crediting Period

The crediting period of the project is 10 years. It is running from April 10th, 2014, to April 9th, 2024. The crediting period lasts 10 years and is renewable at most twice.

1.7 Project Location

The 25 wind turbines that make up the wind farm are being distributed along the Sierra de los Caracoles in the municipality of San Carlos in the department of Maldonado, fitting in pages F-26, F-27 and F-28 MTN 1: 50,000.



Table 2. Turbine Location

UTM (21h)	X	Y
CAR-03-01	689,559	6,171,657
CAR-03-02	689,726	6,171,981
CAR-03-03	689,902	6,172,301
CAR-03-04	690,052	6,172,635
CAR-03-05	690,845	6,174,762

CAR-03-06	691,010	6,175,096
CAR-03-07	691,103	6,175,453
CAR-03-08	691,234	6,175,819
CAR-03-09	691,338	6,176,167
CAR-03-10	691,444	6,176,514
CAR-03-11	691,539	6,176,866
CAR-03-12	691,601	6,177,221
CAR-03-13	691,734	6,177,584
CAR-03-14	691,844	6,177,961
CAR-03-15	691,972	6,178,319
CAR-03-16	692,413	6,179,538
CAR-03-17	692,546	6,179,922
CAR-03-18	692,676	6,180,258
CAR-03-19	692,781	6,180,602
CAR-03-20	692,907	6,181,037
CAR-03-21	693,020	6,181,567
CAR-03-22	693,097	6,181,926
CAR-03-23	693,201	6,182,342
CAR-03-24	693,286	6,182,699
CAR-03-25	693,342	6,183,054

Control towers are located at the following coordinates:

Table 3. Location of the meteorological towers

UTM (21h)	X	Y
MAL-TC01	689,559	6,179,729
MAL-TC02	689,726	6,183,256

Finally, the substation is available at the following coordinates:

Table 4. Location of Maldonado Substation

UTM (21h)	X	Y
SETMAL	689,559	6,173,601

1.8 Title and Reference of Methodology

The project uses the UNFCCC approved consolidated baseline and monitoring methodology ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources -- Version 16.0”.

The project uses the following UNFCCC tools, also referred in the methodology:

- “Tool to calculate the emission factor for an electricity system -- Version 05.0”
- “Tool for the demonstration and assessment of additionality -- Version 07.0.0”
- “Combined tool to identify the baseline scenario and demonstrate additionality -- Version 06.0.0”

1.9 Participation under other GHG Programs

The project is not registered under any other GHG program, which also includes not being registered under the CDM scheme.

1.10 Other Forms of Credit

The project does not reduce GHG emissions from activities that are included in an emission-trading program or any other mechanism that includes GHG allowance trading. There is no national program or cap, applicable to this project. The project doesn’t use and will not use its GHG emission reductions and removals for compliance under any such programs or mechanisms.

Uruguay is not an Annex I country of the Kyoto protocol, so it is not participating in the Assigned Amount Unit (AAU) markets. Also, the country has not implemented a national emission rights market.

The Project is a renewable energy generation project. It discharges no emission during the operation period; thus, the project doesn’t fall into categories that create GHG emissions primarily for its subsequent removal or destruction.

The Project has not created or has not sought or received another form of environmental credit, including renewable energy certificates, now or in the future. This will be verified by the DOE.

1.11 Sustainable Development Contributions

In line with the Sustainable Development Goals and the 2030 Agenda for Sustainable Development, the project contributes to sustainable development by contributing to several of its environmental, social, economic, and technological objectives, both directly and indirectly, such as the ones recorded in Table 5 below.

This project contributes with different actions to 4 of the 17 Sustainable Development Goals. Directly, it strengthens goals 7 and 13 with the generation of clean energy and, therefore, the reduction of GHG emissions. It also contributes to goal 15 with the development of native species' conservation actions. In addition, R del Sur S.A. is committed to education and equal opportunities (goal 4), collaborating with a nearby rural school, and organizing academic visits to the wind farm facilities, thus promoting sustainability and ecosystems conservation.

Table 5: Sustainable Development Contributions

Row number	SDG Target	SDG Indicator	Net Impact on SDG Indicator	Current Project Contributions	Contributions Over Project Lifetime
1)	4.a	Internet services and infrastructures provided to improve the conditions of the learning center	Implemented activities to increase	Collaboration with rural school No. 34 during the entire period of operation of the wind farm. They are provided with internet service and since the construction of the project they have collaborated with small infrastructure works (new bathroom, doors) and with materials: printer, books.	Favor education by continuing to provide access to digitization and improving the educational place when they need it
2)	4.7	Number of visitors received in form of organized school excursions and other academic groups. Number of schools or academic centers visiting the wind farm	Implemented activities to increase	Visits are organized from different schools or academic centers around the wind farm and the different facilities, and the sustainability and environmental commitment actions carried out are explained, supported by the informative posters. Informative graphic signage was included to highlight ecologically relevant environments present in the immediate surroundings of the Maldonado I wind farm and provide elements to the people who visit the wind farm.	From 2016 to 2021, 237 visitors were received. 11 schools or academic centers visit Maldonado since 2016.

3)	7.2	7.2. Renewable energy share in the total final energy consumption	Implemented activities to increase	The main activity of the project is based on the production of clean energy that increases the percentage of renewable energy in the energy mix, displacing fossil fuels in the country's electrical system.	From 01/10/2016 to 31/12/2021 the project has injected 838,781.36 MWh of renewable energy into the country's electricity grid
4)	13.2	13.2.2. Total greenhouse gas emissions per year	Implemented activities to decrease	Using renewable energy for generating electricity which otherwise would have been generated through alternate source-based power plants (most likely - fossil fuel), contributing to reduction of specific emissions (emissions of pollutant/unit of energy generated) including GHG emissions.	In this period (October 2016-2021), the project has reduced 483,557 tons of CO ₂ emissions
5)	15.2	15.2.2. Progress towards sustainable forest management • Evolution of the richness of decreasing herbaceous species • Evolution of the richness of herbaceous species in reproductive state • Evolution of the coverage of the exotic species - <i>Cynodon dactylon</i> -	Implemented activities to increase	Biodiversity actions carried out by the company, such as forest conservation of native species on the wind farm site.	6 hectares of assisted regeneration area in which conservation indicators have shown improvement or no change. In none of the cases has there been a decrease in the conditions of the species that are being monitored in the areas of influence of the wind farm.

2 SAFEGUARDS

2.1 No Net Harm

According to Section 5. *Environmental Impact*, “projects and activities, construction or works whose implementation may have significant environmental impacts moderate whose adverse effects can be eliminated or minimized through the adoption of measures well known and easily applicable”. In this section, the most relevant impacts identified in the EIA, and the main mitigation actions are collected.

R del Sur S.A.'s commitment is focused on caring for the environment, through the development of actions that minimize and mitigate the impacts generated by its activities. To this end, guidelines have been developed for the efficient use of resources in operations and the protection of biodiversity where they operate.

All operations have control measures in place to minimize the probability of environmental incidents and mitigate their effects².

The Maldonado wind farm performs seasonal monitoring of biodiversity and mortality. In the last report from spring 2020 to winter 2021, a total of 14 mortality events associated with wind turbines were recorded: 6 birds and 8 bats. No wind turbines accumulating events were detected.

In addition, an assisted regeneration area (ARA) with native plants and a conservation area was created as a compensation measure for the high voltage installation connected to the substation. It is a 6-hectare polygon within the Maldonado Wind Farm project site, and it has monitoring indicators to monitor the ARA annually, and it can be verified that there are no significant anthropic disturbances and that the established indicators remain stable or in improvement.

Other environmental aspects are considered and managed, such as:

- Environmental incidents
- Water and energy consumption
- Use and recycling of metals
- Dangerous residues
- Road maintenance – aggregates
- Avoided emissions
- Landscape

² Report “R del Sur R del Este - Reporte de Sostenibilidad 2021 VF” provided as evidence.

On the other hand, the social impacts are positive thanks to the company's Participation Plan for Social Actors, which relates the community in the influence area with the wind farms, program of visits to educational centers and donations are established.

Since the installation of the wind farm, and uninterruptedly, it has been supported through different ways like donations of materials, food, etc. to rural school N° 34, located near to the wind farm.

2.2 Local Stakeholder Consultation

Prior to the start of the project activity, the population living less than 1 km away from the wind turbines was consulted about their opinion, and it was considered in the Social Impacts Assessment (EIS)³ document. No major inconveniences were expressed with the development of the wind farm.

Nevertheless, stakeholders can leave any comments or complaints about the project on the website <https://www.rdelsur.com.uy/>. All comments are and will be considered.

Since then, the Participation Plan for Social Actors mentioned above was designed, which includes the following:

- Active Communication Program, with the aim of achieving efficient and effective communication with the main affected by the execution of the project, promoting dialogue and the participation of stakeholders. The activities to achieve this goal are:
 - Spread information through bulletins, brochures, annual reports, etc.
 - Consultations and exchange with key parties, establishing formal channels of communication with representatives of the different groups or associations.
 - Organization of workshops or informative meetings with the different sectors of the influence area.
 - Keep record of the activities and the results, collecting, registering, and spreading the results of the activities through the website, demonstrating transparency and credibility
- Management of External Claims, which seeks to set up mechanisms and tools for receiving queries, suggestions, or complaints from the different local communities. Contact information can be accessed on the wind farm website: www.rdelsur.com.uy

³ EIS: Estudio de Impacto Social R. del Sur - Rivero 2012

Through this web page the wind farm company can be contacted by email, telephone, or through a public form available in the contact section that allows collecting any suggestion, complaint, or query.

The information on these communication mechanisms (telephone number, web form and mailboxes) is spread through posters placed visibly at the entrance of the wind farm. A record of the complaints is kept, classified by subject, and reported periodically to company address.

The suggestions or complaints received through the different means were centralized for their fair, confidential, and independent resolution. Efforts are always made to ensure claims are resolved fairly.

Since the formalized complaints mechanism exists, no complaints or comments have been received. However, these will be addressed by the project proponent in case they arise.

More information about the claims management procedure in "*Procedimiento de gestion de reclamos externos – RdeISur – RdeIEste_vf*" document attached as evidence.

This plan also identifies the stakeholders (10 types) and classifies them by level of influence, interest, and impact.

2.3 AFOLU-Specific Safeguards

This project is not an AFOLU-Project, so this section is not required.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

Parque Eólico Maldonado started its commercial operations on April 10th, 2014. The carbon crediting period and therefore the monitoring starts on April 10th, 2014, when the plant finished the starting tests and commenced the electricity generation. At the time of starting the commercial operations, the project was fully operational.

From that moment, the wind farm has been operating in normal conditions and there have not been events due to scheduled or forced stoppages in which the plant was unavailable to inject electricity to the grid for a prolonged period. Evidence about the record of maintenance events or small normal stops in the operation of the wind farm has been provided. None of them was a threat to power generation and its injection into the grid and these were not developed over a long or relevant period. The continuity in the generation by the wind farm can be verified through the evidence provided “*Maldonado I DTE Monthly Generation_v1*”.

The amount of energy generated has been continuously measured through a bidirectional main meter at the connection and measurement point along with the substation “Estación Francisco Veira”, in the project land, and a backup meter, installed in parallel with the main meter.

Operational restrictions in Uruguay

The 97% of Uruguay’s electricity comes from renewable sources. Because of this fact and given that there is no active cross-border market (only occasional interchanges), electricity generation in the country tends to exceed its demand (especially during nighttime). Therefore, the need for power curtailments is very difficult to avoid. In addition, as it is more expensive to restart a thermal power plant once it has stopped (rather than to limit the production of a wind farm), power curtailments are mainly directed towards grid-connected renewable energy power plants.

Power curtailments in Uruguay are defined in the Decree 59-015 dated 17/02/2015 and are implemented following the Article 3 where it mentioned the following: “The ADME will determine the electrical energy that the generating plant would have potentially generated if it had not been affected by the operational restrictions established by the National Load Dispatch as indicated in article 1, after verifying that the plant was in effective conditions to generate”.

In Parque Eólico Maldonado, the internal process happens through a communication link from the wind farm server to the SCADA infrastructure that the electricity grid dispatch entity UTE⁴ uses to regulate power generation nationwide. In this regard, UTE is able to remotely set the power output (from 0 MWh to 50 MWh) they need from Parque Eólico Maldonado at every single

⁴ UTE: Administración Nacional de Usinas y Trasmisiones Eléctricas

time. Once UTE has selected a power generation range or value for the wind farm, the facility's internal Programmable Logic Controller (PLC) infrastructure chooses automatically the most suitable wind turbines and sets them in real time to operate at the best speed (rotation) to achieve the desired power generation objective. This process is based on a specific algorithm that optimizes all the parameters (wind direction, wind speed, air temperature, air humidity, air pressure, etc.) to reach the defined power generation goal in the most efficient manner.

In Parque Eólico Maldonado, total energy curtailments for the project activity during the considered monitoring period represent 10% of all the electricity supplied to the grid by the wind farm during the period. In other words, without power curtailments the project would have achieved 10% more electricity generation. However, only the net electricity generated by the project activity and exported to the grid is considered for the calculation of the emissions reduction during the monitoring period.

3.2 Deviations

2.1.1 Methodology Deviations

No deviations have taken place in the project from the methodology.

2.1.2 Project Description Deviations

No deviations have taken place in the project description.

3.3 Grouped Projects

The proposed project activity is not a grouped project.

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	FC _{i,m,y} ; FC _{i,k,y}
Data unit	Mass or volume unit
Description	Amount of fossil fuel type i consumed by power plant/unit m or k in a year y
Source of data	Data provided by ADME
Value applied	See section 3.4 of Project Description Document ⁵
Justification of choice of data or description of measurement methods and procedures applied	As per Option A.1 of the “Tool to calculate the emissions factor for an electricity system”, version 05.0, CO₂ emission factor of power unit m or k in year y (tCO₂/MW·h) is calculated as: $EF_{EL,m,y} = \frac{\sum_i FC_{i,m,y} \times NCV_{i,y} \times EF_{CO_2,i,y}}{EG_{m,y}}$ ADME publishes the specific fuel consumption (amount of fuel per unit delivered to the grid) for each power unit as the ratio of fuel consumption (FC_{i,m,y}) and the net electricity generated (EG_{m,y}). The ratio is consistent with the equation under Option A.1.
Purpose of Data	Calculation of baseline emissions
Comments	-

Data / Parameter	NCV _{i,y}										
Data unit	GJ/Gg										
Description	Net calorific value (energy content) of fossil fuel type i in year y.										
Source of data	IPCC default values at the lower limit of the uncertainty at a 95% confidence interval as provided in Table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories.										
Value applied	<table border="1"> <thead> <tr> <th></th><th>Net Calorific value (GJ/Gg)</th></tr> </thead> <tbody> <tr> <td>Fuel Oil</td><td>39,800.00</td></tr> <tr> <td>Gas Oil</td><td>41,400.00</td></tr> <tr> <td>Natural Gas</td><td>46,500.00</td></tr> <tr> <td>Landfill Gas</td><td>25,400.00</td></tr> </tbody> </table>		Net Calorific value (GJ/Gg)	Fuel Oil	39,800.00	Gas Oil	41,400.00	Natural Gas	46,500.00	Landfill Gas	25,400.00
	Net Calorific value (GJ/Gg)										
Fuel Oil	39,800.00										
Gas Oil	41,400.00										
Natural Gas	46,500.00										
Landfill Gas	25,400.00										
Justification of choice of data or description of measurement methods and procedures applied	As per Option A.1 of the “Tool to calculate the emissions factor for an electricity system”, version 05.0, CO₂ emission factor of power unit m or k in year y (tCO₂/MW·h) is calculated as: $EF_{EL,m,y} = \frac{\sum_i FC_{i,m,y} \times NCV_{i,y} \times EF_{CO_2,i,y}}{EG_{m,y}}$ IPCC publishes the standard default values of Net Calorific Values for each fuel. This is consistent with the equation under Option A.1.										

⁵ Project Description: <https://registry.verra.org/app/projectDetail/VCS/1308>

Purpose of Data	Calculation of baseline emissions										
Comments	Since local net calorific values per fuel type are not available, IPCC world-wide default values have been used.										
Data / Parameter	EF _{CO₂,i,y}										
Data unit	tCO ₂ / GJ										
Description	CO ₂ emission factor of fossil fuel type i in year y										
Source of data	IPCC default values at the lower limit of the uncertainty at a 95% confidence interval as provided in Table 1.4 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG.										
Value applied	<table border="1"> <thead> <tr> <th>EF</th><th>[tCO₂eq./GJ]</th></tr> </thead> <tbody> <tr> <td>Fuel Oil</td><td>0.07550</td></tr> <tr> <td>Gasoil</td><td>0.07260</td></tr> <tr> <td>Natural Gas</td><td>0.05430</td></tr> <tr> <td>Landfill Gas</td><td>0.04620</td></tr> </tbody> </table>	EF	[tCO ₂ eq./GJ]	Fuel Oil	0.07550	Gasoil	0.07260	Natural Gas	0.05430	Landfill Gas	0.04620
EF	[tCO ₂ eq./GJ]										
Fuel Oil	0.07550										
Gasoil	0.07260										
Natural Gas	0.05430										
Landfill Gas	0.04620										
Justification of choice of data or description of measurement methods and procedures applied	As per Option A.1 of the “Tool to calculate the emissions factor for an electricity system”, version 05.0, CO₂ emission factor of power unit <i>m</i> or <i>k</i> in year <i>y</i> (tCO₂/MW-h) is calculated as: $EF_{EL,m,y} = \frac{\sum_i FC_{i,m,y} \times NCV_{i,y} \times EF_{CO_2,i,y}}{EG_{m,y}}$ IPCC publishes the standard default values of CO₂ emission factor of each fossil fuel type. This is consistent with the equation under Option A.1.										
Purpose of Data	Calculation of baseline emissions										
Comments	According to the “Tool to calculate the emission factor for an electricity system”, if values are reliable and documented in regional or national energy statistics/energy balances, regional or national average default values can be used.										
Data / Parameter	EG _{m,y} and EG _{k,y} Plant yearly generation (last 3 years)										
Data unit	MW-h										
Description	Net electricity generated by power plant/unit <i>m</i> or <i>k</i> in year <i>y</i>										
Source of data	Data provided by ADME										
Value applied	See section 3.4 of the registered PD										
Justification of choice of data or description of measurement methods and procedures applied	Data used are from Uruguayan authorities (ADME).										
Purpose of Data	Calculation of baseline emissions										
Comments	-										
Data / Parameter	EF _{grid,CM,y}										
Data unit	tCO ₂ /MW-h										

Description	Combined margin CO ₂ emission factor for grid connected power generation in year y calculated using the “Tool to calculate the emission factor for an electricity system” Version 05.0
Source of data	Administración del Mercado Eléctrico (ADME)
Value applied	0.5765 tCO ₂ /MW-h
Justification of choice of data or description of measurement methods and procedures applied	“Tool to calculate the emission factor for an electricity system” Version 05.0
Purpose of Data	Calculation of baseline emissions
Comments	The Combined Margin emission factor is calculated ex ante, as described in section 3.1

4.2 Data and Parameters Monitored

Data / Parameter	EG _{facility,y}														
Data unit	MW-h/yr.														
Description	Quantity of net electricity generation supplied by the project plant to the grid in year y														
Source of data	Electricity meter at project site (SMEC)														
Description of measurement methods and procedures to be applied	The electricity supplied by the project is measured by a SMEC meter, located in the connection and measure point, along with the substation “Estación Francisco Veira”. There is also a backup meter utilized only in case of problems with the main meter. Net energy is calculated by subtracting the incoming energy from the outgoing energy by the SMEC meter.														
Frequency of monitoring/recording	The hourly measured reading by SMEC meters is recorded monthly by plant personnel														
Value monitored	<table border="1"> <thead> <tr> <th>Year</th><th>Net Generation</th></tr> </thead> <tbody> <tr> <td>EG (facility, since October 2016)</td><td>38,065.06</td></tr> <tr> <td>EG (facility, 2017)</td><td>137,440.98 MWh</td></tr> <tr> <td>EG (facility, 2018)</td><td>146,976.74 MWh</td></tr> <tr> <td>EG (facility, 2019)</td><td>170,129.79 MWh</td></tr> <tr> <td>EG (facility, 2020)</td><td>183,407.18 MWh</td></tr> <tr> <td>EG (facility, 2021)</td><td>162,761.61 MWh</td></tr> </tbody> </table>	Year	Net Generation	EG (facility, since October 2016)	38,065.06	EG (facility, 2017)	137,440.98 MWh	EG (facility, 2018)	146,976.74 MWh	EG (facility, 2019)	170,129.79 MWh	EG (facility, 2020)	183,407.18 MWh	EG (facility, 2021)	162,761.61 MWh
Year	Net Generation														
EG (facility, since October 2016)	38,065.06														
EG (facility, 2017)	137,440.98 MWh														
EG (facility, 2018)	146,976.74 MWh														
EG (facility, 2019)	170,129.79 MWh														
EG (facility, 2020)	183,407.18 MWh														
EG (facility, 2021)	162,761.61 MWh														
Monitoring equipment	The system SMEC has two meters, the main meter, class 0.2, and back up meter, class 0.5, installed in parallel with the main meter.														
QA/QC procedures to be applied	The monthly measurement results recorded are used for cross check with records of sold electricity and/or with DTE⁶. The SMEC meters are periodically calibrated at least one every two years during the verification of the system, according with Resolution 14/002⁷. According to this Resolution and the evidence from ADME provided⁸,														

⁶ DTE: it is the Economic Transactions Document published monthly by ADME

⁷ Resolution 14/002 UREE: “20220630_160151_0000” document provided as evidence.

⁸ Nota puestos de medición SMEC octubre 2022

ADME is responsible for granting the authorization of the measurement systems. The Resolution in Article 40 defines that the meters must be verified at least once every 2 years and that every 4 years a total verification of the measurement system must be carried out. UTE is the only laboratory authorized for these verifications in Uruguay, which is why it is difficult to coordinate calibration dates. For this reason, ADME applies flexibility criteria in the calibration dates of the meters and the control of the expiration of the calibration periods is carried out by observing the year and not the exact date of the last verification.

Although the delays do not depend on the project proponent, a 0.2% error of the main meter has been applied in the periods that do not present a valid calibration. To be conservative, this reduction has been applied over the period 01/10/2016 to 31/12/2016.

First calibration for the main meter type 0.2S took place on 08/01/2014 and for the backup meter type 0.5S took place on 23/07/2014 carried out by UTE Laboratory.

Second calibration was supposed to take place on January and July 2016 per the biannual calibration frequency projected. However, an authorization from ADME was needed to remove the seal of the meters, and this was not obtained until October 2016. Calibration for both meters took place on December 2016.

Last calibration of the monitoring period was carried out on august 2020.

Below are the details and characteristics of the different electricity meters as well as their calibration dates:

Meter M1:

- Manufacturer: Itron
- Type: SL7000
- Accuracy class: 0.2S
- Serial number: 30023003
- Calibration frequency: At least once every two years
- Calibration date:
 - 14/12/16
 - 21/11/18
 - 27/08/20

Meter M2 (Back up):

- Manufacturer: EMH
- Type: LZQJ-XC
- Accuracy class: 0.5S
- Serial number: 3970853
- Calibration frequency: At least once every two years
- Calibration date:
 - 14/12/16
 - 21/11/18
 - 27/08/20

The generation records of the monitoring period were made with the main meter M1 (S/N 30023003). However, the back-up meter M2 (S/N 3970853) has been used for generation measurement only for 14 hours in the monitoring period:

- 09/01/2018 from 11 PM and 12 PM
- 06/10/2018 from 1 AM to 11 PM
- 02/09/2020 from 12PM to 3 AM

	No discount factor was applied due to the delay from 22/07/2016 to 13/12/2016 in the backup electricity meter as this meter was not in operation during the period with no calibration. The previous information about the meters used is available on the ADME website by accessing from the private profile of the project proponent.
Purpose of the data	Calculation of baseline emissions
Calculation method	N/A. This parameter is monitored continuously.
Comments	These data are used to directly calculate the emission reductions.

4.3 Monitoring Plan

The Monitoring Plan is developed in accordance with the approved consolidated baselines and monitoring methodology for grid-connected electricity generation from renewable sources – ACM0002. The monitoring plan will specify the monitoring tasks to be implemented in order to ensure that the real, measurable and long-term greenhouse gas (GHG) emission reduction for the proposed project is monitored and reported.

Monitoring Management Structure

To ensure organization in the project in terms of reliable data collection and gathering during the full crediting period, the project owner has established the organization of the monitoring team with clear roles and responsibilities assigned to all staff involved in the VCS project.

In accordance with the methodology, monitoring consists of metering the electricity generated by the renewable technology. Generation data monitoring is carried out by the specialized operator of the wind farm (as shown the structure of figure 3 in this monitoring report), and the operation and maintenance is carried out by Gamesa, which has personnel specifically qualified for this task.

The project owner has archived electronically all data collected as part of monitoring and has kept it at least for 2 years after the end of the last crediting period. The project owner has implemented a monitoring plan to guarantee the accurate and transparent determination of avoided emissions.

In summary, the project owner has executed the monitoring plan of the project, in accordance with the requirements of the applicable methodology and the EB on monitoring and verification to ensure that the emission reductions are monitored, recorded, and reported accurately.

Monitoring equipment and installation

Given that, the emission factor is calculated ex-ante, and referring to the Monitoring Methodology ACM0002, the only monitored data is the quantity of net electricity supplied to the grid by the wind project in every year.

Project owner has installed an electricity meter at the connection and measurement point along with the substation “Estación Francisco Veira”, in the project land. The grid connection diagram

indicates the positioning of metering instruments used in the monitoring of emission reductions, in the figure below:

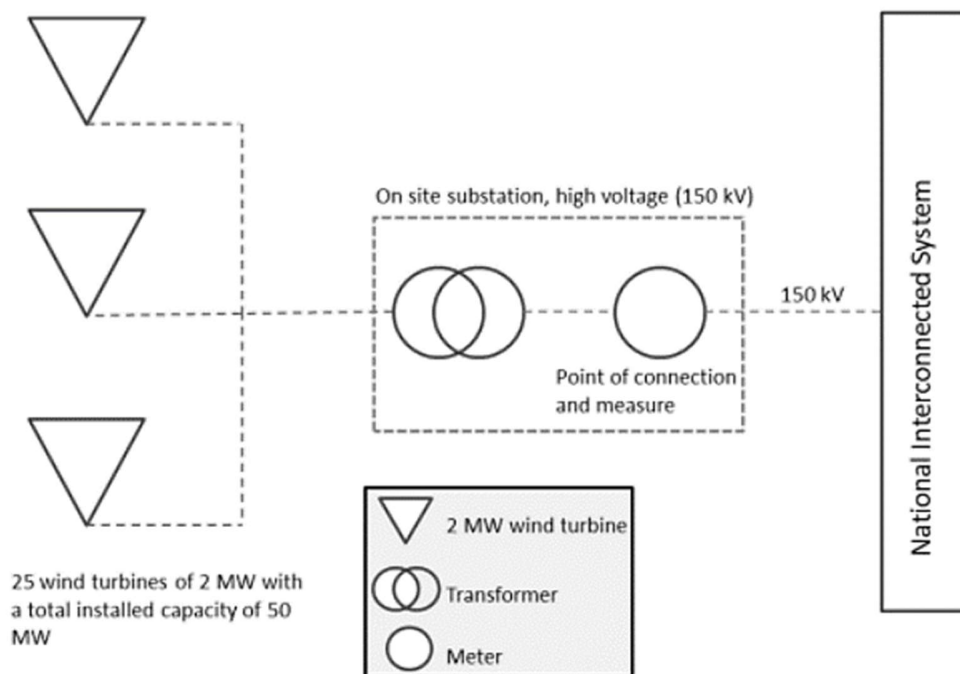


Figure 2. Positioning of metering instruments

Certified entities have provided the equipment used to monitor the electricity production and conducted calibration per the Resolution 14/002 and the standards IEC 62052-11⁹ and IEC 62053-22¹⁰ for static active meters of classes 0.2 and 0.5.

Table 8. Calibration data

Meter	Manufacturer	Type	Serial Number	Accuracy	Calibration Date	Carried out by	Certificate number	Calibration frequency
M1 Main Meter	Itron	SL7000	30023003	0.2S	08/01/14	UTE	133691	Biannual
					14/12/16	UTE	163936	
					21/11/18	UTE	183727	

⁹ Norma IEC 62052-11 (2003): metering equipment

¹⁰ Norma IEC 62053-22 (2003): Static meters for active energy (classes 0.2S and 0.5S)

Meter	Manufacturer	Type	Serial Number	Accuracy	Calibration Date	Carried out by	Certificate number	Calibration frequency
					27/08/20	UTE	202349	
M2 Backup Meter	EMH	LZQJ-XC	3970853	0.5S	23/07/14	UTE	142153	Biannual
					14/12/16	UTE	163937	
					21/11/18	UTE	183728	
					27/08/20	UTE	202350	

Data recording and archiving:

- A. Project owner has monitored the electricity supplied by the project to the grid using a calibrated electricity meter and taking monthly records.
- B. Measurements have been crosschecked with sale receipts for electricity and/or with the information published in DTE, using conservative values for calculation of emission reductions.
- C. The project participants have archived all data collected as part of monitoring during the monitoring period plus two years.
- D. Quality assurance and Quality control have been applied:
 - An overarching monitoring system maintains the quality of data generated by this project. This system includes procedures used to double-check data, for staff training, meter calibration, accreditation of the facility completing calibration and the adherence to the relevant standards.
 - Measuring equipment has been calibrated per the Resolution 14/002, at least once every two years during the verification period.
- E. Procedures on how to deal with erroneous measurements:

In the event of problem to the measurements system, the information is obtained through one of the following sources of measurement in this order:

- Data from the main meter of SMEC
- Data from the back-up meter of SMEC

- Data from SCADA system
- Data provided by user to the control center of DNC via telephone.

Verification and Monitoring Results

Monitoring personnel prepare the monitoring report, containing the data report and the results of the energy generation and emission reductions of the project for the defined verification period.

Management structure to monitor emission reductions

The General Manager holds the overall responsibility for the monitoring process, but as indicated below, some tasks of the process are delegated. The first step is the measurement of the electrical energy supplied to the grid and reporting of daily operations by the plant operation staff. The project owner appoints a:

- Plant operation staff, who is the responsible for the electrical energy measurements and review the daily operation of the wind farm station.
- Monitoring officer, who is responsible for verification of the measurement, collection of sales receipts, collection of billing receipts of the power supplied by the grid to the wind farm and the calculation of the emissions reductions. In addition, is the responsible for preparing operational reports of the project activity, review the daily operation of the wind farm station including operating periods, power delivered to the grid, equipment defects, etc.
- Finally, the General Manager has reviewed the monitoring results.

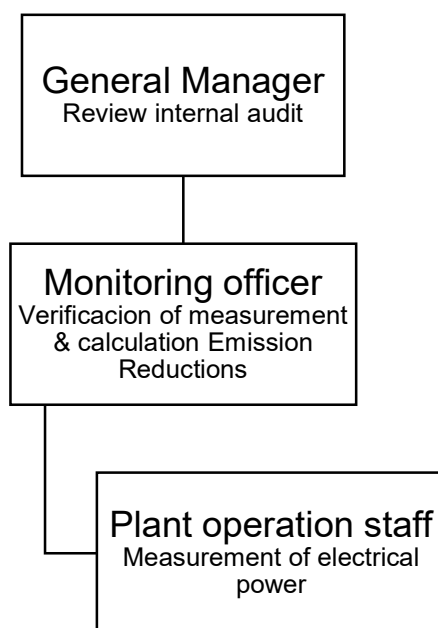


Figure 3. General management structure

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

Baseline emissions include only CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The baseline emission is calculated as the product of electrical energy baseline EG(PJ,y) expressed in MWh, produced by the renewable generating unit and multiplied by the grid emission factor:

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

Where:

BE_y: Baseline Emission in year y (tCO₂).

EGPJ,y: Quantity of net electricity generation that is produced and fed into the grid because of the implementation of the VCS project activity in year y (MWh/yr.).

EF_{grid,CM,y}: Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the Tool to calculate the emission factor for an electricity system (tCO₂/MWh).

Calculation of EG(PJ,y)

The calculation of EGPJ,y is different for (a) Greenfield plants, (b) retrofits and replacements, and (c) capacity additions.

Since the project involves the installation of a new grid-connected renewable power plant/unit at a site where no renewable power plant was operated prior to the implementation of the project activity (Case (a) Greenfield plant), then:

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

Where:

EGPJ,y: Quantity of net electricity generation that is produced and fed into the grid because of the implementation of the VCS project activity in year y (MWh/yr.).

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

The electricity supplied by the project is measured by a SMEC meter, located in the connection and measure point, along with the substation “Estación Francisco Veira” in project land. There is also a backup meter that is only utilized should there be any problem with the main meter.

This measurement is cross-checked with invoices from ADME. The value collected in the invoices corresponds to the total energy generated that is injected into the national grid by the wind farm. Performing the crosscheck, it is possible to observe that the resulting energy supply match with the values from the invoices, highlighting small differences in a few months resulting from ADME's own adjustments. In these cases, the most conservative monthly data has been chosen for the emission reduction calculation.

On the other hand, the wind farm has energy consumptions that is billed separately. Therefore, the net electricity used for the emission reduction calculation is the result of the energy that is produced and supply to the grid minus the energy that is consumed. This energy consumption values are also obtained from the DTE records, where the amount of energy consumed hourly for each month is collected.

However, a reduction in the emission reductions is assumed by the project proponent, as it mentioned in section 4.2, applying the 0.2% error of the main meter to the electricity data measured in the periods that do not present a valid calibration.

The definitive results of net electricity used for the emission reduction calculation are presented in the following table:

Table 9. Net electricity generation during the monitoring period

Year	Month	Net electricity generation (MWh)
2016	October	14,191.64
	November	10,986.97
	December	12,886.45
2017	January	12,173.70
	February	8,339.12
	March	14,147.93
	April	12,877.42
	May	10,070.51
	June	9,472.16
	July	14,058.67
	August	9,040.40

	September	9,302.24
	October	10,566.98
	November	13,450.18
	December	13,941.67
2018	January	13,394.87
	February	10,378.52
	March	11,419.05
	April	11,132.03
	May	12,683.07
	June	15,489.12
	July	14,397.61
	August	15,299.08
	September	12,631.77
	October	9,189.21
	November	9,869.43
	December	11,092.98
2019	January	13,494.03
	February	10,800.98
	March	16,124.83
	April	10,304.19
	May	12,461.96
	June	17,901.80
	July	16,526.44
	August	15,869.73
	September	12,250.78
	October	14,882.48
	November	14,458.03
	December	15,054.54

2020	January	14,071.70
	February	14,179.92
	March	12,447.22
	April	17,106.87
	May	18,371.74
	June	14,944.14
	July	18,765.69
	August	17,085.88
	September	13,470.05
	October	13,583.08
	November	12,382.21
	December	16,998.68
2021	January	14,208.75
	February	10,083.19
	March	10,221.78
	April	13,662.71
	May	15,915.84
	June	16,657.08
	July	19,194.39
	August	10,134.10
	September	13,672.52
	October	12,972.23
	November	14,180.74
	December	11,858.28

The total electricity supplied by the project during the monitoring period is 838,781.36 MW·h

EG(PJ,2016) = EG_(facility,2016) = 38,065.06 MW·h

EG(PJ,2017) = EG_(facility,2017) = 137,440.98 MW·h

EG(PJ,2018) = EG_(facility,2018) = 146,976.74 MW·h

$$EG(PJ,2019) = EG_{\text{(facility,2019)}} = 170,129.79 \text{ MWh}$$

$$EG(PJ,2020) = EG_{\text{(facility,2020)}} = 183,407.18 \text{ MWh}$$

$$EG(PJ,2021) = EG_{\text{(facility,2021)}} = 162,761.61 \text{ MWh}$$

Calculation of EF_{grid,CM,y}

The emission factor was calculated ex-ante in the registered PD according to the “Tool to calculate the emission factor for an electricity system” Version 05.0. The values for the crediting period are the followings:

Table 10. Ex-ante emission factor values for the crediting period

	EF _{grid,OM-adj,y} (tCO ₂ /MWh)	EF _{grid,BM,y} (tCO ₂ /MWh)	EF _{grid,CM,y*} (tCO ₂ /MWh)
2011	0.7524	0.2417	0.5765
2012	0.7359		
2013	0.5805		

$$*w_{OM} = 0.75, w_{BM} = 0.25$$

Net generation and Emission Factor data is available in the attached Spreadsheet *GEN Maldonado I Monitoring Period 2_v3*, and there have been used to calculate the Baseline Emissions calculation.

Calculation of Baseline Emissions

As it has explained above, Baseline Emissions are calculated according to the following formula:

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

Where:

BE_y = Baseline emissions in year y (tCO₂/y).

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

EF_{grid,CM,y} = Combined margin CO₂ emission factor for grid connected power generation in year y calculated using version 05.0 of the “Tool to calculate the emissions factor for an electricity system” (tCO₂/MWh).

The baseline emissions are the product of the electricity generated and supplied by the project power plant to the grid in the period year (EGPJ,y) and the grid emission factor (EF_{grid,CM,y}).

Therefore, as said before, the combined margin CO₂ emission factor of 0.5765 tCO₂/MWh was calculated ex-ante for the duration of the first crediting period as per “Tool to calculate the emission factor for an electricity system, (version 05.0)” and the energy generation is measured through the monitoring period in accordance with “ACM0002 version 16.0”. Then, baseline emissions of the project are:

Table 11. Summary of emission reductions calculation

Period	Net Generation (MWh)	EFy (tCO ₂ /MWh)	BEy (tCO ₂ e)
2016	38,065.06	0.5765	21,944.51
2017	137,440.98		79,234.72
2018	146,976.74		84,732.09
2019	170,129.79		98,079.82
2020	183,407.18		105,734.24
2021	162,761.61		93,832.07
TOTAL	838,781.36		483,557

Emission factor calculation is detailed in the Project Description Document and meters data is compiled in the attached spreadsheet “GEN SMEC Monitoring Period 2_v3”. The monthly generation data is available in the attached spreadsheet “Maldonado I DTE Monthly Generation_v1”.

5.2 Project Emissions

For most renewable energy project activities, the project emissions are neglected. Following the methodology, as the project is a wind farm project, it does not lead to any GHG emissions and therefore project emissions are considered equal to zero.

PEy= 0 tCO₂e / year

5.3 Leakage

Following the applied methodology, no leakage emissions are considered. The main emissions potentially giving rise to leakage in the context of electric sector projects are emissions arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, and transportation). These emissions sources are neglected.

5.4 Net GHG Emission Reductions and Removals

The net GHG emission reduction is calculated following the guidance of the methodology ACM0002, as follows:

$$ER_y = BE_y - PE_y$$

Where:

ER_y: Emission reduction in year y (tCO₂)

BE_y: Baseline Emission in year y (tCO₂)

PE_y: Project emission in year y (tCO₂)

According to methodology, ER_y = BE_y – 0, so the emission reductions are equal to the baseline emissions, as it can be seen in the table below.

The Emission Reduction results can be found on the attached spreadsheet *GEN SMEC Monitoring Period 2_v3*.

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
2016 (from 01/10/2016)	21,944.51	0	0	21,944.51
2017	79,234.72	0	0	79,234.72
2018	84,732.09	0	0	84,732.09
2019	98,079.82	0	0	98,079.82
2020	105,734.24	0	0	105,734.24
2021	93,832.07	0	0	93,832.07
Total	483,557	0	0	483,557