



MALDONADO II WIND FARM

1st Monitoring Report

Document Prepared by NTT DATA EUROPE & LATAM GREEN ENGINEERING

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CONTENTS

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	5
1.9	Participation under other GHG Programs.....	5
1.10	Other Forms of Credit.....	5
1.11	Sustainable Development Contributions	6
2	SAFEGUARDS	9
2.1	No Net Harm	9
2.2	Local Stakeholder Consultation	10
2.3	AFOLU-Specific Safeguards	11
3	IMPLEMENTATION STATUS	11
3.1	Implementation Status of the Project Activity	11
3.2	Deviations	13
3.2.1	Methodology Deviations.....	13
3.2.2	Project Description Deviations	13
3.3	Grouped Projects	14
4	DATA AND PARAMETERS.....	14
4.1	Data and Parameters Available at Validation	14
4.2	Data and Parameters Monitored.....	17
4.3	Monitoring Plan.....	19
5	QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS	24
5.1	Baseline Emissions	24
5.2	Project Emissions	30
5.3	Leakage.....	30
5.4	Net GHG Emission Reductions and Removals.....	30

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 and Lavalleja, 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 a new generator position situated in the existing substation “Estación Francisco Veira”.

The project activity consists of the installation and operation of a new grid connected wind power project, the baseline scenario for the proposed project activity is the Uruguayan national grid.

The relevant implementation dates for this project are:

Table 1. Relevant implementation dates of the Project activity

Date	Key Events	Document
18/03/2015	Purchase of main equipment	1230701_CON_002__020150318 (Contrato compraventa RDE – Gamesa)
04/05/2015	Start of Works / Date of construction	20150427 Presentación condiciones previo a obras
11/03/2015	Environmental Authorization	20150313 Resolución de AAP de PEM II 20150427 Presentación condiciones previo a obras
16/06/2016	Commissioning date	20160708 Acta de Habilitación Total RdE 20170627 Nota acta de habilitación limpia RDE
16/06/2016 – to date (it will continue operating)	Continued operation period	Generation Records. For this first monitoring period, see the Spreadsheet <i>Maldonado II DTE Monthly Generation_v1</i>

Date	Key Events	Document
16/06/2016	Starting date of the crediting period	VCS Homepage: Home / Verified Carbon Standard / Project 1572 ¹
27/02/2017	VCS Registration date	VCS Homepage: Home / Verified Carbon Standard / Project 1572

According to the PD, the power plant has an expected operating life of 20 years and is expected to displace a total amount of 224,300 MWh/year from the national power grid, generating, on average, annual emission reductions of 84,718 tCO₂ and amounting to 847,179 tCO₂ for the first crediting period (June 16th, 2016, to June 15th, 2026).

The total CO₂ emission reductions or removals generated in this monitoring period (16/06/2016 to 31/12/2021) is 434,291 tons.

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 17.0

The project activity is not a grouped project.

1.3 Project Proponent

Organization name	R del Este S.A.
Contact person	Diego Bonacchi
Title	General Manager
Address	Gabriel Otero 6462 Ofic. 207 11500 Montevideo Uruguay
Telephone	+598 2 6007201
Email	dbonacchi@rdelsur.com.uy

¹ Maldonado II Wind Farm: <https://registry.verra.org/app/projectDetail/VCS/1572>

1.4 Other Entities Involved in the Project

There are no other entities involved in the project.

1.5 Project Start Date

The project had its start date on June 16th, 2016. 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 will run from June 16th, 2016, to June 15th, 2026, extendable twice for another 10 years each time, according to VCS standard and subject to the plant's operating life.

1.7 Project Location

The 25 wind turbines that make up the wind farm are distributed along the Sierra de los Caracoles in the departments of Maldonado and Lavalleja, 28 Km. south of the city of Aiguá in Uruguay.

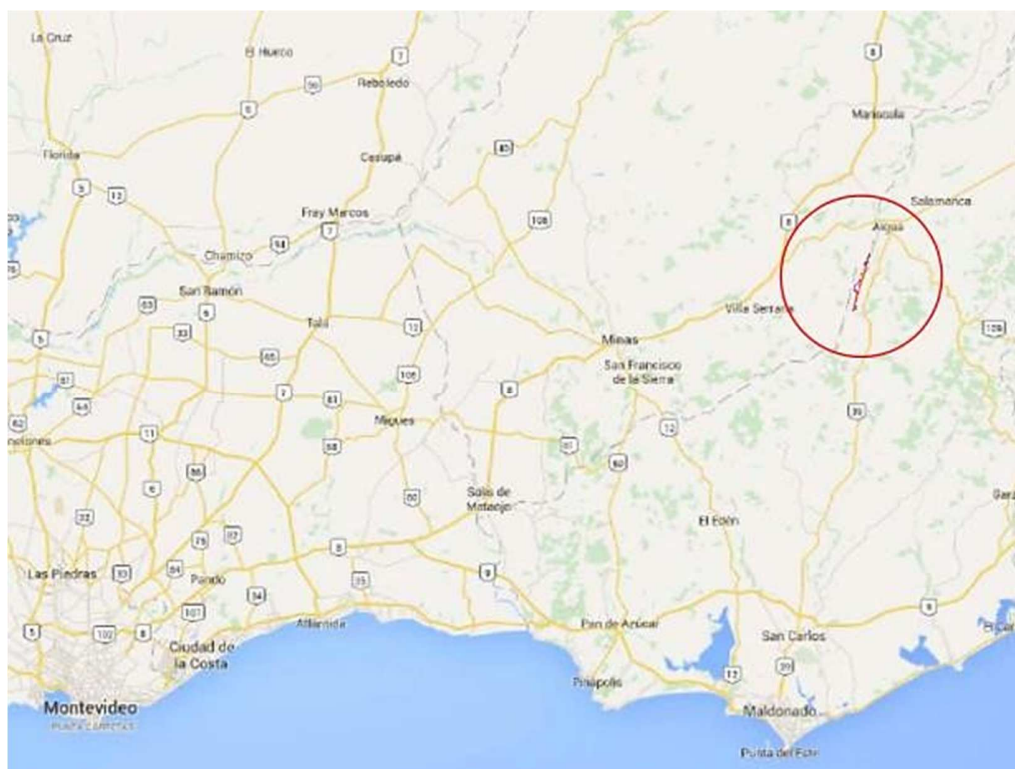


Figure 1. Project Location

The location of the wind turbines, and control towers and evacuation transformer substation are shown in the following tables:

Table 2. Wind Turbines location

Equipment	Latitude	Longitude
Turbine 01	-34.44119	-54.89375
Turbine 02	-34.43858	-54.88919
Turbine 03	-34.43413	-54.88813
Turbine 04	-34.43576	-54.89246
Turbine 05	-34.43052	-54.89043
Turbine 06	-34.42659	-54.88893
Turbine 07	-34.42255	-54.88820
Turbine 08	-34.41867	-54.88692
Turbine 09	-34.41156	-54.88389
Turbine 10	-34.41001	-54.88862
Turbine 11	-34.40222	-54.88153
Turbine 12	-34.39840	-54.87994
Turbine 13	-34.39454	-54.87881
Turbine 14	-34.39179	-54.88207
Turbine 15	-34.39080	-54.87647
Turbine 16	-34.38686	-54.87531
Turbine 17	-34.38331	-54.87778
Turbine 18	-34.38137	-54.87344
Turbine 19	-34.37712	-54.87204
Turbine 20	-34.37279	-54.87048
Turbine 21	-34.36783	-54.87349
Turbine 22	-34.36423	-54.87162
Turbine 23	-34.36214	-54.86769
Turbine 24	-34.35750	-54.86705
Turbine 25	-34.35382	-54.86495

Control towers are located at the following coordinates:

Table 3. Location of control towers

Equipment	Latitude	Longitude
MAL-TC01	-34.42075	-54.88695
MAL-TC02	-34.35188	-54.86412

Finally, the substation is available at the following coordinates:

Table 4. Location of Estación Francisco Veira

Equipment	Latitude	Longitude
SETMAL	-34.524561	-54.910608

1.8 Title and Reference of Methodology

The UNFCCC approved consolidated baseline and monitoring methodology ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources — Version 17.0” is used in this project.

This methodology also refers to the approved versions of the following UNFCCC tools that are also used:

- “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 programs, 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 does not 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 sought or received another form of GHG-related environmental credit, including renewable energy certificates.

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 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 16/06/2016 to 31/12/2021 the project has injected 1,149,832.41 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 (June 2016-2021), the project has reduced 434,291 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 - Cynodon dactylon -	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

R del Este 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.

In the PD document of this project, in section 5. Environmental impact, the most relevant impacts identified in the EIA, and the main mitigation actions are collected.

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

The Maldonado I & II wind farms 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 for both wind farms: 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.

As a social measure, a flicker of shadows control is carried out on some living places (according to the requirement of preventive measure of the environmental resolution of Maldonado II), by a shadow sensor installed in Wind Turbine 10 that regulates the affection of shadows from the wind turbines on certain points, allowing the interruption of the wind turbines operation in the periods of time in which the maximum level of intermittent shadow projection is exceeded. The operating condition established in the equipment configuration is a maximum shadow effect limit of 30 minutes per day and 30 hours per week. In 2021, 83:41 shutdown hours were recorded from 15 wind turbines in a total of 371 events.

Other environmental aspects are considered and managed, such as:

- Environmental incidents
- Water and energy consumption

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

- Use and recycling of metals
- Dangerous residues
- Road maintenance – aggregates
- Avoided emissions
- Landscape

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.

The web of the wind farm has a detailed account of the actions taken by the project proponent to engage the community; those include works to improve infrastructures like the #8 & #39 access routes and the Arroyo Solís Grande bridge.

In addition, 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

During the beginning of the project, different meetings were held with the stakeholders to identify opinions and contributions. These are specifically included in Section 6. Stakeholder consultation of the PD.

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.rdeleste.com.uy

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.

All comments or complaints about the project to date on the website have been addressed by the project proponent.

More information about the claims management procedure is provided in "*Procedimiento de gestion de reclamos externos – RdelSur – RdelEste_vf*" document 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

Maldonado II Wind Farm started its commercial operations on 16/06/2016. The carbon crediting period and, therefore, the monitoring started on June 16th, 2016, when the plant startup tests finished, and operation started 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 II DTE Monthly Generation_v1*”.

The amount of energy generated has been continuously measured. The substation evacuates the energy generated by the wind farm through an overhead power line connecting with the "Francisco Veira" station in the project land, where the measurement and control position of UTE are located, and the backup meter is 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 Maldonado II Wind Farm, the internal process happens through a communication link from the wind farm server to the SCADA infrastructure that the electricity grid dispatch entity UTE3 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 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 Maldonado II Wind Farm, 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

³ UTE: Administración Nacional de Usinas y Trasmisiones Eléctricas

project activity and exported to the grid is considered for the calculation of the emissions reduction during the monitoring period.

3.2 Deviations

3.2.1 Methodology Deviations

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

3.2.2 Project Description Deviations

A deviation has been identified that applies to the first crediting period, from the registration date to the end of the period. Section 4.1 Data and Parameters Available at Validation of the registered VCS Project Description document contents an error in $EF_{CO_2,i,y}$ parameter. It is only considered a minor error or *errata* committed when the parameter data was completed. This deviation and correction do not affect the applicability of the baseline scenario, methodology nor the additionality of the project as per VCS VVM version 3.2 and VCS Standard version 4.3.

The field of *value applied* for this parameter had been completed with the Net Calorific Values according to Table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories, as can be seen below.

Table 6: Table of $EF_{CO_2,i,y}$ parameter from the Project Description document

Data / Parameter	$EF_{CO_2,i,y}$										
Data unit	tCO ₂ /GJ										
Description	CO ₂ emission factor of fossil fuel type i used 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></th><th>Net Calorific Value [GJ/Gg]</th></tr> </thead> <tbody> <tr> <td>Fuel Oil</td><td>39,800</td></tr> <tr> <td>Gas Oil</td><td>41,400</td></tr> <tr> <td>Natural Gas</td><td>46,500</td></tr> <tr> <td>Landfill Gas</td><td>25,400</td></tr> </tbody> </table>		Net Calorific Value [GJ/Gg]	Fuel Oil	39,800	Gas Oil	41,400	Natural Gas	46,500	Landfill Gas	25,400
	Net Calorific Value [GJ/Gg]										
Fuel Oil	39,800										
Gas Oil	41,400										
Natural Gas	46,500										
Landfill Gas	25,400										
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 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.										

This information has been corrected for this first monitoring report, completing the table of value applied with the IPCC default values provided in Table 1.4 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG:

Table 7: Values applied for parameter EF_{CO2,i,y} in Section 4.1 of this Monitoring Report

	EF (tCO ₂ eq./GJ)
Fuel Oil	0.07550
Gas Oil	0.07260
Natural Gas	0.05430
Landfill Gas	0.04620

The parameter EF_{CO2,i,y} can be seen corrected in section 4.1 of this Monitoring Report. This deviation must be described in all subsequent monitoring reports, according to the VCS Standard, version 4.3.

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 the Project Description ⁴ .
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: $EF_{EL,m,y} = \frac{\sum_i FC_{i,m,y} \times NCV_{i,y} \times EF_{CO2,i,y}}{EG_{m,y}}$ ADME publishes the specific fuel consumption (amount of fuel per unit delivered to the grid) for each power unit as the ratio of fuel

⁴ VCS Project Document Maldonado II.

https://registry.terra.org/mymodule/ProjectDoc/Project_ViewFile.asp?FileID=20336&IDKEY=qiofj09234rm9oq4jndsma80vcalksdjf98cxkja90823nmg3i28043344

	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
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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, CO_2 emission factor of power unit m or k in year y (tCO_2/MWh) 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.										
Purpose of Data	Calculation of baseline emissions										
Comments	-										

Data / Parameter	$EFCO_{2,i,y}$										
Data unit	tCO_2/GJ										
Description	CO_2 emission factor of fossil fuel type i used 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></th><th>EF ($tCO_2eq./GJ$)</th></tr> </thead> <tbody> <tr> <td>Fuel Oil</td><td>0.07550</td></tr> <tr> <td>Gas Oil</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 ($tCO_2eq./GJ$)	Fuel Oil	0.07550	Gas Oil	0.07260	Natural Gas	0.05430	Landfill Gas	0.04620
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Fuel Oil	0.07550										
Gas Oil	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, CO_2 emission factor of power unit m or k in year y (tCO_2/MWh) 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 m or k in year y
Source of data	Data provided by ADME
Value applied	See section 3.4 and calculations of the 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	0.3777
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	EGfacility, y														
Data unit	MWh/y														
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 SMEC meter, located in the connection and measure point, along with the substation "Estación Francisco Veira". The measured of back up meter is utilized only if there are any problem with the main meter.														
Frequency of monitoring/recording	SMEC meters' hourly readings are recorded monthly by plant personnel														
Value monitored	<table> <tr> <th>Year</th><th>Net Generation</th></tr> <tr> <td>EG (facility, since June 2016)</td><td>115,622.39 MWh</td></tr> <tr> <td>EG (facility, 2017)</td><td>181,082.41 MWh</td></tr> <tr> <td>EG (facility, 2018)</td><td>199,952.00 MWh</td></tr> <tr> <td>EG (facility, 2019)</td><td>215,568.91 MWh</td></tr> <tr> <td>EG (facility, 2020)</td><td>233,738.23 MWh</td></tr> <tr> <td>EG (facility, 2021)</td><td>203,868.47 MWh</td></tr> </table>	Year	Net Generation	EG (facility, since June 2016)	115,622.39 MWh	EG (facility, 2017)	181,082.41 MWh	EG (facility, 2018)	199,952.00 MWh	EG (facility, 2019)	215,568.91 MWh	EG (facility, 2020)	233,738.23 MWh	EG (facility, 2021)	203,868.47 MWh
Year	Net Generation														
EG (facility, since June 2016)	115,622.39 MWh														
EG (facility, 2017)	181,082.41 MWh														
EG (facility, 2018)	199,952.00 MWh														
EG (facility, 2019)	215,568.91 MWh														
EG (facility, 2020)	233,738.23 MWh														
EG (facility, 2021)	203,868.47 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 measurement results recorded monthly is used for cross check with records of sold electricity and/or with DTE⁵. The SMEC meters should be periodically calibrated at least once every two years during the verification of the system, according with Article 40 of Resolution 14/002⁶. According to this Resolution and the evidence from ADME provided⁷, ADME is responsible for granting the authorization of the measurement systems. 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 following periods:														

⁵ DTE: it is the Economic Transactions Document published monthly by ADME

⁶ Resolution 14/002 UREE: "20220630_160151_0000" document provided as evidence.

⁷ Nota puestos de medición SMEC octubre 2022

- 01/06/2017 - 31/08/2018
- 01/03/2019 - 31/03/2021

First calibration for the main meter type 0.2S took place on 15/06/15 and for the backup meter type 0.5S took place on 06/08/2015 and was carried out by UTE Laboratory.

In September 2018, a fault was identified in the operation of the main meter, so it was replaced by a new one (serial number 30023040 as can be seen in the table above) that had been calibrated in March 2017⁸.

In February 2019, a document was issued to confirm that the calibration of the meters of the R del Este S.A. wind farm was carried out by ADME according with art. 40 of the Regulation of the Commercial Measurement System (SMEC), Res. 14/002⁹. This includes the new meter installed five months before.

In 2020, the UTE laboratory (the only authorized supplier) suffered delays in the agenda because of the COVID-19 situation. That is why the meter calibration was carried out in 2021.

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

Meter M1 (Replaced):

- Type: SL7000
- Accuracy class: 0.2S
- Serial number: 73000288
- Calibration frequency: At least once every two years
- Calibration date:
 - 15/06/15
 - 28/08/18

Meter M1 (New):

- Type: SL7000
- Accuracy class: 0.2S
- Serial number: 30023040
- Calibration frequency: At least once every two years
- Calibration date:
 - 17/03/2017
 - 24/03/2021

Meter M2 – Back up:

- Type: LZQJ-XC
- Accuracy class: 0.5S

⁸ Document “Asesoramiento recalibración medidores R del Este”, provided as evidence.

⁹ Document “20220630_160151_0000”, provided as evidence.

	- Serial number: 4392635 - Calibration frequency: At least once every two years - Calibration date: 06/08/15 28/08/18 24/03/21 The generation records of the monitoring period were made with the main meter M1 (S/N 73000288 until September 2018, and S/N 30023040 since September 2018). However, the back-up meter M2 (S/N 4392635) has been used for generation measurement during one hour in this monitoring period, on 22/09/2020 (12PM). This measurement is considered in the emission reduction calculation for this monitoring period. 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	This data is used to calculate directly the emission reductions and is archived electronically as per internal procedures, for two years after the end of the last crediting period.

4.3 Monitoring Plan

The monitoring plan specifies the monitoring tasks implemented to ensure that the actual measurable and long-term greenhouse gas (GHG) emission reduction for the 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 applicable methodology, ACM0002 is suitable for monitoring the emission reductions due to the project activity, according to the applicability criteria. 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 accordance with the methodology, monitoring consists of metering the electricity generated by the renewable technology.

The project owner hired specific consultants to train, during the period needed, the correspondent staff. This training took place prior the operation starting date of the project to train all staff fully in the correct operation of the plant.

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:

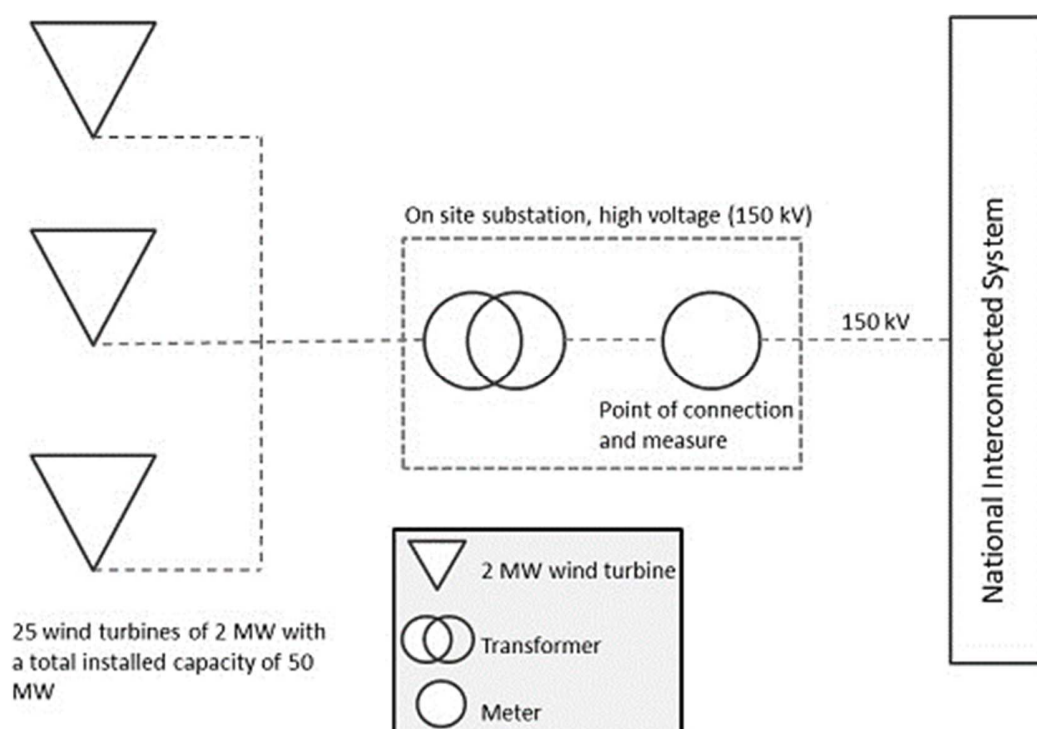


Figure 2. Positioning of metering instruments

Certified entities provided the equipment used to monitor the electricity production and conduct calibration according to the Resolution 14/002 and the standards IEC 62052-11¹⁰ and IEC 62053- 22¹¹ for static active meters of classes 0.2 and 0.5.

Table 8. Calibration data

Meter	Type	Serial Number	Accuracy	Calibration Date	Carried out by	Certificate number	Calibration frequency
M1 Main Meter	SL7000	73000288	0.2S	15/06/2015	UTE	151655	Biannual
				28/08/2018	UTE	182849	
	SL7000*	30023040	0.2S	17/03/2017	UTE	170874	Biannual
				24/03/2021	UTE	210465	
M2 Backup Meter	LZQJ-XC	4392635	0.5S	06/08/2015	UTE	143747	Biannual
				28/08/2018	UTE	182850	
				24/03/2021	UTE	210466	

* Main meter replaced in September 2018 due to malfunction.

In September 2018, a fault was identified in the operation of the main meter, so it was replaced by a new one (serial number 30023040 as can be seen in the table above) that had been calibrated in March 2017. The back-up meter served as the main meter during the installation of the new meter.

Data recording and archiving

- A. Project owner monitors the electricity supplied by the project to the grid using a calibrated electricity meter and taking monthly records.

¹⁰ Norma IEC 62052-11:2004: Electricity metering equipment (AC) - General requirements, tests and test conditions -- Part 11: Metering equipment

¹¹ Norma IEC 62053-22:2003: Electricity metering equipment - Particular requirements - Part 22: Static meters for active energy (classes 0,2 S and 0,5 S)

- B. The data of the meters are issued by ADME in the DTE and from them the invoice is issued to UTE. The measurements are crosschecked with sale receipts for electricity, using conservative values for calculation of emission reductions.
- C. The project participants archive all data collected as part of monitoring during the monitoring period plus two years.
- D. Quality assurance and Quality control is applied:
 - Development of 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 is calibrated according to the Resolution 14/002, at least once every two years during the verification of the system.
- E. Procedures on how to deal with erroneous measurements/non-conformities: In the event of problem to the measurements system, the information will be 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. It shall contain the data report and the results of the emissions reductions of the project for the defined verification period.

In this project sampling approaches do not apply and internal audit processes are not considered.

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.

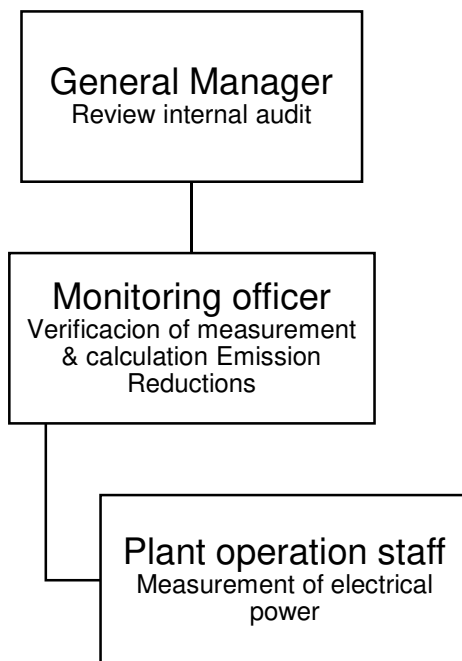


Figure 3. General management structure

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

Baseline emissions include only CO₂ emissions from electricity generation in fossil fuel power plants displaced due to the project activity. The methodology assumes that existing grid-connected power plants and the addition of the new grid-connected power plants would have generated all project electricity generation above baseline levels. Thus, the calculation of baseline emissions is as follows:

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

Where:

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

EGPJ,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 (MW·h/yr.)

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/MW·h)

Calculation of EGPJ,y

The calculation of EGPJ,y is different for (a) greenfield plants, (b) retrofits and replacements, and (c) capacity additions. Since this project activity is the installation of a new grid-connected renewable power plant at a site where no renewable power plant was operated prior to the implementation of the project activity, the option (a) was selected:

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

Where:

EGPJ,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 (MW·h/yr.)

$EG_{facility,y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MW-h/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 1. Net electricity generation during the monitoring period

Year	Month	Net electricity generation (MWh)
2016	June	6,770.33
	July	18,255.53
	August	18,296.87
	September	19,747.37
	October	20,189.26
	November	16,653.67
	December	15,709.36
2017	January	15,958.91
	February	11,897.69
	March	18,104.96

Year	Month	Net electricity generation (MWh)
	April	16,908.15
	May	14,663.61
	June	12,186.21
	July	16,581.47
	August	11,882.55
	September	12,770.53
	October	15,763.81
	November	17,490.35
	December	16,874.17
2018	January	18,418.28
	February	14,902.56
	March	17,018.87
	April	15,508.60
	May	17,046.11
	June	21,618.38
	July	19,239.83
	August	19,994.75
	September	17,325.06
	October	11,532.00
	November	12,361.65
	December	14,985.90
2019	January	17,471.70
	February	13,450.50
	March	20,432.77
	April	14,651.70
	May	18,365.95
	June	19,987.32

Year	Month	Net electricity generation (MWh)
	July	20,780.64
	August	21,703.72
	September	14,005.48
	October	17,339.79
	November	18,665.58
	December	18,713.77
2020	January	18,512.55
	February	17,663.16
	March	17,373.23
	April	20,111.58
	May	22,439.44
	June	18,796.30
	July	24,358.97
	August	21,985.16
	September	18,899.11
	October	17,754.97
	November	15,957.34
	December	19,886.42
2021	January	16,690.96
	February	11,531.41
	March	12,530.46
	April	15,746.58
	May	19,109.15
	June	21,393.21
	July	22,709.94
	August	15,654.16
	September	17,774.20

Year	Month	Net electricity generation (MWh)
	October	16,829.30
	November	17,704.95
	December	16,194.15

The total electricity supplied by the project during the monitoring period is 1,149,832.41 MWh

$$EG(PJ,2016) = EG_{\text{facility},2016} = 115,622.39 \text{ MW}\cdot\text{h}$$

$$EG(PJ,2017) = EG_{\text{facility},2017} = 181,082.41 \text{ MW}\cdot\text{h}$$

$$EG(PJ,2018) = EG_{\text{facility},2018} = 199,952.00 \text{ MW}\cdot\text{h}$$

$$EG(PJ,2019) = EG_{\text{facility},2019} = 215,568.91 \text{ MW}\cdot\text{h}$$

$$EG(PJ,2020) = EG_{\text{facility},2020} = 233,738.23 \text{ MW}\cdot\text{h}$$

$$EG(PJ,2021) = EG_{\text{facility},2021} = 203,868.47 \text{ MW}\cdot\text{h}$$

Calculation of EF (grid,CM,y)

The calculation of the combined margin CO₂ emissions factor is in accordance with the “Tool to calculate the emission factor for an electricity system” (version 05.0). This methodological tool determines the CO₂ emission factor for the displacement of electricity generated by power plants in an electricity system, by calculating the combined margin emission factor (CM) of the electricity system. The CM is the result of a weighted average of two emission factors pertaining to the electricity system: the operating margin (OM) and the build margin (BM). The operating margin is the emission factor that refers to the group of existing power plants whose current electricity generation would be affected by the proposed VCS project activity. The build margin is the emission factor that refers to the group of prospective power plants whose construction and future operation would be affected by the proposed VCS project activity.

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

The values for the crediting period are the followings:

Table 9. 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)
2013	0.5888	0.0624	0.3777
2014	0.4075		
2015	0.4691		

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

Net generation and Emission Factor data is available in the attached Spreadsheet “*GEN Maldonado II Monitoring Period 1_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:

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

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 ($EG_{PJ,y}$) and the grid emission factor ($EF_{grid,CM,y}$).

Therefore, as said before, the combined margin CO₂ emission factor of 0.3777 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 17.0”. Then, baseline emissions of the project are:

Table 10. Summary of emission reductions calculation

Period	Net Generation (MWh)	EF _y (tCO ₂ /MWh)	BE _y (tCO ₂ e)
2016	115,622.39	0.3777	43,670.58
2017	181,082.41		68,394.83
2018	199,952.00		75,521.87
2019	215,568.91		81,420.38
2020	233,738.23		88,282.93
2021	203,868.47		77,001.12
TOTAL	1,149,832.41		434,291

Emission factor calculation is detailed in the Project Description Document and meters data is compiled in the attached spreadsheet “*GEN Maldonado II Monitoring Period 1_v3*”. The monthly generation data is available in the attached spreadsheet “*Maldonado II DTE Monthly Generation_v1*”.

5.2 Project Emissions

The project has no emissions.

5.3 Leakage

The project has no leakage.

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 Maldonado II Monitoring Period 1_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 16/06/2016)	43,670.58	0	0	43,670.58
2017	68,394.83	0	0	68,394.83
2018	75,521.87	0	0	75,521.87

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)
2019	81,420.38	0	0	81,420.38
2020	88,282.93	0	0	88,282.93
2021	77,001.12	0	0	77,001.12
Total	434,291	0	0	434,291