



Monitoring report form
(Version 05.1)

MONITORING REPORT

Title of the project activity	Amayo 40 MW Wind Power Project - Nicaragua	
UNFCCC reference number of the project activity	2315	
Version number of the monitoring report	Version 2	
Completion date of the monitoring report	July 22 nd 2016	
Monitoring period number and duration of this monitoring period	8 th MP: 01/07/2015 to 11/04/2016	
Project participant(s)	Consorcio Eólico Amayo S.A. Shell Trading International Limited	
Host Party	Host Country Nicaragua	
Sectoral scope(s)	1-energy industries (renewable/non-renewable sources).	
Selected methodology(ies)	ACM0002:"Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (Version 07 – December 2007).	
Selected standardized baseline(s)	N/A	
Estimated amount of GHG emission reductions or net GHG removals by sinks for this monitoring period in the registered PDD	94,232 ¹ GHG emission reductions	
Total amount of GHG emission reductions or net GHG removals by sinks achieved in this monitoring period	GHG emission reductions or net GHG removals by sinks reported up to 31 December 2012	GHG emission reductions or net GHG removals by sinks reported from 1 January 2013 onwards
	0	96,467

¹ According to PDD, the amount of GHG emission reductions for a year is 120,811, therefore for a monitoring period of ten months, the amount is 94,298.91 (120,811CERs / 12mo = 10,067.5CERs/mo * 9.36mo = 94,232.58 CERs).

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

The purpose of the project activity is to produce and provide electricity to the Nicaraguan grid by using wind power as the energy source. In order to accomplish this objective, the project installed nineteen 2.1 MW, 60HZ Suzlon wind turbine generators model S88, for a total power capacity of 39.9 MW. The electricity is injected to the 230 kV transmission line through a substation that was built by the project owner, and then distributed to the national grid.

Amayo wind farm was connected to the grid on 9th February 2009 and started to produce electricity on 12th February 2009, as the first days were required to energize the main transformer and test the electrical circuits. Since then, the wind farm has been fully operational.

Table 1: Implementation of the Project

DATE (DD/MM/YY)	Key events
01/01/08	The construction activities started
09/02/09	Connection to the grid / internal tests
12/02/09	First production of energy
12/04/09	Registration date and starting date of the crediting period
12/04/09-30/09/09	The 1 st monitoring period
01/10/09-31/08/10	The 2 nd monitoring period
01/09/10 – 30/04/11	The 3 rd monitoring period
01/05/11 – 31/03/12	The 4 th monitoring period
01/04/12 – 30/04/13	The 5 th monitoring period
01/05/13 – 30/06/14	The 6 th monitoring period
01/07/14 - 30/06/15	The 7 th monitoring period
01/07/15 - 11/04/16	The 8 th monitoring period (this report)
11/04/16	End of first crediting period

The project was registered as a CDM project by the UNFCCC on April 12th 2009, under reference number 2315: Amayo 40 MW Wind Power Project - Nicaragua. More background information can be found in the Project Design Document (PDD) and related documents, available on the UNFCCC website: <https://cdm.unfccc.int/Projects/DB/SGS-UKL1227712726.26/view>.

The project's CDM first crediting period ended on April 11th 2016.

The total emissions reductions achieved in this monitoring period (from July 1st 2015 to April 11th 2016, both days included) are 96,467 tCO₂.

A.2. Location of project activity

Amayo 40 MW Wind Power Project – Nicaragua is located in the Department of Rivas, on the Pan-American Highway at 129 kilometers to the south of the capital city, Managua. The site is located on the south west coast of Lake Nicaragua. The area for the wind farm is centered at the geographical coordinates 11°19'32" N and 85°43'05" W and has a total area of 276.36 ha.

A.3. Parties and project participant(s)

Party involved ((host) indicates a host Party)	Private and/or public entity(ies) project participants (as applicable)	Indicate whether the Party involved wishes to be considered as project participant (yes/no)
Nicaragua (host party)	Consorcio Eólico Amayo S.A.	No
Switzerland	Shell Trading International Limited	No

A.4. Reference of applied methodology and standardized baseline

Approved baseline and monitoring methodology applied:

ACM0002: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (Version 07 – December 2007).

The following tools were applied together with the methodology:

"Tool to calculate the emission factor for an electricity system (Version 01)"

"Tool for the demonstration and assessment of additionality (Version 05)"

For reference see:

<http://cdm.unfccc.int/methodologies/DB/UB3431UT9I5KN2MUL2FGZXZ6CV71LT>

A.5. Crediting period of project activity

The starting date of the first crediting period is April 12th, 2009 (project's registration date), and the end date is April 11th 2016. The crediting period is renewable (the project choose 7 years*3 as crediting period as stated on the PDD).

A.6. Contact information of responsible persons/entities

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CDM Coordinator

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SECTION B. Implementation of project activity

B.1. Description of implemented registered project activity

The project implemented a total of nineteen 2.1 megawatt Suzlon S88 60HZ wind turbine generators (hereafter, "WTGs"), with the following operating data: cut-in wind speed 4 m/s, rated wind speed 14 m/s, cut-out wind speed 25 m/s, survival wind speed 60 m/s. The robust design of the wind turbine, with its uniform weight distribution, ensures high levels of safety, reliability and enhanced service life. Suzlon's Advanced Control System includes precisely calibrated sensors installed at each critical junction that closely monitors factors like temperature, wind speed and vibrations. The remote monitoring and control option enhances ease of operation.

The wind turbine S88-2.1 MW is a variable slip wind turbine with an electrical pitch system that has been designed in accordance with Germanischer Lloyd GLIIa Type Certification. With the pitch system the pitch angle of each blade is accurately adjusted to the requirements of the control and/or safety system. It has been designed in order that which means that each blade has its own drive system consisting of a motor, a gearbox and a converter.

The Suzlon wind turbine generator (WTG) has a rated power of 2.1 MW, a standard rotor height of 80 meters and a rotor diameter of 88 meters, and it is designed to withstand harsh environmental conditions. Its robust design and uniform weight distribution ensure high levels of safety and reliability. The main parts of the Suzlon S88-2.1 MW are the nacelle, the tower and the rotor with the blades. All parts have been designed in line with approved industry standards to guarantee operational safety and efficient operation. See below a summary with the main specifications of this equipment:

Table 2: Summary of the main specifications of WTG S88

Main data	Description
Nominal Power	2.1 MW
Rotor diameter	88.0 m
Swept area of rotor	6,082 m ²

Rotor height	79.0 m
Tower height	77.5 m
Rotational speed	15.0 to 17.6 rpm
Number of blades	3
Rotor cone angle	5°
Power regulation	Pitch / SUZLON-FLEXISLIP SYSTEM
Rotor orientation	Upwind
Blade length	43.25 m
Material of the blades	Fibre glass / epoxy
Type of rotor air brake	Pitch / Full blade
Pitch system	
Type description	Electrical
Drives	1 electric motor with gearbox and electrical brake per blade
Backup system	1 battery set per blade
Pitch angle range	95°
Pitch speed	0.1 to 10.0 °/s
Generator system	
Type description	Single fed induction generator with slip rings, variable rotor resistance via SUZLON-FLEXISLIP System
Rated power	2.100 MW
Voltage stator (phase to phase)	600 V
Frequency	60 Hz
Number of poles	4
Synchronous speed	1,800 rpm
Speed range for constant power with SUZLON-FLEXISLIP	1,836 to 2,100 rpm
Yaw System – Bearing	Slide bearing with gear ring, automatic greasing system

The Project also built a control center and a 230/kV outdoor substation. The control center consists of the following:

- A control room, where the computer control center of the wind farm is housed.
- 13.8 kV (LV) cabinets, (one for each phase of the wind farm).
- Energy meters.
- A warehouse, where the critical spares and other material are located for the operation and maintenance of the wind farm.
- Restrooms and changing rooms for the use of the operation and maintenance personnel and visitors.
- A Meeting Room, for the wind farm personnel and for the reception of any institutional visits to the wind farm.

The outdoor 230 kV substation is equipped with the following electrical components: transformer of power 100 MVA, auto valves, voltage transformers, switch, disconnecting switch with earthing blades. Also are the corresponding elements of protection and control (such as relays) and metering equipment as well as a short (40 m) 230 kV transmission line that connects to the 230kV line which transverses the site.

Each turbine has a low voltage transformer outside the tower. The electricity produced in the generator at 600 V is delivered to its own transformer where the voltage is increased from 600 v to 13.8 kV. Then this electricity is delivery to the 13.8 kV cabinets at the control room, divided by circuits. This electricity is finally sent to the 100 MVA main transformer at the substation to elevate the voltage to 230 kV so it can be injected to the 230 kV transmission line and distributed to the grid.

Table 3: Technical issues that affected plant availability

Location	Event description	Date	Start time	Restart date	Downtime
PLANT	Disturbance in line 230 kV. All plant is out of service	6-Jul-15	23:14:00	0:40:38	1:26:37
	EOLO L9170 line tripped. All plant is out of service	14-Jul-15	20:43:15	21:50:00	1:06:45
	Programmed ground clearance for rehabilitation works on AMY-L9030/AMY-B9015/AMY-L9170 lines	26-Jul-15	7:54:17	19:03:00	11:08:43
	Programmed ground clearance for rehabilitation works on Main Transformer	23-Aug-15	6:55:00	23:22:00	16:27:00
	Programmed ground clearance for measurements on Main Transformer and air line replacement on U3110 circuit	9-Sep-15	6:49:06	20:15:04	13:25:58
T10	Generator DE bearing replacement		7/26/15 22:03	7/28/15 18:12	44:09:19
T06	Generator NDE bearing replacement		10/7/15 0:00	10/7/2015 13:44	13:44:47
T15	Blade #3 repairment		10/14/15 15:35	12/26/2015 13:44	1750:09:47
T11	Generator's neutral repairment		10/29/15 19:30	11/2/2015 19:56	96:26:10
T13	Blade #1 repairment		11/13/15 15:48	12/17/2015 18:45	818:56:14
T11	Turbine's main bearing replacement		1/4/2016 15:16	3/3/2016 18:23	1419:07:30
T13	Blade #1 repairment		2/10/2016 16:45	3/2/2016 18:43	505:58:28

Other technical issues related to the metering system:

The calibration of metering system was performed on October 23rd 2014, and according to local standards by INE regulations next calibration should be carried out before October 23rd 2016.

B.2. Post-registration changes

B.2.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline

There have not been any temporary deviations.

B.2.2. Corrections

There has not been any request for corrections

B.2.3. Changes to start date of crediting period

There have not been any changes to start date of crediting period.

B.2.4. Inclusion of a monitoring plan to the registered PDD that was not included at registration

There has not been an inclusion of a monitoring plan.

B.2.5. Permanent changes from registered monitoring plan, applied methodology or applied standardized baseline

During the second monitoring period (October 2009 to August 2010, both months included) a revision of the monitoring plan was requested. The monitoring plan has been revised and it was approved by the CDM - UNFCCC on September 8th 2011.

B.2.6. Changes to project design of registered project activity

There have not been any changes to project design of registered project activity.

B.2.7. Types of changes specific to afforestation or reforestation project activity

None. This is a renewable energy project.

SECTION C. Description of monitoring system

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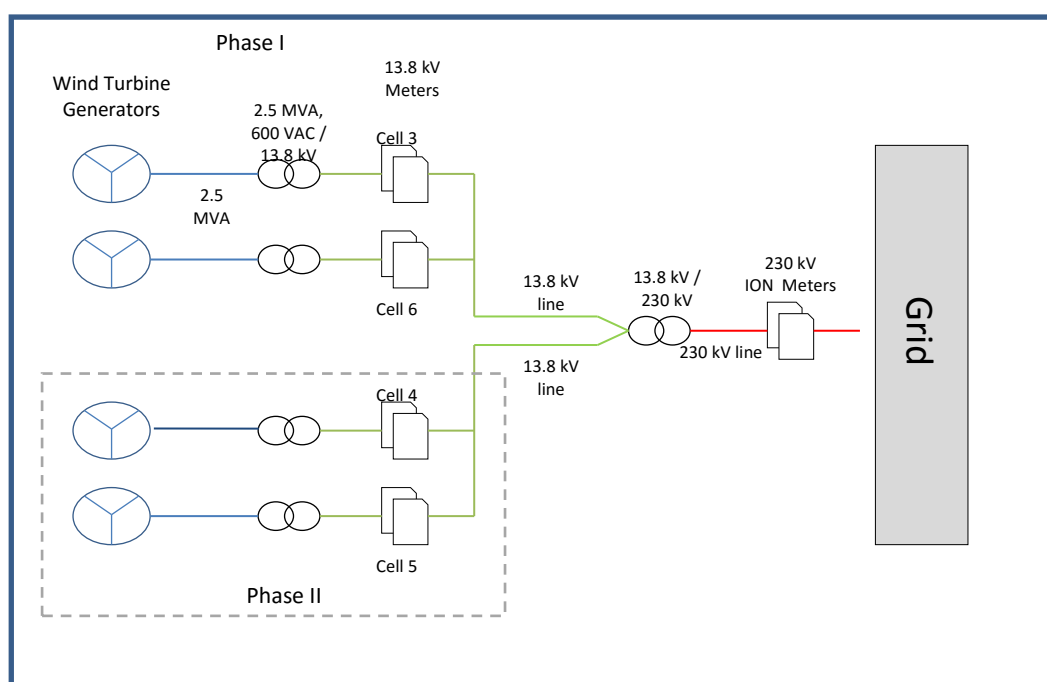
Data Generation

The data is first generated at the metering system of the plant. The main parameter monitored is the electricity supplied to the grid by the project activity (EGy), as indicated in the PDD section B.7.1. The electricity supplied to the national grid is continuously measured and recorded by the metering system which includes:

- The main revenue meter and a backup meter both installed at the high voltage side of the main transformer at the plant facilities.
- Four main meters and four back up meters installed at the 13.8 kV medium voltage side of the main transformer, which measures separately the energy from Phase I and Phase II.

Consorcio Eólico Amayo, S.A. (Phase I) and Consorcio Eólico Amayo Fase II, S.A. (Phase II) are located side by side on the same geographical area of the Department of Rivas. Both have their own collector for energy at 13.8 kV level that goes into one 13.8 kV bus bar at the entrance of the low side of the transformer located at the 230 kV substation, which is the common point where Phase I and Phase II deliver power to the Nicaraguan Grid. Phase II connects into the same Substation that Phase I does since this is the nearest point to deliver power to grid. Said substation has one main 100 MVA transformer that can handle the total output of Phase I and Phase II, which is approximately 71 MVA at its peak. This way, Phase II has been able to connect to the grid faster by using the same Substation that Phase I is using. The metering scheme is depicted on Figure 1 below.

Figure 1: Metering scheme



The Normative “Normativa de Operación” in place allows two Commercial Agents to deliver energy through the same connection point. In case that the Energy Delivery Point is the same -as in this case- the energy produced by each Agent (Phase I and Phase II) must be identified at each Commercial Agent’s metering point². If the latter are not of the same voltage as the delivery point, a calculation (which must be registered

² Recall that each Phase of the project is registered as an independent commercial agent.

at the CNDC³) may be established in order to account the exact amount of net energy provided by each agent⁴.

Since the commissioning of Phase II, the net amount of energy delivered to the grid can no longer be measured from the high voltage, outside meter, as the latter now indicates the overall generation of the entire wind farm (Phase I and Phase II). The proportion of energy generated by each phase at the 13.8 kV medium voltage side is then applied to the generation by the entire farm measured on the high voltage side, thus allowing to obtain the contribution of energy corresponding to each phase of the project.

It was necessary to paste to the spreadsheet the delivered and received energy values both from the ION Main Revenue Meter and from the meters located at the 13.8 kV low voltage side. In the spreadsheet is possible to easily distinguished the delivered energy (kWh) coming from the main revenue meter (ION Main Meter) which measures the total delivery energy from the total wind farm (Phase I+ Phase II) and the energy values coming from each one of the meters installed at the 13.8 kV voltage side (Cell 3 to Cell 6), where Cell 3 and Cell 6 measures the delivered and received energy corresponding to Amayo Phase I, and Cell 4 and Cell 5 the energy coming from Amayo Phase II (see Figure 1).

The second step was to calculate delivered and received energy for the project at the grid delivery point using the values of energy delivered and received by the entire wind farm at the ION 230 kV Main Meter. Each phase's shares of energy generation/consumption measured at the 13.8 kV meters are applied to the overall generation in order to determine how much of the latter corresponds to each. The formulas described in Section E.1 were then used to calculate the delivered energy to the grid (EG) and the energy received (EC).

The description of each parameter will be shown on section D.

Data Recording and Calculation

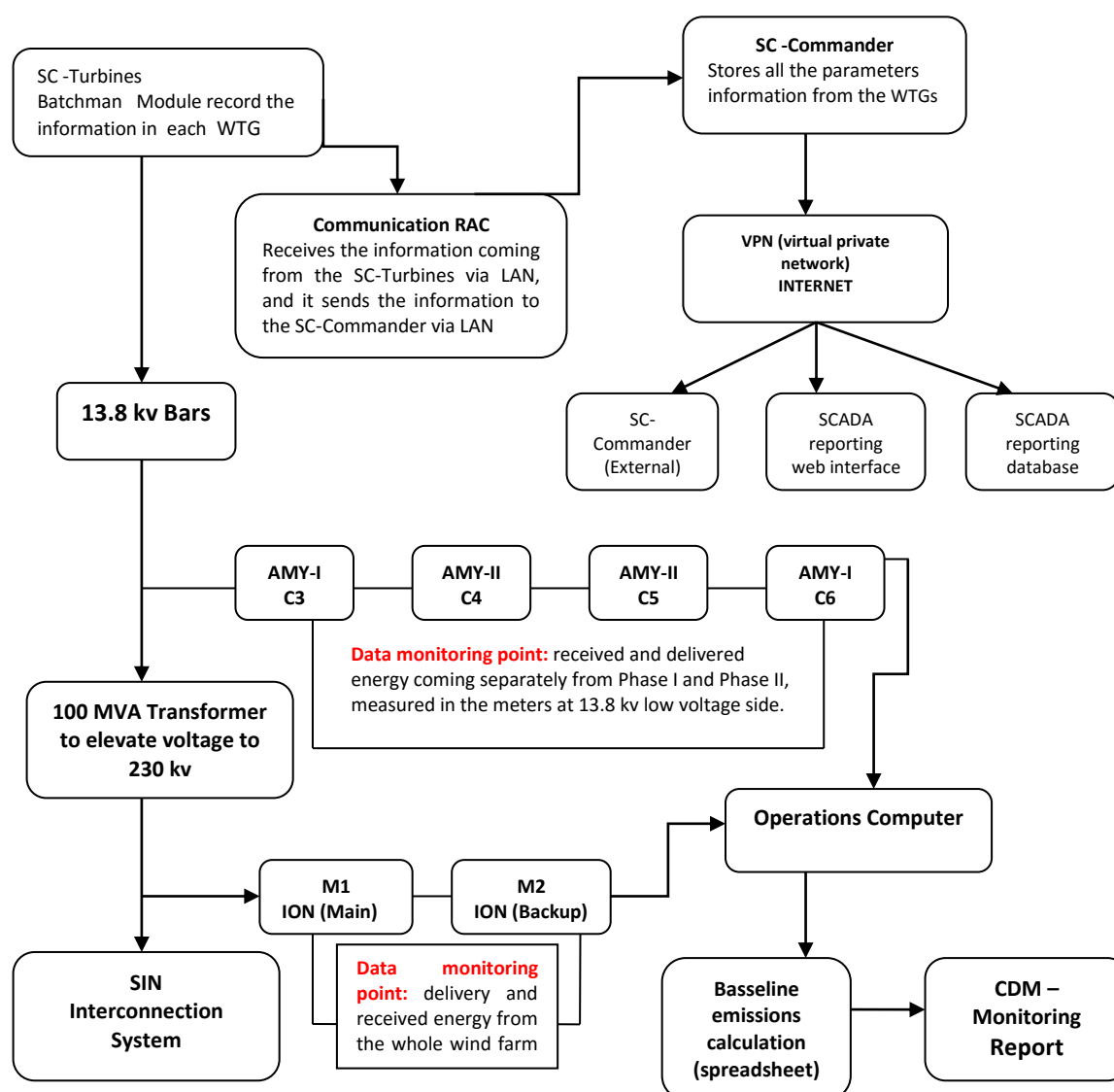
All the meters mentioned above keep track of both the electricity supplied and received from the grid. Daily records are kept by the plant operator in the operation data files. Additionally, these same files are kept in back up CD's.

The data readings used for calculation methodology are taken from the metering system, which are the monitoring points. They keep track of both the electricity supplied and received from the grid. In turn, net energy delivered is used to calculate baseline emissions. Net energy is obtained by subtracting the received energy from the delivered electricity to the grid. The net energy delivered in each hour is multiplied by the emission factor to obtain baseline emissions. The emission factor for Amayo 40 MW Wind Power Project - Nicaragua is 0.7127 tCO₂ / MWh⁵.

3 National Load Dispatch Centre

4 See section 4.1 (metering location) on page 2 of the Commercial Annex III (Commercial Metering System) of the Operating Regulations (Normativa de Operación), available to the DOE (original document in Spanish).

⁵ As indicated in the PDD, project participants chose an *ex-ante* emission factor, which was calculated and presented in sections B.6.1 and B.6.3 of the above mentioned document.

Figure 2: Flow diagram of data recording for baseline emissions calculations.

As it can be seen in the figure above, wind turbines (WTG) data parameters are sent from each WTG to the Suzlon server SC-Commander and to the SCADA, allowing the wind farm to easily follow up the performance of the parameters and generate reports. In turn, the energy generated at each WTG is transported through several circuits to the 13.8 kv Bar, where the electricity coming from each of the two phases is measured in separate cells, which each one has separate meters (one as main meter and another as back up meter). Cells 3 and 6 measure energy from Amayo I, and cells 4 and 5 from Amayo II. After that stage, energy is sent to the main transformer at the 230 kv side, where the voltage is increased from 13.8 kv to 239 kv so it can be delivered to the 230 kv transmission line. At that side of the transformer, both the main revenue ION meter and the backup meter (M1 and M2 in the figure above) are located.

Quality Assurance (QA) and Quality Control (QC) procedures applied

The emission reductions achieved by the project have to be verified internally, so the following steps are taken to ensure the best possible data quality:

- Ensure that the data is complete and transparent. Ensure that they are in the same format. Make sure that the data is checked on consistency and transposition errors (these can occur when data is transported from one system to another). In case that the delivered energy to the grid (gross energy) records used in the CERs calculation are not in accordance with the delivered energy specified in the invoices, then the most conservative data will be used for the CERs calculation.
- Calibration of the energy meters at least once every two years according to local standards by INE regulations (See page 9 of the Commercial Annex in the Operation Regulations issued by INE (in

Spanish: Normativa de Operación, Anexo Comercial: Sistema de Mediciones Comerciales, inciso VII.: Revisión de los medidores habilitados). The calibration can be performed only by entities that are authorized or certified by the national authority CNDC (in English: National Dispatch Center).

- Storage of project data for at least 2 years after the end of the crediting period or the last issuance of CERs for this project activity.

Organizational structure, roles and responsibilities of personnel for the monitoring plan

The purpose of the monitoring organization is that:

- All staff involved in monitoring know what to do and how often;
- Quality assurance and quality control measures are operated. This ensures that the generated data is complete, transparent and reliable.

The project has implemented a management structure where monitoring responsibilities are explicitly defined. The O&M department's is responsible for ERs monitoring, record keeping and the implementation of proper QA procedures. All O&M procedures have been adapted to include the carbon monitoring component and the adequate accounting of the emission reductions.

The person in charge of the carbon credits monitoring is in charge of the following activities:

- Calculation and record keeping of the emissions reduced by the project activity, according to the general guidelines described in the monitoring plan.
- Managing all the validation, registration and certification process of the project's GHG emission reduction.
- Coordination and management of the marketing of the CERs in the relevant carbon markets.
- Providing reliable evidence during verification allowing the uniquely identification of ER reductions from each phase (e.g. invoices from each company showing the amount sold by each phase of the project).

Table 4: Roles and Responsibilities Matrix

	Plant Manager	CDM Coordinator	Operations Manager
Collect data			
Power delivered to grid	R	I	E
Ensure calibrations and data quality	R	I	E
Process data			
Input of raw data in spreadsheet	I	E	I
Cross check data and correct	I	E	E
Calculate emission reductions	I/R	E	I
Quality check calculated emission reductions	I/R	I	R/E
Reporting and archiving			
Report data gaps and errors (**)	I	R	E
Report emission reductions to date	R/E	R/E	R/E
Archiving of procedures and certificates (***)	R	I	E
Archiving of data	R	I	E

E=Execute
R=Responsible
I= To be informed

Record Keeping Arrangements

The sections below provide an overview of what relevant documents (files, manuals, reports, etc.) are kept and where they are stored.

Table 5: Record Keeping Arrangements

Document	Responsible for generation	Storage location	Update frequency	Remarks
Calibration certificates revenue	AMAYO calibration	Office AMAYO	Once every two years	

meters	engineer			
Power delivered to the grid	AMAYO	Office AMAYO	Monthly (power delivered to the grid), where applicable (meter audits)	Compare measured output against invoiced power
Audits of power meter	External verifier	Office AMAYO	Where applicable	Change of meter and meter problems trigger an external audit.
Calculation worksheet	AMAYO	Office AMAYO	When applicable	Make sure that this sheet holds all relevant data and back up every month.
Back up of the power delivered to the grid data in the company's server	AMAYO	Office AMAYO	Monthly	Make sure that the delivered energy to the grid is also storage in the server in case of any incident with the operation's computer.

Emergency Procedures

Table 6: Emergency Procedures

Measured parameter	Calibration procedures	Maintenance procedures	Procedure in case of failure	Default value to use in case of failure	Relevant documents
Power delivered to the grid [MWh] Main Meters	Every two years with an audit from the grid operator	None	Replacement of the meter by an equivalent unit, upon which an audit must be carried out by grid operator.	Value to be taken from backup meter. In case that both meters fail values to be taken according to the procedures of "Normativa de Operación" using the voltage and current values of the Dispatch Center.	Audit reports commissioned by grid operator in Spanish and meter documentation according to "Normativa de Operación vigente".
Power delivered to the grid [MWh] BackUp Meters	As above	As above	As above	Value to be taken from main meter.	As above

SECTION D. Data and parameters

D.1. Data and parameters fixed ex ante or at renewal of crediting period

The following values are presented on section B.6.2 of the registered PDD.

Data / Parameter:	$NCV_{i,y}$
Unit:	TJ/Gg
Description:	Net calorific value (energy content) per mass unit of fuel 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(s) applied):	Fuel Oil: 39.8 TJ/Gg Diesel: 41.4 TJ/Gg
Choice of data or measurement methods and procedures	No other data is publicly available. IPCC guidelines have been used in a conservative manner.
Purpose of data:	Emission factor for baseline emissions, as stated on section B.6.3 of the registered PDD.
Additional comment:	

Data / Parameter:	$EF_{CO_2,i,y}$
Unit:	tCO ₂ /TJ
Description:	CO ₂ emission factor of fossil fuel <i>i</i> in year <i>y</i> .
Source of data:	IPCC default values at the lower limit if 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 Greenhouse Gas Inventories.
Value(s) applied):	Fuel Oil: 75.5 tCO ₂ /TJ Diesel: 72.6 tCO ₂ /TJ
Choice of data or measurement methods and procedures	No other data is publicly available. IPCC guidelines have been used in a conservative manner.
Purpose of data:	Emission factor for baseline emissions, as stated on section B.6.3 of the registered PDD.
Additional comment:	

Data / Parameter:	D_i
Unit:	tons/gal
Description:	Density of fuel <i>i</i> in year <i>y</i> .
Source of data:	Table A.4 "Emissions of Greenhouse Gases in the United States" - Energy Information Administration (US Department of Energy). Available at http://www.eia.doe.gov/oiaf/1605/archive/87-92rpt/appa.html
Value(s) applied):	Fuel Oil: 11 API (= 0.993 gr/cm ³) Diesel: 35.5 API (= 0.8473 gr/cm ³)
Choice of data or measurement methods and procedures	No regional or national data is publicly available. IPCC Guidelines (2006) do not provide information on density so another source had to be sought.
Purpose of data:	Emission factor for baseline emissions, as stated on section B.6.3 of the registered PDD.
Additional comment:	This coefficient is used to convert fuel data (originally expressed in gals) to mass units. Conversion from API to gr/cm ³ was made according to the formula, where D_A is the density expressed in API and D_{g/gm^3} is the same variable expressed in g/cm ³ . (Source: "Sistemas de unidades Físicas", Galán García, JL and Galán García, J., available at: http://books.google.com.ar/books?id=iJMTyEe0vBcC&pg=PA47&dq=conversion+de+API+a+densidad There are also many conversion tools available online, for example: http://www.ior.com.au/ecfdensity.html)

Data / Parameter:	$FC_{i,m,y}$
Unit:	Thousand gals

Description:	Amount of fossil fuel i consumed by each power plant/unit m in year y .
Source of data:	INE - Instituto Nicaragüense de Electricidad (Nicaraguan Electricity Institute)
Value(s) applied):	Data for the 2005-2007 period is available in Annex 3 of the registered PDD
Choice of data or measurement methods and procedures	Data is obtained from official sources
Purpose of data:	Emission factor for baseline emissions, as stated on section B.6.3 of the registered PDD.
Additional comment:	This data is publicly available at: http://www.ine.gob.ni/estadisticasdge/consumo%20de%20combustible%20por%20tipo%20de%20planta.pdf ; http://www.ine.gob.ni/estadisticasdge/001%20Estadisticas%20Electricas%202007%20Resumen.pdf

Data / Parameter:	$EG_{m,y}$
Unit:	MWh
Description:	Net electricity generated and delivered to the grid by power plant/unit m in year y .
Source of data:	INE - Instituto Nicaragüense de Electricidad (Nicaraguan Electricity Institute)
Value(s) applied):	Data for the 2005-2007 period is available in Annex 3 of the registered PDD
Choice of data or measurement methods and procedures	Data is obtained from official sources
Purpose of data:	Emission factor for baseline emissions, as stated on section B.6.3 of the registered PDD.
Additional comment:	This data is publicly available at http://www.ine.gob.ni/estadisticasdge/generacion%20neta%20GWH.pdf , see also: http://www.ine.gob.ni/estadisticasdge/001%20Estadisticas%20Electricas%202007%20Resumen.pdf

Data / Parameter:	<i>Plant name</i>
Unit:	Text
Description:	Identification of power sources for the OM (all the plants in the grid).
Source of data:	INE- Instituto Nicaragüense de Electricidad (Nicaraguan Electricity Institute)
Value(s) applied):	Data for the 2005-2007 period is available in Annex 3 of the registered PDD.
Choice of data or measurement methods and procedures	Data is obtained from official sources
Purpose of data:	Emission factor for baseline emissions, as stated on section B.6.3 of the registered PDD.
Additional comment:	This data is publicly available at http://www.ine.gob.ni/

Data / Parameter:	<i>Plant name</i>
Unit:	Text
Description:	Identification of power sources for the BM (recent additions to the grid).
Source of data:	INE- Instituto Nicaragüense de Electricidad (Nicaraguan Electricity Institute)
Value(s) applied):	Table B.8 of PDD.

Choice of data or measurement methods and procedures	Data is obtained from official sources
Purpose of data:	Emission factor for baseline emissions, as stated on section B.6.3 of the registered PDD.
Additional comment:	This data is publicly available at http://www.ine.gob.ni/

D.2. Data and parameters monitored

Data / Parameter:	EG_y
Unit:	MWh
Description:	Net Electricity supplied to the grid by the project activity in period y.
Measured/ Calculated / Default:	Calculated
Source of data:	Parameters $EG^{230kV}_{AMAYO,y}$, $EG^{13.8kV}_{PhaseI,y}$, $EG^{13.8kV}_{PhaseII,y}$, $EC^{230kV}_{AMAYO,y}$, $EC^{13.8kV}_{PhaseI,y}$ and $EC^{13.8kV}_{PhaseII,y}$, which are based on on-site metering system (same data submitted to INE / SIN).
Value(s) of monitored parameter:	135,355.19 MWh
Monitoring equipment:	See boxes below.
Measuring/ Reading/ Recording frequency:	Data will be measured on site on an hourly basis. Monthly records will be kept.
Calculation method (if applicable):	$EG_y = EG^{230kV}_{PhaseI,y} - EC^{230kV}_{PhaseI,y}$
QA/QC procedures:	- The parameter calculation is based on the meter readings from meters that have a maximum error of $\pm 0.2\%$ and should be calibrated at least once every two years according to local standards by INE regulations (See page 9 of the Comercial Annex in the Operation Regulations issued by INE (in Spanish: Normativa de Operación, Anexo Comercial: Sistema de Mediciones Comerciales, inciso VII.: Revisión de los medidores habilitados). - Crosschecking of the data from the spreadsheet by comparing the delivered energy from the spreadsheet with the delivered energy specified in the invoices⁶.
Purpose of data:	This data is used for baseline emission calculation.
Additional comment:	

Data / Parameter:	$EG^{230kV}_{AMAYO,y}$
Unit:	MWh
Description:	Quantity of electricity delivered to the grid (230 kV transmission line) by the entire wind farm (Phase I + Phase II) in period y.
Measured/ Calculated / Default:	Measured
Source of data:	On-site metering system

⁶ Invoices reflect gross energy delivered to the grid (i.e. the EG^{230kV}_{PhaseI} parameter), which is the main input for determining EG_y

Value(s) of monitored parameter:	213,188.73 MWh (See table B of Section E.1) ($EG^{230kV}_{AMAYO,y}$ is ultimately used to determine EG_y).
Monitoring equipment:	• Main meter: Schneider Electric, Power Logic, ION 8600, serial No.: PT-0901A531-01. • Back up meter: Schneider Electric, Power Logic, ION 8600, serial No.: PT-0901A532-01 The date of last calibration is: • October 23rd 2014 and has a validity of 2 years (until October 22nd 2016). • October 14th 2012 and has a validity of 2 years (until October 13th 2014).
Measuring/ Reading/ Recording frequency:	Data will be measured on site on an hourly basis. Monthly records will be kept.
Calculation method (if applicable):	N/A
QA/QC procedures:	Meters should have a maximum error of $\pm 0.2\%$ and be calibrated at least once every two years according to local standards by INE regulations (See page 9 of the Comercial Annex in the Operation Regulations issued by INE (in Spanish: Normativa de Operación, Anexo Comercial: Sistema de Mediciones Comerciales, inciso VII.: Revisión de los medidores habilitados).
Purpose of data:	This data is used for baseline emission calculation.
Additional comment:	

Data / Parameter:	$EG^{13.8kV}_{PhaseI,y}$
Unit:	MWh
Description:	Gross electricity generation in period y by Phase I, as measured in the 13.8 kV meters.
Measured/ Calculated / Default:	Measured
Source of data:	On-site metering system
Value(s) of monitored parameter:	136,415.17 MWh (See table B Section E.1) ($EG^{13.8kV}_{PhaseI,y}$ is ultimately used to determine EG_y).

Monitoring equipment:	• Main meter at cell 3: Type Nexus 1262. Precision 0.2. Serial number 35415827. • Back up meter at Cell 3: Type Nexus 1262. Precision 0.2. Serial No.: 102-0053298431 • Main meter at Cell 6: Type Nexus 1262. Precision 0.2. Serial No.: 102-0053298936 • Back up meter at Cell 6: Type Nexus 1262. Precision 0.2. Serial No.: 102-0053299028 The date of last calibration for all meters mention above is: • October 23rd 2014 and has a validity of 2 years (until October 22nd 2016). Previous calibrations are: • For Main meter at cell 3 Serial number 35415827 and backup meter at cell 3: January 28th 2014 and has a validity of 2 years (until January 27th 2016). • For the other three meters was October 13th 2012 and had a validity of 2 years (until October 12th 2014).
Measuring/ Reading/ Recording frequency:	Data will be measured on site on an hourly basis. Monthly records will be kept.
Calculation method (if applicable):	N/A
QA/QC procedures:	• Meters should have a maximum error of $\pm 0.2\%$ and be calibrated at least once every two years according to local standards by INE regulations (See page 9 of the Comercial Annex in the Operation Regulations issued by INE (in Spanish: Normativa de Operación, Anexo Comercial: Sistema de Mediciones Comerciales, inciso VII.: Revisión de los medidores habilitados). Crosschecking of the data from the spreadsheet by comparing the delivered energy from the spreadsheet with the delivered energy specified in the invoices⁷.
Purpose of data:	This data is used for baseline emission calculation.
Additional comment:	

Data / Parameter:	$EG^{13.8kV}_{PhaseII,y}$
Unit:	MWh
Description:	Gross electricity generation in year y by Phase II, as measured in the 13.8 kV meter
Measured/ Calculated / Default:	Measured
Source of data:	On-site metering system
Value(s) of monitored parameter:	78,209.71 MWh (See table B of Section E.1) ($EG^{13.8kV}_{PhaseII,y}$ is ultimately used to determine EG_y).

⁷ Invoices reflect gross energy delivered to the grid (i.e. the EG^{230kV}_{PhaseI} parameter), which is the main input for determining EG_y

Monitoring equipment:	• Main meter at Cell 4: Type Nexus 1262. Precision 0.2. Serial No.: 102-0053298532 • Back up meter at Cell 4: Type Nexus 1262. Precision 0.2. Serial No.: 102-0053298633 • Main meter at Cell 5: Type Nexus 1262. Precision 0.2. Serial No.: 102-0053298734 • Back up meter at Cell 5: Type Nexus 1262. Precision 0.2. Serial No.: 102-0053298835 The dates of last calibrations are: • October 23rd 2014 and has a validity of 2 years (until October 22nd 2016). • October 15th 2012 for meters at cell 4 and has a validity of 2 years (until October 13th 2014). • October 14th 2012 for meters at cell 5 and has a validity of 2 years (until October 14th 2014).
Measuring/ Reading/ Recording frequency:	Data will be measured on site on an hourly basis. Monthly records will be kept.
Calculation method (if applicable):	N/A
QA/QC procedures:	• Meters should have a maximum error of $\pm 0.2\%$ and be calibrated at least once every two years according to local standards by INE regulations (See page 9 of the Comercial Annex in the Operation Regulations issued by INE (in Spanish: Normativa de Operación, Anexo Comercial: Sistema de Mediciones Comerciales, inciso VII.: Revisión de los medidores habilitados). Crosschecking of the data from the spreadsheet by comparing the delivered energy from the spreadsheet with the delivered energy specified in the invoices⁸.
Purpose of data:	This data is used for baseline emission calculation.
Additional comment:	

Data / Parameter:	$EC^{230kV}_{AMAYO,y}$
Unit:	MWh
Description:	Quantity of electricity consumed from the grid at the 230 kV transmission line by the entire wind farm (Phase I + Phase II) in period y
Measured/ Calculated / Default:	Measured
Source of data:	On-site metering system
Value(s) of monitored parameter:	208.34. MWh (See table C of Section E.1) ($EC^{230kV}_{AMAYO,y}$ is ultimately used to determine EG_y).

⁸ Invoices reflect gross energy delivered to the grid (i.e. the EG^{230kV}_{PhaseI} parameter), which is the main input for determining EG_y

Monitoring equipment:	- Main meter: Schneider Electric, Power Logic, ION 8600, serial No.: PT-0901A531-01. - Back up meter: Schneider Electric, Power Logic, ION 8600, serial No.: PT-0901A532-01 The date of last calibration is: - October 23rd 2014 and has a validity of 2 years (until October 22nd 2016). - October 14th 2012 and has a validity of 2 years (until October 13th 2014).
Measuring/ Reading/ Recording frequency:	Data will be measured on site on an hourly basis. Monthly records will be kept.
Calculation method (if applicable):	N/A
QA/QC procedures:	Meters should have a maximum error of $\pm 0.2\%$ and be calibrated at least once every two years according to local standards by INE regulations (See page 9 of the Comercial Annex in the Operation Regulations issued by INE (in Spanish: Normativa de Operación, Anexo Comercial: Sistema de Mediciones Comerciales, inciso VII.: Revisión de los medidores habilitados). Crosschecking of the data from the spreadsheet by comparing the consumed energy from the spreadsheet with the consumed energy specified in the DTE (Economic Transaction Document) from the dispatch center. In the case of any differences between the sources of data exists, the most conservative value (i.e. the one that results in the smallest number of ERs) will be used.
Purpose of data:	This data is used for baseline emission calculation.
Additional comment:	

Data / Parameter:	$EC^{13.8kV}_{PhaseI,y}$
Unit:	MWh
Description:	Electricity consumption in year y by Phase I, as measured in the 13.8 kV meters
Measured/ Calculated / Default:	Measured
Source of data:	On-site metering system
Value(s) of monitored parameter:	90.45 MWh (See table C of Section E.1) $EC^{13.8kV}_{PhaseI,y}$ is ultimately used to determine EG_y .

Monitoring equipment:	• Main meter at cell 3: Type Nexus 1262. Precision 0.2. Serial number 35415827. • Back up meter at Cell 3: Type Nexus 1262. Precision 0.2. Serial No.: 102-0053298431 • Main meter at Cell 6: Type Nexus 1262. Precision 0.2. Serial No.: 102-0053298936 • Back up meter at Cell 6: Type Nexus 1262. Precision 0.2. Serial No.: 102-0053299028 • The dates of last calibrations are: • October 23rd 2014 and has a validity of 2 years (until October 22nd 2016). • Only for Main meter at cell 3 Serial number 35415827 and backup meter at cell 3: January 28th 2014 and has a validity of 2 years (until January 27th 2016). • October 13th 2012 and has a validity of 2 years (until October 12th 2014).
Measuring/ Reading/ Recording frequency:	Data will be measured on site on an hourly basis. Monthly records will be kept.
Calculation method (if applicable):	N/A
QA/QC procedures:	• Meters should have a maximum error of $\pm 0.2\%$ and be calibrated at least once every two years according to local standards by INE regulations (See page 9 of the Comercial Annex in the Operation Regulations issued by INE (in Spanish: Normativa de Operación, Anexo Comercial: Sistema de Mediciones Comerciales, inciso VII.: Revisión de los medidores habilitados). • Crosschecking of the data from the spreadsheet by comparing the consumed energy from the spreadsheet with the consumed energy specified in the DTE (Economic Transaction Document) from the dispatch center. In the case of any differences between the sources of data exists, the most conservative value (i.e. the one that results in the smallest number of ERs) will be used.
Purpose of data:	This data is used for baseline emission calculation.
Additional comment:	

Data / Parameter:	$EC^{13.8kV}_{PhaseII,y}$
Unit:	MWh
Description:	Electricity consumption in year y by Phase II, as measured in the 13.8 kV meter
Measured/ Calculated / Default:	Measured
Source of data:	On-site metering system
Value(s) of monitored parameter:	46.62 MWh (See table C of Section E.1) $EC^{13.8kV}_{PhaseII,y}$ is ultimately used to determine EG_y).

Monitoring equipment:	• Main meter at Cell 4: Type Nexus 1262. Precision 0.2. Serial No.: 102-0053298532 • Back up meter at Cell 4: Type Nexus 1262. Precision 0.2. Serial No.: 102-0053298633 • Main meter at Cell 5: Type Nexus 1262. Precision 0.2. Serial No.: 102-0053298734 • Back up meter at Cell 5: Type Nexus 1262. Precision 0.2. Serial No.: 102-0053298835 • The dates of last calibrations are: • October 23rd 2014 and has a validity of 2 years (until October 22nd 2016). • October 15th 2012 for meters at cell 4 and has a validity of 2 years (until October 14th 2014). • October 14th 2012 for meters at cell 5 and has a validity of 2 years (until October 13th 2014).
Measuring/ Reading/ Recording frequency:	Data will be measured on site on an hourly basis. Monthly records will be kept.
Calculation method (if applicable):	N/A
QA/QC procedures:	• Meters should have a maximum error of $\pm 0.2\%$ and be calibrated at least once every two years according to local standards by INE regulations (See page 9 of the Comercial Annex in the Operation Regulations issued by INE (in Spanish: Normativa de Operación, Anexo Comercial: Sistema de Mediciones Comerciales, inciso VII.: Revisión de los medidores habilitados). • Crosschecking of the data from the spreadsheet by comparing the consumed energy from the spreadsheet with the consumed energy specified in the DTE (Economic Transaction Document) from the dispatch center. In the case of any differences between the sources of data exists, the most conservative value (i.e. the one that results in the smallest number of ERs) will be used.
Purpose of data:	This data is used for baseline emission calculation.
Additional comment:	

D.3. Implementation of sampling plan

This project does not implement a sampling plan.

SECTION E. Calculation of emission reductions or GHG removals by sinks

E.1. Calculation of baseline emissions or baseline net GHG removals by sinks

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According to ACM0002 (version 07), the baseline emissions of the project are equal to:

$$BE_y = EG_y * EF_{grid,CM,y}$$

where EG_y is the electricity generated by the project in period y supplied to the Grid (in MWh), and $EF_{grid,CM,y}$ is the *ex-ante* emission factor (0.7127 tCO₂/MWh).

In the context of this project, the revised monitoring plan states the procedure to determine the electricity delivered to the grid:

$$EG_{PhaseI,y}^{230kV} = \frac{EG_{PhaseI,y}^{13.8kV}}{EG_{PhaseI,y}^{13.8kV} + EG_{PhaseII,y}^{13.8kV}} \cdot EG_{AMAYO,y}^{230kV}$$

where:

$EG_{PhaseI,y}^{230kV}$ is the gross energy delivered to the grid by Phase I in period y

$EG_{AMAYO,y}^{230kV}$ is the gross energy delivered by the entire wind farm (Phase I&II) in period y,

$EG_{PhaseI,y}^{13.8kV}$ is the gross energy delivered by Phase I in period y as measured on the 13.8 kV internal meters,

$EG_{PhaseII,y}^{13.8kV}$ is the gross energy delivered by Phase II in period y as measured on the 13.8 kV internal meters.

Internal consumption (i.e. energy consumed from the grid; ECy) will be determined in an analogous fashion:

$$EC_{PhaseI,y}^{230kV} = \frac{EC_{PhaseI,y}^{13.8kV}}{EC_{PhaseI,y}^{13.8kV} + EC_{PhaseII,y}^{13.8kV}} \cdot EC_{AMAYO,y}^{230kV}$$

where:

$EC_{PhaseI,y}^{230kV}$ is the electricity consumption from the grid by Phase I in period y

$EC_{AMAYO,y}^{230kV}$ is the electricity consumption by the entire wind farm (Phase I&II) in period y,

$EC_{PhaseI,y}^{13.8kV}$ is the electricity consumption by Phase I in period y as measured on the 13.8 kV internal meters,

$EC_{PhaseII,y}^{13.8kV}$ is the electricity consumption by Phase II in period y as measured on the 13.8 kV internal meters.

Thus, the net electricity generation will be obtained as:

$$EG_y = EG_{PhaseI,y}^{230kV} - EC_{PhaseI,y}^{230kV}$$

Baseline emissions are thus:

Table A – Baseline emissions

Month	Net energy (KWh)	Total Baseline Emissions (tCO ₂ e) (@ 0.7127 tCO ₂ /MWh)
Jul-2015	17,453,084	12,439
Aug-2015	15,346,580	10,938
Sep-2015	7,250,720	5,168
Oct-2015	4,584,199	3,267
Nov-2015	9,108,675	6,492
Dec-2015	16,697,324	11,900
Jan-2016	18,087,342	12,891
Feb-2016	20,610,937	14,689
Mar-2016	19,408,402	13,832
Apr-2016	6,807,936	4,852
Total	135,355,197	96,467

Table B: Delivery energy

Month	Delivered Energy			
	Phase I, @ 13.8 kV meter (KWh)	Phase II, @ 13.8 kV meter (KWh)	Total wind farm @ 230 kV substation (KWh)	Conservative value ⁹ (kWh)
	<i>EG^{13.8kV}_{PhaseI}</i>	<i>EG^{13.8kV}_{PhaseII}</i>	<i>EG^{230kV}_{AMAYO,y}</i>	<i>EG^{230kV}_{PhaseI}</i>
Jul-2015	17,569,978.2	8,944,709.4	26,343,040.0	17,455,997.4
Aug-2015	15,450,394.2	7,525,208.5	22,825,984.0	15,349,780.2
Sep-2015	7,343,786.0	3,825,696.1	11,075,072.0	7,279,377.2
Oct-2015	4,693,865.64	2,427,980.07	7,050,752.0	4,646,402.1
Nov-2015	9,213,228.3	4,856,955.3	13,958,784.0	9,139,248.2
Dec-2015	16,813,896.1	8,200,918.6	24,849,536.0	16,701,509.5
Jan-2016	18,202,602.2	11,771,613.4	29,784,448.0	18,087,361.0
Feb-2016	20,738,572.8	13,844,860.2	34,371,584.0	20,610,936.5
Mar-2016	19,530,238.0	12,650,538.9	31,983,104.0	19,408,719.5
Apr-2016	6,858,614.2	4,161,230.9	10,946,432.0	6,812,887.4
Total in kWh	136,415,175.6	78,209,711.2	213,188,736.0	135,492,219.2
Total in MWh	136,415.17	78,209.71	213,188.73	135,492.21

Table C: Received Energy

Month	Received Energy			
	Phase I, @ 13.8 kV meter (KWh)	Phase II, @ 13.8 kV meter (KWh)	Total wind farm @ 230 kV substation (KWh)	Conservative value ¹⁰ (kwh)
	<i>EC^{13.8kV}_{PhaseI}</i>	<i>EC^{13.8kV}_{PhaseII}</i>	<i>EC^{230kV}_{AMAYO,y}</i>	<i>EC^{230kV}_{PhaseI}</i>
Jul-2015	2,496.3	1,103.2	4,201.1	2,913.5
Aug-2015	3,385.5	1,238.6	4,297.5	3,200.6
Sep-2015	20,426.1	9,646.0	42,190.4	28,657.2
Oct-2015	36,730.9	18,926.3	94,254.8	62,203.3
Nov-2015	18,857.7	10,656.1	47,849.3	30,573.1
Dec-2015	4,135.5	1,855.5	5,950.5	4,185.8
Jan-2016	207.6	168.2	33.3	19.5
Feb-2016	265.2	0.1	0.0	0.0
Mar-2016	739.1	343.7	465.5	317.7
Apr-2016	3,209.1	2,687.0	9,098.0	4,951.7
Total in kWh	90,452.9	46,624.7	208,340.3	137,022.5
Total in MWh	90.45	46.62	208.34	137.02

E.2. Calculation of project emissions or actual net GHG removals by sinks

There are no project emissions attributable to wind projects. Consequently $PE_y = 0$.

⁹ Conservative value for delivered energy of the project between invoices and spreadsheet calculation.

¹⁰ Conservative value for consumed energy of the project between DTE (economic transaction document) and spreadsheet calculation.

E.3. Calculation of leakage

There is no leakage attributable to wind projects. Consequently $L_y = 0$.

E.4. Summary of calculation of emission reductions or net GHG removals by sinks

Item	Baseline emissions or baseline net GHG removals by sinks (t CO ₂ e)	Project emissions or actual net GHG removals by sinks (t CO ₂ e)	Leakage (t CO ₂ e)	GHG emission reductions or net GHG removals by sinks (t CO ₂ e) achieved in the monitoring period		
				Up to 31/12/2012	From 01/01/2013	Total amount
Total	96,467	0	0		96,467	96,467

According to ACM0002 (version 07), emission reductions are given by:

$$ER_y = BE_y - PE_y - L_y$$

Table D –Emission reductions

Month	Net energy (KWh)	Total Baseline Emissions (tCO ₂ e) (@ 0.7127 tCO ₂ /MWh)	Total Project Emissions (tCO ₂ e)	Total Leakage	Total Emission Reductions (tCO ₂ e)
Jul-2015	17,453,084	12,439	0	0	12,439
Aug-2015	15,346,580	10,938	0	0	10,938
Sep-2015	7,250,720	5,168	0	0	5,168
Oct-2015	4,584,199	3,267	0	0	3,267
Nov-2015	9,108,675	6,492	0	0	6,492
Dec-2015	16,697,324	11,900	0	0	11,900
Jan-2016	18,087,342	12,891	0	0	12,891
Feb-2016	20,610,937	14,689	0	0	14,689
Mar-2016	19,408,402	13,832	0	0	13,832
Apr-2016	6,807,936	4,852	0	0	4,852
Total	135,355,197	96,467	0	0	96,467

A project's emissions reduction for any year y is calculated as the difference between baseline and project emissions, the latter of which includes any leakage attributable to the project. As there are no project emissions or leakage attributable to wind projects, the total emissions reductions of the Amayo Wind Farm are identical to the estimated baseline emissions.

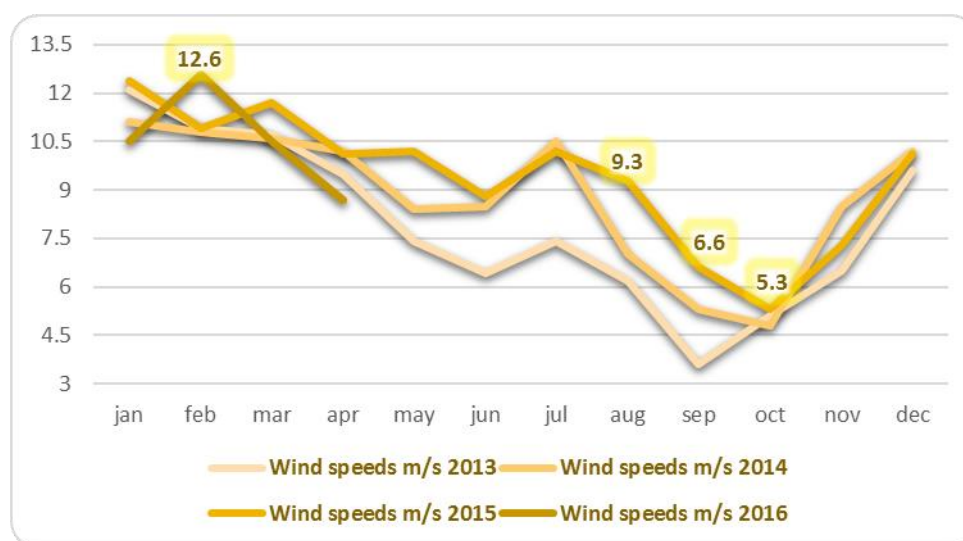
E.5. Comparison of actual emission reductions or net GHG removals by sinks with estimates in registered PDD

Item	Values estimated in ex ante calculation of registered PDD	Actual values achieved during this monitoring period
Emission reductions or GHG removals by sinks (t CO ₂ e)	94,232 ¹¹	96,467

E.6. Remarks on difference from estimated value in registered PDD

Actual values of emission reduction achieved during this monitoring period are higher than estimated in ex-ante calculation of registered PDD for a period of nine months and eleven days (9.36 months). While the PDD considers an annual average of the emission reductions, the wind speed is seasonal and not the same during the whole year, with periods of high and low wind speeds. The main difference remarks on higher wind speeds for some months such as February 2016, August, September and October 2015, which have achieved higher values in comparison to average wind speeds in past years.

The chart below shows the average wind speeds from 2013 to 2016. Notice that average wind speed for this monitoring period (Jul 1st 2015 to April 11th 2016 both days included) is higher in comparison to 2013.



¹¹ According to PDD, the amount of GHG emission reductions for a year is 120,811, therefore for a monitoring period of ten months, the amount is 94,298.91 (120,811CERs / 12mo = 10,067.5CERs/mo * 9.36mo = 94,232.58 CERs).

Appendix 1. Contact information of project participants and responsible persons/entities

Project participant and/or responsible person/ entity	☒ Project participant ☒ Responsible person/ entity for completing the CDM-MR-FORM
Organization name	Consorcio Eólico Amayo S.A.
Street/P.O. Box	Planes de Altamira III Etapa
Building	CAR 2
City	Managua
State/Region	Managua
Postcode	505
Country	Nicaragua
Telephone	(505) 2293-5033
Fax	(505) 2293-5029
E-mail	vladiedska.mendoza@icpower.com.ni
Website	http://www.icpower-group.com/
Contact person	Vladiedska Gabriela Mendoza Mendoza
Title	CDM Coordinator
Salutation	Mrs.
Last name	Mendoza
Middle name	Mendoza
First name	Vladiedska
Department	O&M
Mobile	(505) 8633-3992
Direct fax	(505) 2293-5029
Direct tel.	(505) 2293-5033 Ext. 134
Personal e-mail	vladiedska.mendoza@icpower.com.ni

Attachment. Instructions for filling out the monitoring report form

1. General instructions

1. When monitoring the project activity and completing the CDM-MR-FORM, in addition to following the the "[CDM Project standard](#)" (Project standard), the applied approved baseline and monitoring [methodology\(ies\)](#) (hereinafter referred to as the applied methodology(ies)) and, where applicable, the applied approved [standardized baseline\(s\)](#) (hereinafter referred to as the applied standardized baseline(s)), consult the "[Rules and Reference](#)" section of the UNFCCC CDM website. This section contains all regulatory documents for the CDM, such as [standards](#) (including [methodologies](#), [tools](#) and [standardized baselines](#)), [procedures](#), [guidelines](#), [clarifications](#), [forms](#) and the "[Glossary: CDM terms](#)". Make any data, values and formulae included in electronic spreadsheets provided accessible and verifiable.
2. Complete the CDM-MR-FORM and all attached documents in English, or include a full translation of relevant sections in English.
3. Complete the CDM-MR-FORM using the same format without modifying its font, headings or logo, and without any other alteration to the form.
4. Do not modify or delete tables and their columns in the CDM-MR-FORM. Add rows to the tables as needed. Add additional appendices as needed.
5. If a section of the CDM-MR-FORM is not applicable, explicitly state that the section is left blank intentionally.
6. Use an internationally recognized format for presentation of values in the CDM-MR-FORM, for example use digit grouping in thousands and mark a decimal point with a dot (.), not with a comma (,).
7. Complete the CDM-MR-FORM deleting this "Attachment: Instructions for filling out the monitoring report form".

2. Specific instructions

1. Indicate on the cover page the following information:
 - (a) Title of the project activity;
 - (b) Reference number of the project activity;
 - (c) Version number of the monitoring report;
 - (d) Completion date of the monitoring report (DD/MM/YYYY);
 - (e) Monitoring period number and duration of this monitoring period. The monitoring period number is an ordinal number referring to the chronological order of monitoring periods (e.g. "first monitoring period"). For the monitoring period dates, first and last days are included (DD/MM/YYYY – DD/MM/YYYY);
 - (f) Project participant(s);
 - (g) Host Party;
 - (h) Sectoral scope(s). List all sectoral scopes applicable to the project activity;
 - (i) Selected methodology(ies). List all the selected methodologies and combination of methodologies applicable to the project activity;
 - (j) Selected standardized baseline(s). List all the selected standardized baseline applicable to the project activity;
 - (k) Estimated amount of GHG emission reductions or net GHG removals by sinks for this monitoring period in the registered PDD;
 - (l) Total amount of GHG emission reductions or net GHG removals by sinks achieved in this monitoring period - GHG emission reductions or net GHG removals by sinks reported up to 31 December 2012 (if applicable); GHG emission reductions or net GHG removals by sinks reported from 1 January 2013 onwards (if applicable).

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

1. Provide a brief summary of the detailed description given in section B.1 in terms of:
 - (a) Purpose of the project activity and the measures taken for GHG emission reductions or net GHG removals by sinks;
 - (b) Brief description of the installed technology and equipment;
 - (c) Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods, etc.);
 - (d) Total GHG emission reductions or net GHG removals by sinks achieved in this monitoring period.

A.2. Location of project activity

1. Provide the following information on the location of the project activity:
 - (a) Host Party;
 - (b) Region/state/province, etc.;
 - (c) City/town/community, etc.;
 - (d) Physical/geographical location.

A.3. Parties and project participant(s)

1. List in the table Party(ies) and project participant(s) involved in the project activity.

A.4. Reference of applied methodology and standardized baseline

1. Indicate the exact reference (number, title, version) of:
 - (a) The applied methodology(ies) (e.g. ACM0001: "Large-scale consolidated methodology: Flaring or use of landfill gas" (version 15.0));
 - (b) Any tools and other methodologies to which the applied methodology(ies) refers (e.g. "Methodological tool: Tool for the demonstration and assessment of additionality" (version 07.0.0));

- (c) The applied standardized baseline(s), where applicable (e.g. ASB0001 “Standardized baseline: Grid emission factor for the Southern African power pool” (version 01.0)).
- 2. Refer to the UNFCCC CDM website for the exact reference of the applied methodologies, tools and standardized baselines.

A.5. Crediting period of project activity

- 1. Provide the type, start date and length of the crediting period corresponding to this monitoring period.

A.6. Contact information of responsible persons/entities

- 1. Provide contact information of the person(s)/entity(ies) responsible for completing the CDM-MR-FORM and indicate whether the person(s)/entity(ies) is(are) also a project participant(s) in Appendix 1

SECTION B. Implementation of project activity

B.1. Description of implemented registered project activity

- 1. Provide information on the implementation status of the project activity during this monitoring period in accordance with the applicable provision for description of implemented registered CDM project activity in the Project standard.
- 2. For the description of the installed technology(ies), technical process and equipment, include diagrams, where appropriate.
- 3. If applicable, present information on any request for prior approval by the Board of changes to the registered CDM project activity in section B.2.1, B.2.2, B.2.3, B.2.4, B.2.5 and/or B.2.6.

B.2. Post-registration changes

B.2.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline

- 1. Indicate whether any temporary deviations have been applied during this monitoring period. If applied, provide a description of the deviation(s) in accordance with applicable provisions for temporary deviations from the registered monitoring plan, applied methodologies or applied standardized baseline in the Project standard.
- 2. Include the reasons for the deviation(s), how it deviates from the monitoring plan, applied methodology(ies) and/or applied standardized baseline, the duration for which the deviation(s) is(are) applicable and justification on the conservativeness of the approach.
- 3. For deviation(s) that require prior approval by the Board, include the date of approval and reference number. Otherwise, provide the version number and the completion date of the revised PDD and DOE assessment opinion on the request for post-registration changes that is being submitted with this monitoring report.

B.2.2. Corrections

- 1. Indicate whether any corrections to project information or parameters fixed at validation have been approved during this monitoring period or submitted with this monitoring report.
- 2. In cases where the correction(s) and the revised PDD are approved prior to the submission of this monitoring report for request for issuance, provide the approval date and reference number. Otherwise, provide the version number and the completion date of the revised PDD and the DOE assessment opinion on the request for post-registration changes that is being submitted with this monitoring report.

B.2.3. Changes to start date of crediting period

- 1. Indicate whether any changes to the start date of the crediting period have been approved during this monitoring period or submitted with this monitoring report.
- 2. In cases where the changes and the revised PDD are approved prior to the submission of this monitoring report for request for issuance, provide the approval date and reference number.

B.2.4. Inclusion of a monitoring plan to the registered PDD that was not included at registration

1. Indicate whether the inclusion of a monitoring plan into the PDD for which the delayed submission of the monitoring plan was chosen by the project participants at the time of the registration of the project activity, has been approved by the Board prior to the submission of this monitoring report or is being submitted together with this monitoring report.
2. If the inclusion of a monitoring plan into the registered PDD has been approved by the Board prior to the submission of this monitoring report, provide the date of approval and reference number.

B.2.5. Permanent changes from registered monitoring plan, applied methodology or applied standardized baseline

1. Indicate whether any permanent changes from the registered monitoring plan, applied methodologies or applied standardized baseline have been approved during this monitoring period or submitted with this monitoring report.
2. In cases where the change(s) and the revised PDD are approved prior to the submission of this monitoring report for request for issuance, provide the approval date and reference number. Otherwise, provide the version number and the completion date of the revised PDD and DOE assessment opinion on the request for post-registration changes that is being submitted with this monitoring report.

B.2.6. Changes to project design of registered project activity

1. Indicate whether any changes to the project design of the project activity have been approved during this monitoring period or submitted with this monitoring report.
2. In cases where the change(s) and the revised PDD are approved prior to the submission of this monitoring report for request for issuance, provide the approval date and reference number. Otherwise, provide the version number and the completion date of the revised PDD and DOE assessment opinion on the request for post-registration changes that is being submitted with this monitoring report.

B.2.7. Types of changes specific to an afforestation or reforestation project activity

1. Indicate whether any changes specific to afforestation or reforestation project activities have been applied during this monitoring period based on applicable provisions in the Project standard that do not require prior approval by the Board. If changes were applied, provide the version number and the completion date of the revised PDD and DOE assessment opinion on the request for post-registration changes that is being submitted with this monitoring report.

SECTION C. Description of monitoring system

1. Provide a description of the monitoring system based on the applicable provision for description of monitoring system in the Project standard. Include diagrams of the monitoring system and the information flow where appropriate.

SECTION D. Data and parameters

1. Provide information on all data and parameters in accordance with applicable provisions for data and parameters in the Project standard, using the tables provided in sections D.1 and D.2.
2. For "Purpose of data" in the tables in D.1 and D.2, choose one of the following options:
 - (a) Calculation of baseline emissions or baseline net GHG removals by sinks;
 - (b) Calculation of project emissions or actual net GHG removals by sinks;
 - (c) Calculation of leakage.
3. Where the applied standardized baseline(s) standardizes baseline emissions, apply the standardized value(s) of the parameter(s) in section D.1 and/or D.2 in accordance with applicable provisions related to data and parameters in the Project standard.

D.1. Data and parameters fixed ex ante or at renewal of crediting period

1. Include data that are fixed before registration and/or at the renewal of crediting period and are used during this monitoring period under section D.1.
2. For "Value(s) applied", use one table to report multiple values referring to the same data and parameter, if applicable. Use reference(s) to electronic spreadsheets, if necessary.

D.2. Data and parameters monitored

1. For "Monitoring equipment" in the table, provide information on type, accuracy class, serial number, calibration frequency, date of last calibration and validity.
2. For "Value(s) of monitored parameter", use one table to report multiple values referring to the same data and parameter, if applicable. Use reference(s) to electronic spreadsheets, if necessary.

D.3. Implementation of sampling plan

1. If data and parameters monitored described in section D.2 above are determined by a sampling approach, provide a description on how project participants implemented the sampling efforts and surveys for those data and parameters according to the sampling plan. Include:
 - (a) Description of implemented sampling design;
 - (b) Collected data (attach and provide reference to electronic spreadsheets, if necessary);
 - (c) Analysis of the collected data;
 - (d) Demonstration on whether the required confidence/precision has been met.

SECTION E. Calculation of emission reductions or GHG removals by sinks

1. For the parameter global warming potentials (GWPs), from 1 January 2013, include the values adopted by decision 4/CMP.7 to calculate the emission reductions achieved in the second commitment period of the Kyoto Protocol in accordance with the applicable provisions in the Project standard.

E.1. Calculation of baseline emissions or baseline net GHG removals by sinks

1. Provide sample calculations for all formulae used and calculation of baseline emissions or baseline net GHG removals by sinks, applying actual values. Attach electronic spreadsheets to present full calculations in the monitoring report.

E.2. Calculation of project emissions or actual net GHG removals by sinks

1. Provide sample calculations for all formulae used and calculation of project emissions or actual net GHG removals by sinks, applying actual values. Attach electronic spreadsheets to present full calculations in the monitoring report.

E.3. Calculation of leakage

1. Provide sample calculations for all formulae used and calculation of leakage, applying actual values. Attach electronic spreadsheets to present full calculations in the monitoring report.

E.4. Summary of calculation of emission reductions or net GHG removals by sinks

1. Summarize the results of sections E.1, E.2, E.3 above and provide GHG emission reductions or net GHG removals by sinks for this monitoring period, using the table.
2. If the monitoring period starts before 31 December 2012 and ends anytime thereafter, provide actual GHG emission reductions or net GHG removals by sinks achieved for the following two periods respectively:
 - a) Up to 31 December 2012 (first commitment period); and
 - b) From 1 January 2013 onwards.
3. Calculate the achieved GHG emission reductions or net GHG removals by sinks proportionally for each period. In cases where annual caps were applied in the calculations, prorate the annual caps to each period.

E.5. Comparison of actual emission reductions or net GHG removals by sinks with estimates in registered PDD

1. Provide a comparison of actual GHG emission reductions or net GHG removal of the project activity achieved during this monitoring period with the estimates in the registered PDD.

E.6. Remarks on difference from estimated value in registered PDD

1. Explain the cause of any increase in the actual GHG emission reductions achieved during this monitoring period based on the applicable provision for calculation of GHG emission reductions in the Project standard.

Appendix 1. Contact information of project participants and responsible persons/entities

1. In accordance with section A.6 above, complete the table, with the following mandatory fields: Project participant and/or responsible person/entity, Organization, Street/P.O. Box, City, Postcode, Country, Telephone, Fax, E-mail and Name of contact person. Copy and paste the table as needed.

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Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
05.1	4 May 2015	Editorial revision to correct version numbering.
05.0	1 April 2015	Revisions to: • Include provisions related to delayed submission of a monitoring plan; • Provisions related to the Host Party; • Remove reference to programme of activities; • Overall editorial improvement.
04.0	25 June 2014	Revisions to: • Include the Attachment: Instructions for filling out the monitoring report form (these instructions supersede the "Guideline: Completing the monitoring report form" (Version 04.0)); • Include provisions related to standardized baselines; • Add contact information on a responsible person(s)/ entity(ies) for completing the CDM-MR-FORM in A.6 and Appendix 1; • Change the reference number from <i>F-CDM-MR</i> to <i>CDM-MR-FORM</i>; • Editorial improvement.
03.2	5 November 2013	Editorial revision to correct table in page 1.
03.1	2 January 2013	Editorial revision to correct table in section E.5.
03.0	3 December 2012	Revision required to introduce a provision on reporting actual emission reductions or net GHG removals by sinks for the period up to 31 December 2012 and the period from 1 January 2013 onwards (EB70, Annex 11).
02.0	13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20).
01	28 May 2010	EB 54, Annex 34. Initial adoption.
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: monitoring report		