



**Monitoring report form for CDM project activity**  
**(Version 06.0)**

*Complete this form in accordance with the instructions attached at the end of this form.*

**MONITORING REPORT**

<b>Title of the project activity</b>	60MW Solar PV - Monte Plata	
<b>UNFCCC reference number of the project activity</b>	8530	
<b>Version number of the PDD applicable to this monitoring report</b>	06	
<b>Version number of this monitoring report</b>	04	
<b>Completion date of this monitoring report</b>	21/02/2019	
<b>Monitoring period number</b>	First Monitoring Report	
<b>Duration of this monitoring period</b>	31/05/2015 – 31/12/2016	
<b>Monitoring report number for this monitoring report</b>	-	
<b>Project participants</b>	Electronic J.R.C., S.R.L (private) Foundation myclimate – The Climate Protection Partnership (private) Uno Wind Service GmbH (private)	
<b>Host Party</b>	Dominic Republic	
<b>Sectoral scopes</b>	Energy industries (renewable - / non-renewable sources)	
<b>Applied methodologies and standardized baselines</b>	ACM0002: Grid-connected electricity generation from renewable sources Version 13.0	
<b>Amount of GHG emission reductions or net anthropogenic GHG removals achieved by the project activity in this monitoring period</b>	Amount achieved before 1 January 2013	Amount achieved from 1 January 2013
		15,209
<b>Amount of GHG emission reductions or net anthropogenic GHG removals estimated ex ante for this monitoring period in the PDD</b>	17,065	

## SECTION A. Description of project activity

### A.1. General description of project activity

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The project activity consists in the installation of a 60MW<sub>n</sub> (limited by inverters) photovoltaic Solar Energy Farm, which is considered as a sustainable source of electricity generation. There are no emissions of Green House Gases (GHS) associated with this kind of energy generation.

Until December of 2016, the total capacity of the solar plant is 30 MW, and to comply with the total capacity, the additional 30 MW will be in operation between the second and third quarter of 2019.

The project activity is developed by Electronic J.R.C., S.L.R., a 'special purpose vehicle' (SPV) company from the Dominican Republic owned by 'General Energy Solutions' (GES) a Taiwanese company and built, operated and maintained by Soventix GmbH a German company. After construction of the addition capacity, the proposed project activity will be the largest solar power plant in Caribbean area.

With the development of the proposed project activity there is a real and measurable contribution to the sustainable development of the Dominican Republic ("**DomRep**") in the following aspects:

- The project activity is in compliance with all the national environmental initiatives:
  - The "Ley No. 57 – 07 de Incentivo a las Energías Renovables y Regímenes Especiales" promotes the creation of new renewable energy projects in the country, in order to incentive the regional, rural and agro industrial economic development. The Dominican Republic has no meaningful fossil fuel sources, which increases the dependence of foreign sources of energy, having a direct impact on the countries balance of foreign trade.
  - The project activity is in compliance with all the quality conditions established in the "Ley General de Electricidad (125-01)".
- The proposed project activity produces renewable energy at a production price that is independent from the worldwide market fluctuations and risks for fossil fuels.
- Employment creation.
- Technology and Knowledge transfer.
- Environmental Impact.

Based on the Solar Irradiation Study performed by "M&A Ingeniería, C. por A."<sup>1</sup>, an annual irradiation hiding the solar panels of 2,088 kWh/m<sup>2</sup> has been determined.

### A.2. Location of project activity

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Country: Dominican Republic

Region: Monte Plata

City: Monte Plata, Cruce de Boronga

### A.3. Parties and project participants

Parties involved	Project participants	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
Dominican Republic (Host)	Electronic J.R.C., S.R.L (private)	No

<sup>1</sup> Solar Irradiation Study is available to the DOE during the validation process.

Parties involved	Project participants	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
Switzerland	Foundation myclimate – The Climate Protection Partnership (private)	No
United Kingdom of Great Britain and Northern Ireland	Uno Wind Service GmbH (private)	No

#### A.4. Reference to applied methodologies and standardized baselines

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The approved baseline and monitoring methodology applied to the project activity is the:

- ACM0002: “Grid-connected electricity generation from renewable sources”, Version 13.0.

Also for the documentation of the Project Activity, the following tools were followed:

- Tool to calculate the emission factor for an electricity system – Version 02.2.1<sup>2</sup>
- Tool for the demonstration and assessment of additionality - Version 06.1.0<sup>3</sup>

Because the project activity relies on the generation of electricity through the electro-chemical conversion of solar radiation, no associated emissions are generated during the operation, so there is no leakage emissions considered.

#### A.5. Crediting period type and duration

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31/05/2015 – 30/05/2025

### SECTION B. Implementation of project activity

#### B.1. Description of implemented project activity

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The project activity is developed by Electronic J.R.C., S.L.R., a ‘special purpose vehicle’ (SPV) company from the Dominican Republic owned by ‘General Energy Solutions’ (GES) a Taiwanese company and built, operated and maintained by Soventix GmbH a German company. After construction, the proposed project activity will be the largest solar power plant in Caribbean area.

The PV plant Monte Plata was built as a free field installation at the northern suburban area of Monte Plata (Dominican Republic), close to the local HV-substation at 69kV. The construction of first 30MW was completed in May of 2016; the plant was connected to the grid in June 2016, the registration of the data in the monitoring system started in June 17<sup>th</sup> and fed into the grid four days later. The commercial operations started in September of 2016.

A total of 132.000 modules of the type 7NAC000-06A245/ 255 /266 produced by the manufacturer General Energy Solutions have been used to complete a total nominal capacity of 33.389,4 kWp. The construction has been finished using a two row steel sub construction system from the manufacturer Schletter with an inclination of 10°, south oriented.

The generated electricity is transformed into alternating current at a frequency of 60Hz and 480 Volts by the use of 1.000 SUN2000-30KTL-A inverters supplied by the manufacturer Huawei. The voltage from the inverters is stepped up by medium voltage transformer station up to 20kV

<sup>2</sup> EB 63 Annex 19, 29<sup>th</sup> September 2011.

<sup>3</sup>EB 65, Annex 21, 25<sup>th</sup> of November 2011.

(20kV/0,48kV). The transformer stations are connected in a ring configuration. The total park consists of three medium voltage rings with 7,8,7 medium voltage stations per ring.

In order to collect the counter values of the inverters and the global irradiation as well as to alert the operators in case of disruptions, 23 data logging instruments from Meteocontrol have been installed. Being transferred from the data loggers to the SaferSun Portal from Meteocontrol, the performance data of the plant is able to be tracked and analyzed.

The capacity addition is under development and the construction is expected to start in the second quarter of 2019 and be in operation in the third quarter of 2019.

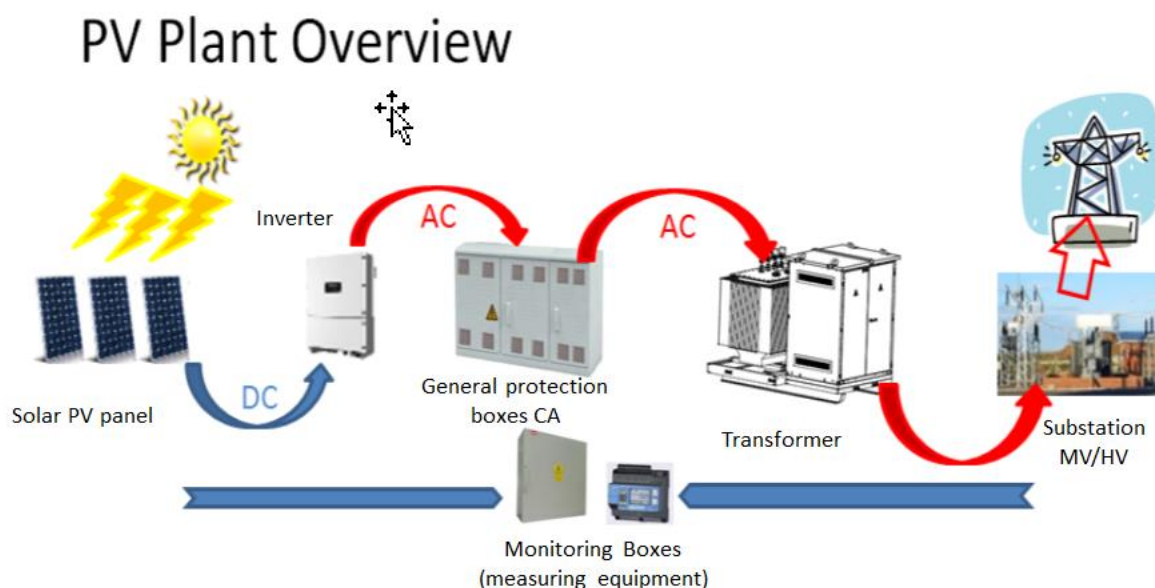


Figure 1: Solar Plant Overview

## B.2. Post-registration changes

### B.2.1. Temporary deviations from the registered monitoring plan, applied methodologies or standardized baselines

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Not applicable.

### B.2.2. Corrections

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Change the project activity name because the proposed change in the installed capacity. According PRC-8530-001 approved November 29, 2018.

First name: 30MW Solar PV – Monte Plata

New name: 60MW Solar PV – Monte Plata

### B.2.3. Changes to the start date of the crediting period

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The project starting date was defined by the date of signature of the purchase agreement for the key-equipment expected by 01/02/2013 but because the change of two project owners of the

project activity, delays in approval of legal documentation and the addendums in the Power Purchase Agreement, the project activity propose to postpone two years the start of the crediting period. According PRC-8530-001 approved November 29, 2018.

First start date of crediting period: 01/06/2013

New start date of crediting period: 31/05/2015

#### **B.2.4. Inclusion of monitoring plan**

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Not applicable.

#### **B.2.5. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other applied standards or tools**

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Not applicable.

#### **B.2.6. Changes to project design**

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The project will add capacity of the plant from 30 MW to 60 MW. During the last years the owners changed and the project made the decision to increase the capacity of the solar plant. Construction of the new 30 MW will be in 2019. At the end of 2019 there will be physically one project of up to 60MW.

### **SECTION C. Description of monitoring system**

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As established in the methodology, the only variable that needs to be verified and monitored during the crediting period is the total amount of electricity delivered to the electric grid, since the calculations of the emission factor are performed in an *ex ante* basis, so is not necessary to update any other variable during the crediting period.

The equipments installed for measuring the total amount of energy delivered to the grid is the PowerLogic ION8650 meter (Schneider Electric meter).

#### ***Main electricity meter***

Serial number: MW-1408A774- 01

Type: Schneider Electric ION 8650

Accuracy: 0.2

#### ***Back-up electricity meter***

Serial number: MW-1507A002

Type: Schneider Electric ION 8650

Accuracy: 0.2

Main characteristics:

#### **ANSI Class 0.2 and IEC 62053-22/23 Class 0,2S metering**

For interconnection points on medium, high, and ultra-high voltage networks; twice as accurate as current IEC (International Electrotechnical Commission) and ANSI (American National Standard for

Electricity Meters) Class 0.2 standards over all conditions and including single wide range current measurement.

**Power quality compliance monitoring**

Monitor compliance with international quality-of-supply standards (IEC 61000-4-30 Class A/S, EN50160, IEC 61000-4-7, IEC 61000-4-15, IEEE 1159, IEEE 519).

**Digital fault recording**

Simultaneous capture of voltage and current channels for sub-cycle disturbance transients.

**Complete communications**

Multi-port, multi-protocol ports including serial, infrared, modem and ethernet. Simultaneously supports multiple industry standard protocols including: Itron MV-90, Modbus, Modbus Master, DNP 3.0 and IEC 61850.

**Multiple tariffs and time-of-use**

Apply tariffs, seasonal rate schedules to measure energy and demand values for time periods with specific billing requirements.

**Multiple setpoints for alarm and control functions**

A total of 65 setpoints are configurable for 1-second or ½ - cycle operation.

**Power quality summary**

Consolidation of all the power quality characteristics into a single trendable index.

**Integrate with software**

Easily integrate with ION Enterprise operations software or other energy management systems; MV90, DNP, Modbus, IEC 61850.

**Transformer/line loss compensation**

Determine technical system losses in real time.

**Instrument transformer correction**

Save money and improve accuracy by correcting for less accurate transformers.

**Alarm notification via email**

High-priority alarms, data logs sent directly to the user's PC. Instant notification of power quality events by email.

It has two communication buses RS 485, one of them commutable to a RS 232, with an internal modem of 33.6 kbps.

Feature set: 32MB memory, basic tariff/energy metering (4 data recorders, 64 channels).

The system frequency is 60 Hz. systems

All the meters are designed to work in a four wire three phases system.

The nominal tension and the type of service is self-programmable within the range of 57 – 277 V and have an operation range of +- 15% of the nominal tension, base type, with quartz controlled internal digital clock, independent from the frequency of the grid.

Data is measured in the Point of Common Coupling; that means in the project boundary. All energy losses within the boundaries of the project is not accounted as emission reductions.

Data of the "onsite" measurements is crosschecked with the data approved and provided by the buyer.

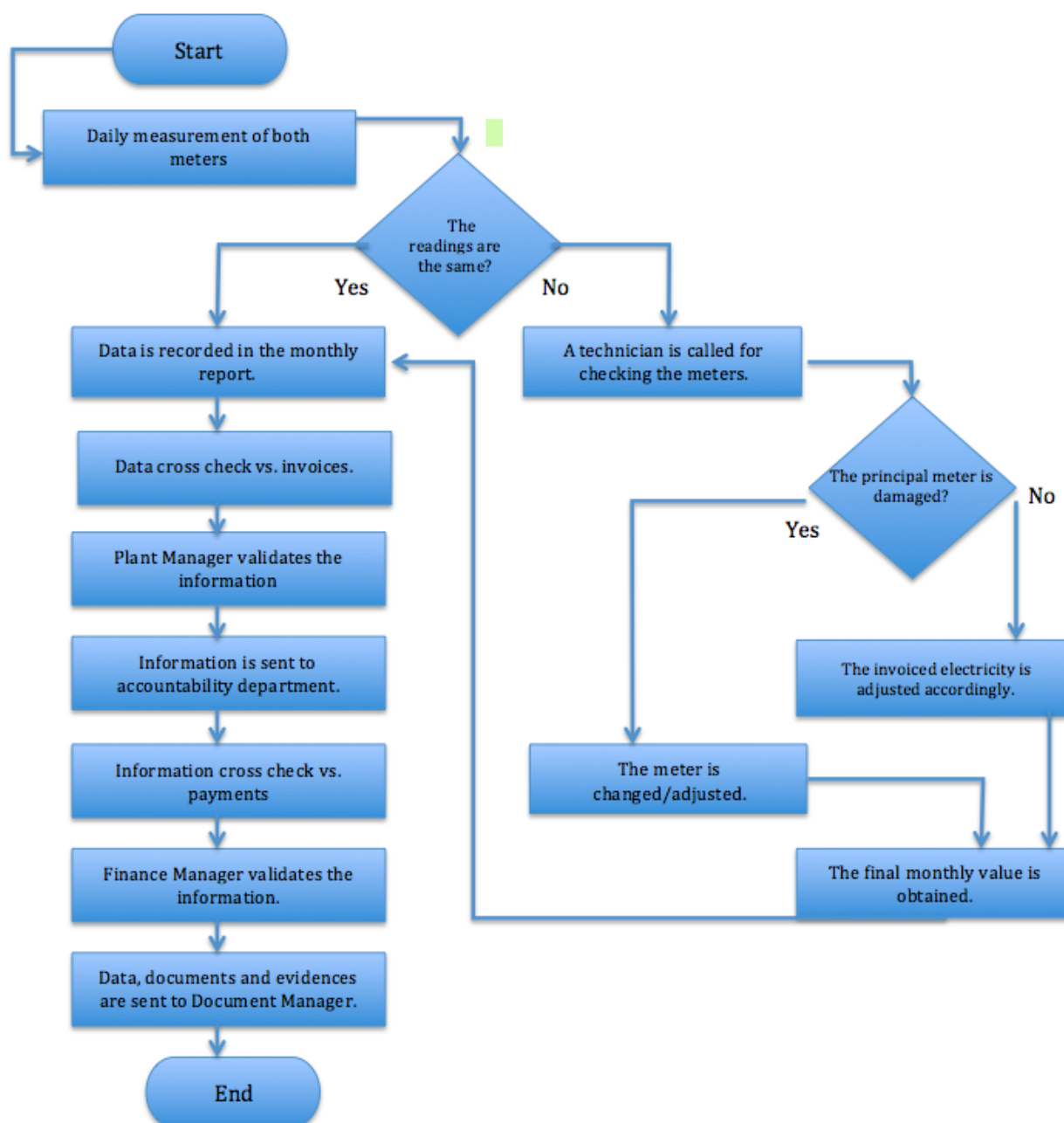
**Emission Reductions:**

The current emission reductions of the project is accounted as the total electricity delivered to the grid for the monitoring period, multiplied by the emission factor of the SENI. In order to monitor the total emission reductions a simplified calculation model is used.

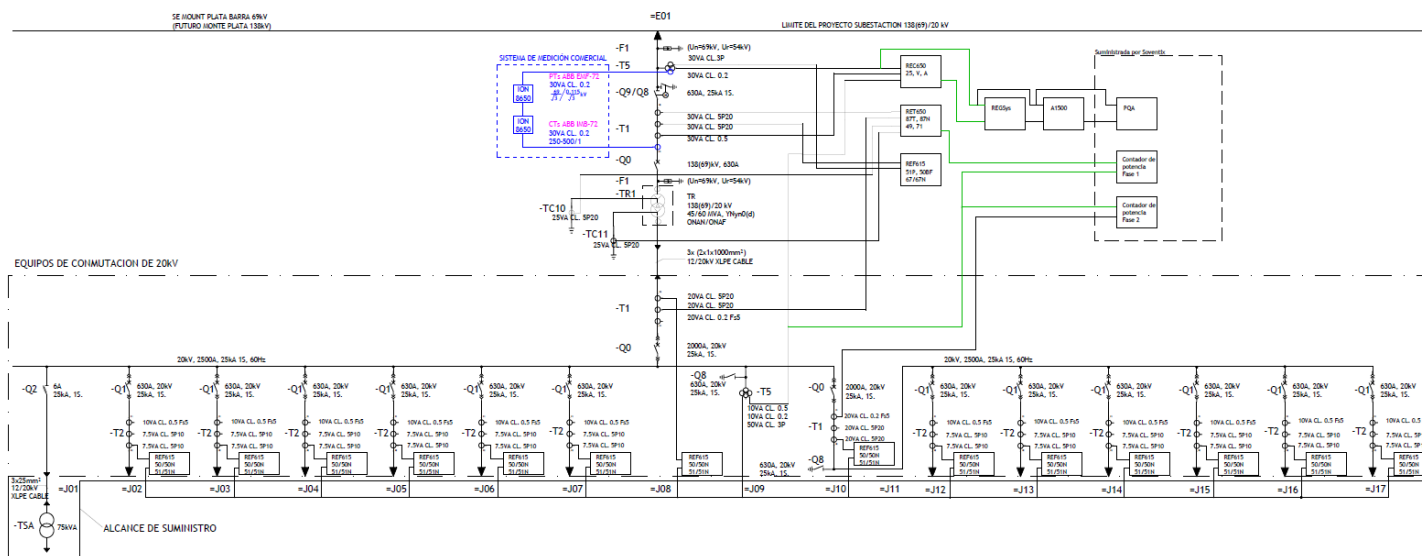
**Total Energy Generated:**

To monitor the output of the electricity of the solar plant two meters are installed, one for internal control and the other for delivering the electricity to the grid. The installed meters send all the information to the control cabin. All the information is recorded and stored. The final crosscheck of the data is with the sales receipts. Also, each one of the structures has a direct monitoring for detecting any kind of failure in the electric system. All data monitored and required for verification and issuance of CER's is kept for two years after the end of the last crediting period or the last issuance of CERs, whichever occurs latest.

The following monitoring procedure has been developed in order to generate the necessary information for verification purposes:



### Figure 2: Monitoring procedure



### Figure 3: Commercial measurement system

## SECTION D. Data and parameters

### D.1. Data and parameters fixed ex ante

(Copy this table for each data or parameter.)

Data/Parameter	$EG_{m,y}$
Unit	kWh
Description	Net energy delivered to the grid by power unit “ $m$ ” during year “ $y$ ”
Source of data	Statistical Data from the National Energy Commission
Value(s) applied	Data for 2008, 2009 and 2010. References are in Annex 3
Choice of data or measurement methods and procedures	The information is official and publicly available upon request to the National Energy Commission. The information was received electronically by email <sup>4</sup> .
Purpose of data/parameter	Calculation of baseline emissions
Additional comments	

Data/Parameter	$EF_{CO2,l,y}$
Unit	kgCO <sub>2</sub> /TJ
Description	Emission factor of the fossil fuel type “ <i>l</i> ”

<sup>4</sup> The evidences are available to the DOE for validation purposes.



Source of data	2006 IPCC Guidelines for National Greenhouse Gas Inventories", Volume 2: Energy, Chapter 2: Stationary Combustion – Table 2.2. Lower limit.										
Value(s) applied	<table> <tr> <td><b>Fossil Fuel used:</b></td><td><b>Emission Factor</b></td></tr> <tr> <td>Coal</td><td>89.5000</td></tr> <tr> <td>Fuel Oil #6 / Residual Fuel Oil</td><td>75.5000</td></tr> <tr> <td>Fuel Oil #2 / Diesel</td><td>72.6000</td></tr> <tr> <td>Gas Natural</td><td>54.3000</td></tr> </table>	<b>Fossil Fuel used:</b>	<b>Emission Factor</b>	Coal	89.5000	Fuel Oil #6 / Residual Fuel Oil	75.5000	Fuel Oil #2 / Diesel	72.6000	Gas Natural	54.3000
<b>Fossil Fuel used:</b>	<b>Emission Factor</b>										
Coal	89.5000										
Fuel Oil #6 / Residual Fuel Oil	75.5000										
Fuel Oil #2 / Diesel	72.6000										
Gas Natural	54.3000										
Choice of data or measurement methods and procedures	The information is official and publicly available.										
Purpose of data/parameter	Calculation of baseline emissions										
Additional comments	It is important to mention that the information provided by the National Energy Commission is not specifying the type of Coal that is being used, therefore, in order to keep a conservative approach, the values used are the "Other Bituminous Coal"										

<b>Data/Parameter</b>	<b>NCV</b>								
Unit	TJ/Gg								
Description	The NCV refers to the energy content of these fossil fuels								
Source of data	2006 IPCC Guidelines for National Greenhouse Gas Inventories", Volume 2: Energy, Chapter 1: Introduction – Table 1.2. Lower limit.								
Value(s) applied	<table> <tr> <td><b>Fossil Fuel used:</b></td><td><b>NCV</b></td></tr> <tr> <td>Coal</td><td>25.8000</td></tr> <tr> <td>Fuel Oil #6 / Residual Fuel Oil</td><td>40.4000</td></tr> <tr> <td>Fuel Oil #2 / Diesel</td><td>43.0000</td></tr> </table>	<b>Fossil Fuel used:</b>	<b>NCV</b>	Coal	25.8000	Fuel Oil #6 / Residual Fuel Oil	40.4000	Fuel Oil #2 / Diesel	43.0000
<b>Fossil Fuel used:</b>	<b>NCV</b>								
Coal	25.8000								
Fuel Oil #6 / Residual Fuel Oil	40.4000								
Fuel Oil #2 / Diesel	43.0000								
Choice of data or measurement methods and procedures	No other trustable source is publicly available for the data.								
Purpose of data/parameter	Calculation of baseline emissions								
Additional comments	The values were used in a conservative manner.								

<b>Data/Parameter</b>	<b><math>FC_{i,m,y}</math></b>
Unit	Volume units
Description	Amount of fossil fuel type "i" used in power unit "m" during year "y"
Source of data	National Energy Commission – CNE
Value(s) applied	Data for 2013, 2014 and 2015 References are in annex 3.
Choice of data or measurement methods and procedures	The information is official and publicly available by request.
Purpose of data/parameter	Calculation of baseline emissions
Additional comments	

<b>Data/Parameter</b>	<b>Density of fuels</b>
Unit	kg/m <sup>3</sup>

Description	The density express the concentration of mass in a determined volume
Source of data	Table A.4 of the "Emission Greenhouse Gases in the United States" - Energy Information Administration (EIA, US Department of Energy), available at: <a href="http://www.eia.gov/oiaf/1605/archive/87-92rpt/appa.html">http://www.eia.gov/oiaf/1605/archive/87-92rpt/appa.html</a>
Value(s) applied	Fuel Oil / Residual Fuel –11 API = 0.993 kg/m <sup>3</sup> Diesel / Distillate fuel – 35.5 API = 0.8473 kg/m <sup>3</sup>
Choice of data or measurement methods and procedures	The density of the fossil fuels is a parameter that is not commonly available. The IPCC guidelines are not providing any reference. The density of the fuels depends on the quality of the fuel and in consequence, each fuel supplier could provide the same fuel with different density values. Therefore, a general density value must be used. The EIA provides a conservative international reference for the density values of both fuels.
Purpose of data/parameter	Calculation of baseline emissions
Additional comments	The conversion formula used for calculating the density of the fuels is: $D_{kg/m^3} = \frac{141.5}{D_{API} + 131.5}$ According to the Schlumberger Oilfield Glossary, available at: <a href="http://www.glossary.oilfield.slb.com/en/Terms/a/api_gravity.aspx">http://www.glossary.oilfield.slb.com/en/Terms/a/api_gravity.aspx</a>

<b>Data/Parameter</b>	<b>EF<sub>CM</sub></b>
Unit	tCO <sub>2</sub> /MWh
Description	Combined Margin Emission Factor of the Dominican Republic National Grid
Source of data	Statistics of the National Energy Commission
Value(s) applied	0.6541
Choice of data or measurement methods and procedures	The National Energy Commission is the national entity that regulates the energy supply, distribution and delivery of the electric energy in the country. It is the official government institution for managing the national statistics of the electric sector. The data is publicly available upon request.
Purpose of data/parameter	Calculation of baseline emissions
Additional comments	- The information was received electronically by email and approved during the registration of the project.

<b>Data/Parameter</b>	<b>EF<sub>OM</sub></b>
Unit	tCO <sub>2</sub> /MWh
Description	Operating Margin Emission Factor of the Dominican Republic National Grid
Source of data	Statistics of the National Energy Commission
Value(s) applied	0.4448

Choice of data or measurement methods and procedures	The National Energy Commission is the national entity that regulates the energy supply, distribution and delivery of the electric energy in the country. It is the official government institution for managing the national statistics of the electric sector. The data is publicly available upon request.
Purpose of data/parameter	Calculation of baseline emissions
Additional comments	- The information was received electronically by email and approved during the registration of the project.

<b>Data/Parameter</b>	<b>EF<sub>BM</sub></b>
Unit	tCO <sub>2</sub> /MWh
Description	Build Margin Emission Factor of the Dominican Republic National Grid
Source of data	Statistics of the National Energy Commission
Value(s) applied	0.7238
Choice of data or measurement methods and procedures	The National Energy Commission is the national entity that regulates the energy supply, distribution and delivery of the electric energy in the country. It is the official government institution for managing the national statistics of the electric sector. The data is publicly available upon request.
Purpose of data/parameter	Calculation of baseline emissions
Additional comments	- The information was received electronically by email and approved during the registration of the project.

## D.2. Data and parameters monitored

(Copy this table for each data or parameter.)

<b>Data/Parameter</b>	<b>EG<sub>facility,y</sub></b>
Unit	MWh/y
Description	Quantity of net electricity generation supplied by the project plant to the grid in year y.
Measured/calculated/Default	Measured
Source of data	Readings of the on-site metering connected to the grid.
Value(s) of monitored parameter	23,254MWh

Monitoring equipment	<p>Data is measured in the Point of Common Coupling; that means in the project boundary. All energy losses within the boundaries of the project, is not accounted as emission reductions.</p> <p>Data of the “onsite” measurements is crosschecked with the data approved and provided by the buyer.</p> <p><b>Main electricity meter</b>  Serial number: MW-1408A774- 01  Type: Schneider Electric ION 8650  Accuracy: 0.2  Calibration date: 03/09/2014 (Certificate of Compliance and Calibration) and 15/06/2016 (valid until 14/06/2018) was released to certify the enabling the commercial measurement system by the OC (Coordinating Body of the Interconnected National Electrical System).</p> <p><b>Back-up electricity meter</b>  Serial number: MW-1507A002  Type: Schneider Electric ION 8650  Accuracy: 0.2  Calibration date: 06/07/2015 (Certificate of Compliance and Calibration) and 15/06/2016 (valid until 14/06/2018) was released to certify the enabling the commercial measurement system by the OC (Coordinating Body of the Interconnected National Electrical System).</p>
Measuring/reading/recording frequency	Data is measured continuously and recorded at least monthly.
Calculation method (if applicable)	-
QA/QC procedures	Meter should be periodically calibrated (every two years) <sup>5</sup> in order to ensure a maximum error of +- 0.2% following national requirements (General Electricity Law No. 125-01 articles 336, 337, 338 and 340, the Coordinating Body of the Interconnected National Electrical System certifies the commercial measurement system and provide commercial authorization) <sup>6</sup> or manufacturer specifications (certification of compliance and calibration released by Schneider Electric). Sales receipts is kept in order to verify the consistency of the data monitored.
Purpose of data/parameter	Calculation of baseline emissions
Additional comments	All data collected is collected electronically and be kept at least for 2 years after the end of the last crediting period.

### D.3. Implementation of sampling plan

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N.A

<sup>5</sup> General Electricity Law No. 125-01 articles 342, b) Meters (contrasting): every two (2) years.

<sup>6</sup> The OC (Coordinating Body of the Interconnected National Electrical System) certifies the commercial measurement system and provide commercial authorization following the articles of the General Electricity Law No. 125-01. According article 338 a) Verification of the programming and testing of the meter (s) is done according to IEC 60687 or ANSI / IEEE C.12.16.

## SECTION E. Calculation of emission reductions or net anthropogenic removals

### E.1. Calculation of baseline emissions or baseline net removals

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The chosen methodology, ACM0002 V.13.0, establishes the parameters for calculating the baseline emissions. It is important to notice that the first parameter that needs to be calculated is the emission factor of the electric grid.

This parameter is expressed in tons CO<sub>2</sub>/MWh, and it indicates the amount of CO<sub>2</sub>-equivalent GHG emissions that are emitted per each MWh of electricity fed into the SENI. This parameter was estimated during registration of the project activity.

With the emission factor of the Dominican Republic electric grid calculated, the information gathered is the quantity of net electricity generation supplied by the project plant to the grid for the monitoring period in order to calculate the total emission reductions of the project activity.

Quantity of net electricity generation supplied by the project plant to the grid.

Month	kWh	Source
May-15	0	-
Jun-15	0	-
Jul-15	0	-
Aug-15	0	-
Sep-15	0	-
Oct-15	0	-
Nov-15	0	-
Dec-15	0	-
Jan-16	0	-
Feb-16	0	-
Mar-16	0	-
Apr-16	0	-
May-16	0	-
Jun-16	875,161	Electronic JRC Report of measurements
Jul-16	4,288,318	Electronic JRC Report of measurements
Aug-16	2,606,456	Electronic JRC Report of measurements
Sep-16	4,401,424	Electronic JRC Report of measurements
Oct-16	3,944,601	Electronic JRC Report of measurements
Nov-16	3,289,097	Electronic JRC Report of measurements
Dec-16	3,849,007	Electronic JRC Report of measurements
<b>Total</b>	<b>23,254,064</b>	

According the methodology ACM0002, the potential sources of project emissions are fossil fuel combustion, emissions of non-condensable gases from operation of geothermal power plants and emission from water reservoirs of hydro power plants. None of these sources has been produced in the project during the monitoring period reported, the solar PV power plant has generated electricity by harnessing solar radiation through photovoltaic panels.

Concerning the leakage, according the methodology ACM0002, it has not been considered. The main emissions potentially giving rise to leakage in the context of electric sector projects are emissions arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing and transport). These emissions sources are neglected,

Therefore as stated in the PDD registered, a Solar PV power plant project has no emissions that could be accounted, for the project, there are no leakage emissions or any other emissions source that could be accounted, so the total project emissions in the year “y” is zero, i.e.  $PE_y = 0$ .

According to the ACM0002 V.13.0, the baseline emissions include only CO<sub>2</sub> emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The baseline emissions are calculated as follows:

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

**Equation 1:**

Where:

$BE_y$  = Baseline emissions in year “y” (tCO<sub>2</sub>/year)

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

$EF_{grid,CM,y}$  = Combined Margin CO<sub>2</sub> emission factor for grid connected power generation in year “y” calculated using the latest version of the “Tool to calculate the emission factor for an electricity system” (tCO<sub>2</sub>/MWh)

$$BE_y = 23,254 * 0.6541 = 15,209$$

Year	Baseline emissions (t CO <sub>2</sub> e)	Project emissions (t CO <sub>2</sub> e)	Leakage (t CO <sub>2</sub> e)	Emission reductions (t CO <sub>2</sub> e)
2015	0	0	0	0
2016	15,209	0	0	15,209
<b>Total</b>	<b>15,209</b>	<b>0</b>	<b>0</b>	<b>15,209</b>

## E.2. Calculation of project emissions or actual net removals

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A Solar PV power plant project has no emissions that could be accounted, so the total emission reductions is the baseline emissions.

## E.3. Calculation of leakage emissions

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Because the project activity relies on the generation of electricity through the electro-chemical conversion of solar radiation, no associated emissions are generated during the operation, so there is no leakage emissions considered.

## E.4. Calculation of emission reductions or net anthropogenic removals

	Baseline GHG emissions or baseline net GHG removals (t CO <sub>2</sub> e)	Project GHG emissions or actual net GHG removals (t CO <sub>2</sub> e)	Leakage GHG emissions (t CO <sub>2</sub> e)	GHG emission reductions or net anthropogenic GHG removals (t CO <sub>2</sub> e)		
				Before 01/01/2013	From 01/01/2013	Total amount
<b>Total</b>	15,209	0	0	0	15,209	15,209

**E.5. Comparison of emission reductions or net anthropogenic removals achieved with estimates in the registered PDD**

Amount achieved during this monitoring period (t CO <sub>2</sub> e)	Amount estimated ex ante (t CO <sub>2</sub> e)
15,209	17,065

**E.6. Remarks on increase in achieved emission reductions**

&gt;&gt;

The slightly difference between estimated and actual accounts in total 1856 tCO<sub>2</sub>e, this is mainly due to the fact that the monitoring report consider the generation of energy since the exact day (June 17<sup>th</sup>) based on the monitoring system, meanwhile the PDD consider the generation since the first day of June..

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**Document information**

<i>Version</i>	<i>Date</i>	<i>Description</i>
06.0	7 June 2017	Revision to: <ul style="list-style-type: none"> <li>• Ensure consistency with version 01.0 of the “CDM project standard for project activities” (CDM-EB93-A04-STAN);</li> <li>• Make editorial improvements.</li> </ul>
05.1	4 May 2015	Editorial revision to correct version numbering.
05.0	1 April 2015	Revisions to: <ul style="list-style-type: none"> <li>• Include provisions related to delayed submission of a monitoring plan;</li> <li>• Provisions related to the Host Party;</li> <li>• Remove reference to programme of activities;</li> <li>• Overall editorial improvement.</li> </ul>
04.0	25 June 2014	Revisions to: <ul style="list-style-type: none"> <li>• Include the Attachment: Instructions for filling out the monitoring report form (these instructions supersede the "Guideline: Completing the monitoring report form" (Version 04.0));</li> <li>• Include provisions related to standardized baselines;</li> <li>• Add contact information on a responsible person(s)/ entity(ies) for completing the CDM-MR-FORM in A.6 and Appendix 1;</li> <li>• Change the reference number from <i>F-CDM-MR</i> to <i>CDM-MR-FORM</i>;</li> <li>• Editorial improvement.</li> </ul>
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 (EB 70, 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).
01.0	28 May 2010	EB 54, Annex 34. Initial adoption.
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: monitoring report		