



OAXACA IV WIND ENERGY PROJECT



Document Prepared by Kosher Climate India Private Limited

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1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The objective of the project activity is the construction of a wind farm; the renewable energy is provided to the Mexican grid system and therefore results in the greenhouse gas (GHG) emissions reduction because in the absence of the project activity the power would have been generated by the Mexican grid system which depends mainly upon fossil fuels usage.

The Oaxaca IV Wind Energy Project has a capacity of 102 MW, comprising 68 turbines generators, each with a capacity of 1.5 MW. Total generated electricity is selling to the CFE.

The project with full capacity Of 102 MW has been commissioned and started operation from 18th November 2011. Since its commissioning project has been successfully in operation.

The project was expected to generate approximately 422,076 MWh per year which would be sold to the CFE. The electricity generated by the project displaces electricity from the Mexican grid. In the current scenario, so as in the baseline scenario, the power units of the Mexican national grid system which are mainly based in the utilization of fossil fuel sources, have been providing the electricity demand to the national grid users, the project activity will contribute in increasing the renewable energy sources share of the grid system reducing its total emission rate per kilowatt-hour generated. For this reason, due to this project, it was expected that 245,015 tCO₂ per year will be abated.

The VCS crediting period lasts for 10 years and is renewable twice. The first crediting period starts from 18th November 2011 and ends on 17th November 2021. The project was registered under the UNFCCC on 15th May 2012. Registration number is 6216. As per the paragraph 3.8.3 of the VCS standard version 3.3 and paragraph 3.8.7 of the latest VCS standard version 4.1 the VCS end date of crediting period is the end date of the CDM crediting period. CDM crediting period starts from 16th May 2012 and ends on 15th May 2022 (fixed crediting period) hence the VCS crediting period ends on 15th May 2022.

The monitoring period covered under this report is from 01st December 2019 to 30th November 2021. The total emission reductions achieved during this monitoring period are 467,156 tCO_{2e} through displacing 804,749 MWh of electricity from fossil-fuel dominated electricity grid with electricity generation using wind energy resources.

1.2 Sectoral Scope and Project Type

Sectoral Scope 1: Energy Industries (renewable / non-renewable sources)

Project Type: Renewable Energy Project (Wind)

1.3 Project Proponent

Organization name

CE Oaxaca Cuatro S. de R.L. de C.V.

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Title	Mr.
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1.4 Other Entities Involved in the Project

Organization name	Kosher Climate India Private Limited
Role in the Project	Project Representative
Contact person	Vamsi Krishna
Title	Mr.
Address	#109, 2nd Floor, 27th Main, Sector – 1, HSR Layout, Bangalore-560102, India.
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Email	carbon@kosherclimate.com , vamsi@kosherclimate.com

1.5 Project Start Date

The project start date is the date on which the project began generating GHG emission reductions. The project start date is 18th November 2011.

1.6 Project Crediting Period

The wind farm began generating GHG emission reductions on 18th November, 2011, so this is the starting date of the first crediting period. The expected operational lifetime of the project activity is 20 years and the project proponent expects to go for a crediting period of 10 years. So, the first crediting period starts from 18th November 2011 to 17th November 2021.

The project was registered under the UNFCCC on 15th May 2012 with Registration number is 6216. As per the paragraph 3.8.3 of the VCS standard version 3.3 and paragraph 3.8.7 of the latest VCS standard version 4.1 the VCS end date of crediting period is the end date of the CDM crediting period. CDM crediting period starts from 16th May 2012 and ends on 15th May 2022 (fixed crediting period) hence the VCS crediting period ends on 15th May 2022.

1.7 Project Location

The project is located in La Venta Municipality, windy region, in the Isthmus of Tehuantepec, state of Oaxaca, Mexico.

The project activity coordinates are 16° 36' 36.21" N and 94° 47' 23.98" W (decimal coordinates: 16.61005925 latitude and -94.78999567 longitude).

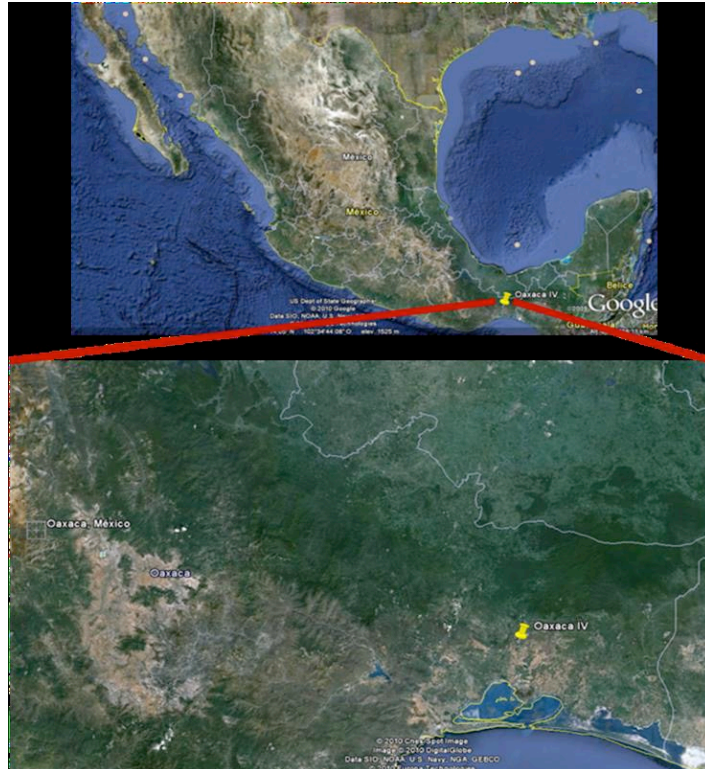


Figure: Project Location

1.8 Title and Reference of Methodology

Methodology Title: “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” ACM0002 version 12.1.0.

This methodology also refers to the approved versions of the following tools

- Tool to calculate the emission factor for an electricity system (ver 02.2.1)
- Tool for the demonstration and assessment of additionality (ver. 05.2)

1.9 Participation under other GHG Programs

The project activity has also been registration with UNFCCC under Clean Development Mechanism (CDM) program, with UN reference number is 6216¹.

GHG credits for the monitoring period from 18th November 2011 till 15th May 2012 were issued under VCS and GHG credits from 16th May 2012 till 30th November 2019 were issued under CDM. The present VCS monitoring period covered in this report is for the period from 1st December 2019 till 30th November 2021 (including both the days).

The project proponent has provided undertaking that it will not claim any GHG credits under for UNFCCC CDM during the current monitoring period covered under the VCS.

1.10 Other Forms of Credit

Mexico is non-annex1 country and there is no compliance with an emission trading program or to meet binding limits on GHG emissions for this project activity. The project is registered under CDM with UNFCCC (Registration ID 6216) However; the project proponent (PP) has submitted undertaking that they will not claim GHG credits under CDM in the current monitoring period. PP has also provided undertaking that it would not use net GHG emission reductions by the projects for compliance with emission trading program to meet binding limits on GHG emissions.

Besides, the project proponent has also submitted undertaking for not availing other forms of environmental credits including that of Renewable Energy Certificate (REC) for the same crediting period under consideration.

1.11 Sustainable Development

The project complies with all country regulations and permits, and contributes to sustainable development at the local, regional and global levels in the following ways:

Environmental and social benefits other than GHG emissions reduction:

In addition to lower GHG emissions, other environmental and social benefits include:

- Use of renewable resources as energy source.
- Enforcement of environmental sustainability avoiding exploitation of natural resources such as coal and natural gas that would have been used to generate electricity in the fossil fuel-based power plants in absence of the project activity.
- Employment generation in the construction, operation and maintenance stages.
- An additional income to the landowners without sacrificing the current ground use.
- Attraction of foreign capital.
- Diversification of the national energy portfolio, which is currently mostly occupied by conventional fossil fuels.
- The project activity does not generate any significant negative environmental impact.

¹ <https://cdm.unfccc.int/Projects/DB/AENOR1337004252.43/view>

- Some regions within the country don't currently have energy generation infrastructure; the project activity will contribute to the improvement of the current situation satisfying the growing demand for electricity enhancing energy distribution to more isolated zones.
- The project participant is implementing a social sustainability plan in Oaxaca to contribute to the development of the local communities in three different areas: basic rights, basic services, and sustainability.

2 SAFEGUARDS

2.1 No Net Harm

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

2.2 Local Stakeholder Consultation

Project Proponent conducted local stakeholder consultation extensively during registration of the project - identification of local stakeholders, invitation of them, held meeting where project activity was explained in details and the PP also took due care of comments/suggestions of the local stakeholders.

The process of local stakeholder consultation is continuous. During the current monitoring period, the project proponent has kept grievance register in plant site office and sought comments/grievances/suggestions from local stakeholders including local community, government agencies and NGOs. Besides, the PP has also kept provision for submitting comments/grievances/suggestions from local stakeholders through direct mail. However, no comments/grievances/suggestions have been received from the aforementioned stakeholders during the current monitoring period.

2.3 AFOLU-Specific Safeguards

Not applicable to this as this is not an AFOLU project activity

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The project has been completed and the monitoring equipment were installed to monitor the parameters as described in the registered Project Description Document (PDD).

The Project activity is the installation of 68 No's of 1.5 MW Wind turbine generators generating power and supplying to the national grid. All the WTGS involved in the project are already commissioned and operational.

The general characteristics of the project activity are provided in below table:

Total Power Capacity	102 MW
Rated Power of Turbine	1.5 MW
Cut-in Wind Speed	4 m/s
Cut-out Wind speed	25 m/s
Generator Voltage	12,000 V
No of Turbines	68
Equivalent annual operating hours	4056 Hrs
Annual Production	413,712
Capacity Factor	46.3%
Transmission line length	32.5 km
Transmission line voltage	230 kV
Diameter	70 m
Swept Area	3848.5 m ²
Hub height	80 m
Nominal rotational speed	20.2 rpm

The project start date is the date on which the project began generating GHG emission reductions i.e 18th November 2011 when the plant started generated and feeding the energy into the grid

All the WTGs involved in the project activity are already commissioned and operational. The WTGs are under operation since the date of commissioning and no event has been identified which may impact GHG emission reduction.

The project was in operation continuously with minor outages during the current monitoring period. The line to be connected to the Federal Electricity Commission ("Comisión Federal de Electricidad", CFE) transformer is a 230 kV and 32.2 km long line, running from the wind farm control house to the CFE transformer located in the Ixtepec substation.

3.2 Deviations

2.3.1 Methodology Deviations

No Methodology deviation is applied during this monitoring period.

2.3.2 Project Description Deviations

No deviations occurred to monitoring plan or methodology in this project activity.

3.3 Grouped Projects

The project is not a grouped project thus this is not applicable

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	$EF_{grid,CM,y}$
Data unit	tCO ₂ /MWh
Description	Combined margin CO ₂ emission factor for grid connected power generation in year y calculated using the “Tool to calculate the emission factor for an electricity system” (Ex-ante)
Source of data	Revised 2006 IPCC, CFE and SENER: “Prospectiva del Sector Eléctrico 2009-2024”, “Prospectiva del Sector Eléctrico 2008-2017” and “Prospectiva del Sector Eléctrico 2007-2016”.
Value applied	0.5805 tCO ₂ /MWh
Justification of choice of data or description of measurement methods and procedures applied	We have chosen to calculate the emission factor ex-ante because it is simpler for the project development. The value was calculated as per the “Tool to calculate the emission factor for an electricity system”, the calculation data is provided in Annex 3
Purpose of Data	Baseline Emissions
Comments	-

Data / Parameter	$FC_{i,y}$						
Data unit	TJ						
Description	Amount of fossil fuel type i consumed by power plant in year y						
Source of data	SENER: “Prospectiva del Sector Eléctrico 2009-2024”, “Prospectiva del Sector Eléctrico 2008-2017” and “Prospectiva del Sector Eléctrico 2007-2016”.						
Value applied	<table border="1"> <tr> <td>2006</td><td>1,608,555 TJ</td></tr> <tr> <td>2007</td><td>1,652,355 TJ</td></tr> <tr> <td>2008</td><td>1,587,036 TJ</td></tr> </table>	2006	1,608,555 TJ	2007	1,652,355 TJ	2008	1,587,036 TJ
2006	1,608,555 TJ						
2007	1,652,355 TJ						
2008	1,587,036 TJ						
Justification of choice of data or description of measurement methods and procedures applied	As per Tool to calculate the emission factor for an electricity system once for each crediting period using the most recent three historical years for which data is available at the time of submission of the CDM-PDD to the DOE for validation (ex-ante option).						
Purpose of Data	Baseline Emissions						
Comments	In 2008 only fuel consumption is provided in other units (m ³ and Ton) and converted into TJ using NCVs and Density information below. Calculations provided in PDD.						

Data / Parameter	NCV _{i,y}		
Data unit	GJ/mass or volume unit		
Description	Net calorific value (energy content) of fossil fuel type i in year y		
Source of data	SENER, México, National Commission for Energy Efficiency ²		
Value applied			
	Fuel Oil	40,122	kJ/kg
	Natural Gas	34,353	kJ/m3
	Diesel	41,868	kJ/kg
	Coal	0.024	TJ/Ton
Justification of choice of data or description of measurement methods and procedures applied	Local net calorific values per fuel type are used. Once for each crediting period using the most recent three historical years for which data is available at the time of submission of the CDM-PDD to the DOE for validation (ex ante option).		
Purpose of Data	Baseline Emissions		
Comments	The data is used for 2008 only, for other years the data for fossil fuel consumed by power plant in year y is reported in TJ.		

Data / Parameter	Density								
Data unit	Kg/m3								
Description	Density of fossil fuel type i in year y								
Source of data	SENER, México, National Commission for Energy Efficiency ³								
Value applied	<table><tr><td>Fuel Oil</td><td>982</td><td>Kg/m3</td></tr><tr><td>Diesel</td><td>865</td><td>Kg/m3</td></tr></table>			Fuel Oil	982	Kg/m3	Diesel	865	Kg/m3
Fuel Oil	982	Kg/m3							
Diesel	865	Kg/m3							
Justification of choice of data or description of measurement methods and procedures applied	The data is used for 2008 only, for other years the data for fossil fuel consumed by power plant in year y is reported in TJ								
Purpose of Data	Baseline Emissions								
Comments	The data is used for 2008 only, for other years the data for fossil fuel consumed by power plant in year y is reported in TJ.								

² http://www.conae.gob.mx/wb/CONAE/CONA_694_a2_tablas_y_figura?page=2
³ http://www.conae.gob.mx/wb/CONAE/CONA_694_a2_tablas_y_figura?page=2

Data / Parameter	EF _{CO2,y}														
Data unit	tCO ₂ /TJ														
Description	CO2 emission factor of fossil fuel type i in year y														
Source of data	Revised 2006 IPCC														
Value applied	<table><tr><td>Fuel Oil</td><td>75.5</td><td>tCO₂/TJ</td></tr><tr><td>Natural Gas</td><td>54.3</td><td>tCO₂/TJ</td></tr><tr><td>Diesel</td><td>72.6</td><td>tCO₂/TJ</td></tr><tr><td>Coal</td><td>87.3</td><td>tCO₂/TJ</td></tr></table>			Fuel Oil	75.5	tCO ₂ /TJ	Natural Gas	54.3	tCO ₂ /TJ	Diesel	72.6	tCO ₂ /TJ	Coal	87.3	tCO ₂ /TJ
Fuel Oil	75.5	tCO ₂ /TJ													
Natural Gas	54.3	tCO ₂ /TJ													
Diesel	72.6	tCO ₂ /TJ													
Coal	87.3	tCO ₂ /TJ													
Justification of choice of data or description of measurement methods and procedures applied	As per Tool to calculate the emission factor for an electricity system, once for each crediting period using the most recent three historical years for which data is available at the time of submission of the CDM-PDD to the DOE for validation (ex-ante option).														
Purpose of Data	Baseline Emissions														
Comments	-														

Data / Parameter	EG _y											
Data unit	MWh											
Description	Net electricity generated by the project electricity system in year y											
Source of data	SENER: “Prospectiva del Sector Eléctrico 2009-2024”, “Prospectiva del Sector Eléctrico 2008-2017” and “Prospectiva del Sector Eléctrico 2007-2016”.											
Value applied	<table><tr><td>Year 2006</td><td>205,878,000</td><td>MWh</td></tr><tr><td>Year 2007</td><td>211,454,000</td><td>MWh</td></tr><tr><td>Year 2008</td><td>215,276,000</td><td>MWh</td></tr></table>			Year 2006	205,878,000	MWh	Year 2007	211,454,000	MWh	Year 2008	215,276,000	MWh
Year 2006	205,878,000	MWh										
Year 2007	211,454,000	MWh										
Year 2008	215,276,000	MWh										
Justification of choice of data or description of measurement methods and procedures applied	As per Tool to calculate the emission factor for an electricity system, once for each crediting period using the most recent three historical years for which data is available at the time of submission of the CDM-PDD to the DOE for validation (ex-ante option).											
Purpose of Data	Baseline Emissions											
Comments	-											

Data / Parameter	EG_{m,y}		
Data unit	MWh		
Description	Net electricity generated by the power plant m in year y		

Source of data	SENER: "Prospectiva del Sector Eléctrico 2009-2024".
Value applied	Values provided in Annex 3 of PDD.
Justification of choice of data or description of measurement methods and procedures applied	BM: Ex ante, following the guidance in Step 5 of the Tool to calculate the emission factor for an electricity system.
Purpose of Data	<i>Baseline Emissions</i>
Comments	-

4.2 Data and Parameters Monitored

Data / Parameter	EG_{facility, y}
Data unit	MWh/y
Description	Quantity of net electricity generation supplied by the project plant to the grid in year y
Source of data	Measured according to the calculation based on the EG _{output, y} , EG _{import, y} , EG _{project, y} and EG _{another, y} as the formula below..
Description of measurement methods and procedures to be applied	Net electricity supplied by the project activity to the grid. Continuous measurement and at least monthly recording. The metering equipment complies with CFE regulations and is properly calibrated by CFE. Calculated from energy exported by the project to the grid and energy imported by the project from the grid, directly obtained from the metering equipment installed in the Ixtepec substation. Oaxaca IV Wind Farm has two meters (1 main, 1 backup) at the exit of the wind farm and two meters (1 main, 1 backup) in Ixtepec Substation. The project activity shares the transmission line to Ixtepec Substation with another wind project. The energy production from the project activity is determined by CFE by means of CFE certified meters located in the Ixtepec Substation. The metering is cross-checked with the invoice of sales. The net electricity generation is measured in the meter installed at the delivery point of energy. As was mentioned before this project activity shares the transmission line with another project; for this reason the meter in the substation uses a software that calculates the net electricity exported to the grid by the project activity: $EG_{facility, y} = \left(\frac{EG_{project, y}}{EG_{project, y} + EG_{another, y}} * EG_{output, y} \right) - EG_{import, y}$

	EG _{output,y} , EG _{import,y} , EG _{project,y} and EG _{another,y} are measured directly by electricity meters (please refer to the 3.3. for measurement breakdown).
Frequency of monitoring/recording	Continuous measurement and at least monthly recording
Value monitored	804749
Monitoring equipment	Identification code for meters in CFE Ixtepec substation: Main Meter: MT-1011A383-01 Backup Meter: MT-1011A456-01 Identification code for meters in Oaxaca IV substation Main Meter: MT-1011A462-01 Backup Meter: MT-1011A388-01 Identification code for meters in 'another project B' (Oaxaca IV) substation: Main Meter: MT-1011A453-01 Backup Meter: MT-1011A560-01 Main and backup meters are bidirectional and have 0.2% accuracy class.
QA/QC procedures to be applied	The metering equipment in Ixtepec Substation, Oaxaca II and Oaxaca IV Substation is properly calibrated and checked annually for accuracy, as per Mexican law and/or PPA, to ensure that any error resulting from such equipment shall not exceed +/- 0.2% of full-scale rating. To guarantee QA/QC, it is done double checked by invoice of electricity sales.
Purpose of the data	Emission Reductions
Calculation method	$EG_{facility,y} = \left(\frac{EG_{project,y}}{EG_{project,y} + EG_{another,y}} * EG_{output,y} \right) - EG_{import,y}$
Comments	The data is archived electronically. Archived data will be kept during the crediting period and two years later.

Data / Parameter	EG _{output,y}
Data unit	MWh
Description	Electricity supplied to the grid by the proposed project and 'another project B' during year y

Source of data	Measured by power meter M3 main meter (maestro fiscal principal) or M3 backup meter (maestro fiscal respaldo)
Description of measurement methods and procedures to be applied	Continuous measurement and at least monthly recording. The metering equipment complies with CFE regulations and is properly calibrated by CFE. Directly obtained from the metering equipment installed in the Ixtepec substation.
Frequency of monitoring/recording	Continuous measurement and at least monthly recording
Value monitored	1522465
Monitoring equipment	Identification code for meters in CFE Ixtepec substation: Main Meter: MT-1011A383-01 Backup Meter: MT-1011A456-01 Main and backup meters are bidirectional and have 0.2% accuracy class.
QA/QC procedures to be applied	The metering equipment in Ixtepec Substation, are properly calibrated and checked annually for accuracy, as per Mexican law and/or PPA, to ensure that any error resulting from such equipment shall not exceed +/- 0.2% of full-scale rating. To guarantee QA/QC, it is done double checked by invoice of electricity sales. Main and Check meter has been tested and calibrated by LAPEM in 29/05/2019, 12/05/2020 and 03/04/2021. Next calibration is due on 02/04/2022.
Purpose of the data	Emission Reductions
Calculation method	Measured
Comments	The data is archived electronically. Archived data will be kept during the crediting period and two years later.

Data / Parameter	EG import, y
Data unit	MWh
Description	Electricity purchased from the grid by the proposed project and 'another project B' during year y
Source of data	Measured by power meter M3 main meter (maestro fiscal principal) or M3 backup meter (maestro fiscal respaldo)
Description of measurement methods	Continuous measurement and at least monthly recording. The metering equipment complies with CFE regulations and is properly

and procedures to be applied	calibrated by CFE. Directly obtained from the metering equipment installed in the Ixtepec substation.
Frequency of monitoring/recording	Continuous measurement and at least monthly recording
Value monitored	3952
Monitoring equipment	Identification code for meters in CFE Ixtepec substation: Main Meter: MT-1011A383-01 Backup Meter: MT-1011A456-01 Main and backup meters are bidirectional and have 0.2% accuracy class.
QA/QC procedures to be applied	The metering equipment in Ixtepec Substation, are properly calibrated and checked annually for accuracy, as per Mexican law and/or PPA, to ensure that any error resulting from such equipment shall not exceed +/- 0.2% of full-scale rating. To guarantee QA/QC, it is done double checked by invoice of electricity sales. Main and Check meter has been tested and calibrated by LAPEM in 29/05/2019, 12/05/2020 and 03/04/2021. Next calibration is due on 02/04/2022.
Purpose of the data	Emission Reductions
Calculation method	Measured
Comments	The data is archived electronically. Archived data will be kept during the crediting period and two years later.

Data / Parameter	EG _{project, y}
Data unit	MWh
Description	Electricity measured by meters installed at the project site Oaxaca IV substation
Source of data	Measured by power meter M2 main meter (esclavo principal) o M2 backup meter (esclavo respaldo)
Description of measurement methods and procedures to be applied	Continuous measurement and at least monthly recording. The metering equipment complies with CFE regulations and is properly calibrated by CFE. Directly obtained from the metering equipment installed in the Oaxaca IV substation.
Frequency of monitoring/recording	Continuous measurement and at least monthly recording
Value monitored	812251

Monitoring equipment	Identification code for meters in M2, Oaxaca IV substation: Main Meter : MT-1011A462-01 Backup Meter: MT-1011A388-01 Main and backup meters are bidirectional and have 0.2% accuracy class.
QA/QC procedures to be applied	The metering equipment in Oaxaca IV Substation, are properly calibrated and checked annually for accuracy, as per Mexican law and/or PPA, to ensure that any error resulting from such equipment shall not exceed +/- 0.2% of full-scale rating. To guarantee QA/QC, it is done double checked by invoice of electricity sales. Main and Check meter has been tested and calibrated by LAPEM in 31/05/2019, 15/05/2020 and 03/04/2021. Next calibration is due on 02/04/2022.
Purpose of the data	Emission Reductions
Calculation method	Measured
Comments	The data is archived electronically. Archived data will be kept during the crediting period and two years later.

Data / Parameter	EG another, y
Data unit	MWh
Description	Electricity measured by meters installed at 'another project B' project site substation
Source of data	Measured by power meter M1 main meter (esclavo principal) o M1 backup meter (esclavo respaldo)
Description of measurement methods and procedures to be applied	Continuous measurement and at least monthly recording. The metering equipment complies with CFE regulations and is properly calibrated by CFE. Directly obtained from the metering equipment installed in another project B substation.
Frequency of monitoring/recording	Continuous measurement and at least monthly recording
Value monitored	716,867
Monitoring equipment	Identification code for meters M1 in another project B' (Oaxaca II) substation: Main Meter: MT-1011A453-01 Backup Meter: MT-1011A560-01

	Main and backup meters are bidirectional and have 0.2% accuracy class.
QA/QC procedures to be applied	The metering equipment in 'another project B' (Oaxaca II) Substation, are properly calibrated and checked annually for accuracy, as per Mexican law and/or PPA, to ensure that any error resulting from such equipment shall not exceed +/- 0.2% of full-scale rating. To guarantee QA/QC, it is done double checked by invoice of electricity sales. Main and Check meter has been tested and calibrated by LAPEM in 30/05/2019, 14/05/2020 and 03/04/2021. Next calibration is due on 02/04/2022.
Purpose of the data	Emission Reductions
Calculation method	Measured
Comments	The data is archived electronically. Archived data will be kept during the crediting period and two years later.

4.3 Monitoring Plan

Monitoring plan. The project meets the applicability criteria under the monitoring methodology, ACM0002 v.12.1.0, "Consolidated methodology for grid-connected electricity generation from renewable sources" This methodology is applicable, among others, to projects that generate electricity using wind resources.

According to the applicable methodology, the data has been monitored, archived electronically and will be kept at least for 2 years after the end of the crediting period is the quantity of net electricity generation supplied by the project activity to the grid in year y. This information comes from Ixtepec substation power meter (main meter and its backup). These certified power meters are property of CFE (Comisión Federal de Electricidad, which is the state own electric utility company and responsible of the transmission system). Sales invoice cross-check have also been achieved.

The net electricity supplied to the grid by the proposed project has been calculated as follows:

$$EG_{facility,y} = \left(\frac{EG_{project,y}}{EG_{project,y} + EG_{another,y} - EG_{import,y}} * EG_{output,y} \right)$$

Where:

EG_{facility,y} = Net electricity supplied by the proposed project in the period y.

EG_{output,y} = Total electricity supplied to the grid by the proposed project and 'another project B' in the period y.

$EG_{import,y}$ = Total electricity imported from the grid by the proposed project and ‘another project B’ in the period y

$EG_{project,y}$ = Electricity measured by meters installed at the Oaxaca IV substation

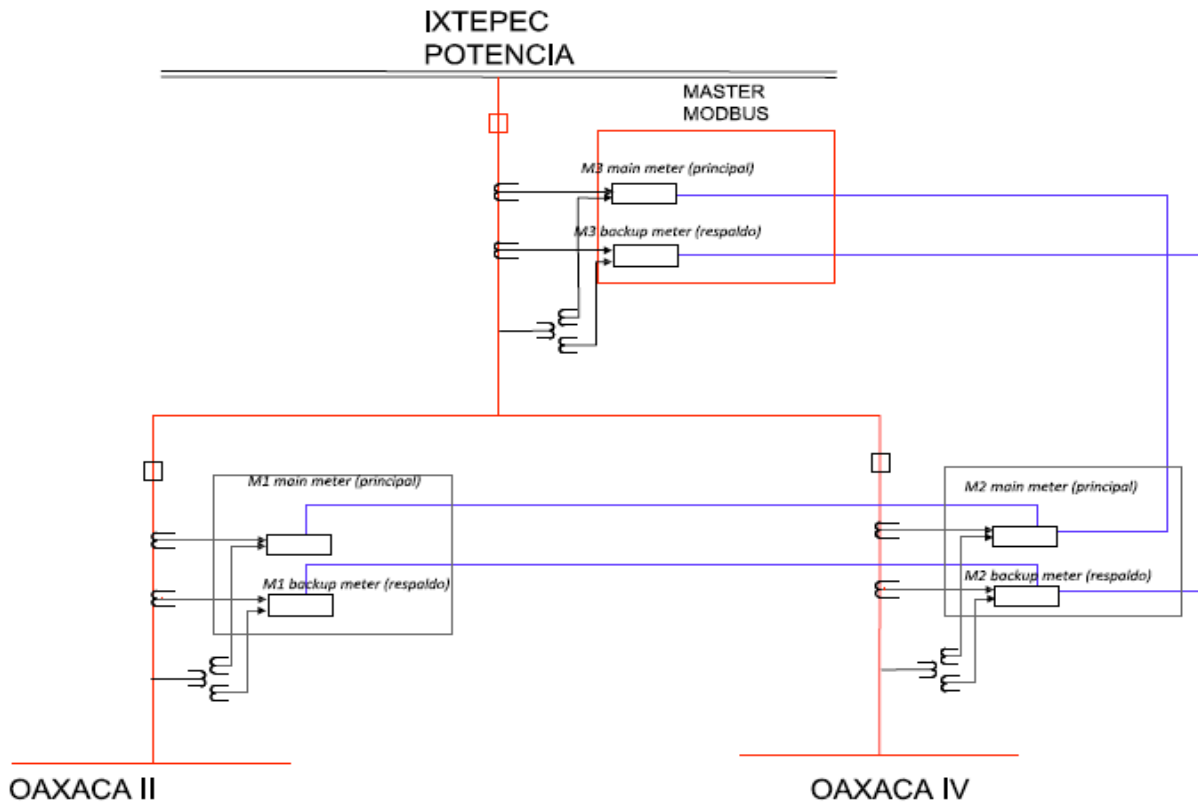
$EG_{another,y}$ = Electricity measured by meters installed at the ‘another project B’ substation that share transmission facilities with Oaxaca IV.

Parameters $EG_{output,y}$, $EG_{import,y}$, $EG_{project,y}$ and $EG_{another,y}$ in the above formula which are used to calculate $EG_{facility,y}$ have been measured by electricity meters.

$EG_{output,y}$ and $EG_{import,y}$ have been measured by bidirectional meters M3 installed in the project substation in Ixtepec.

$EG_{project,y}$ has been measured by electricity bidirectional meters M1 installed at the Oaxaca IV substation. $EG_{another,y}$ has been measured by electricity bidirectional meters M2 installed at the ‘another project B’ substation. $EG_{import,y}$ is the total electricity imported from the grid by the Oaxaca IV and ‘another project B’ in period, to be conservative, when the $EG_{facility,y}$ is calculated, $EG_{import,y}$ is fully deducted including the electricity imported from the grid by ‘another project B’.

In conclusion, the determination of $EG_{facility,y}$ is based on the measurement of electricity meters installed and is conservative

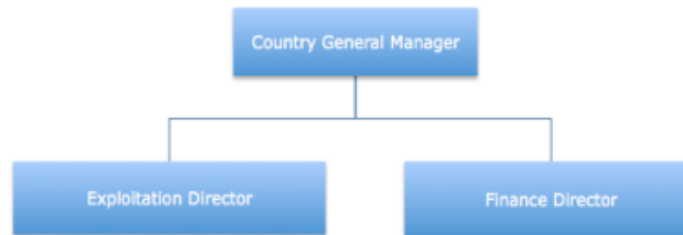


Meter Interconnection

For the emission reduction calculation, the following formula will be used:

Annual emission reduction = (Quantity of net electricity generation supplied by the project plant to the grid in year y) * (CO₂ emission factor (Ex-ante) of the estimated baseline).

Organizational structure is as follows:



Responsible	Responsibility and competences
Country General Manager	Responsible for overseeing the CDM process
Exploitation Director	Responsible for monitoring, recording, reporting and archiving measured data. Responsible for checking data with receipt of sales. Responsible for corrective and preventive actions
Finance Director	Responsible for performing the emission reduction calculations based on methodology and preparing the Monitoring Report as appropriate. Responsible for internal audit

Measuring and cross-check procedure.

Measuring. The person(s) responsible obtains the electricity generation information from the meters installed in the substation on a monthly basis, and reports them in the spreadsheet designed for measurement control and stores the data electronically

Cross-check of net electricity supplied to the grid with receipt of sales:

Net electricity supplied to the grid measured at the substation is cross-checked with receipts of sales.

If there is a mismatch, the person(s) responsible will solve it with CFE, explaining the discrepancy detected, the origin of deviations and the corrective actions taken and file the evidence.

Quality control (QC) procedures and quality assurance procedures (QA).

1. Monitoring equipment

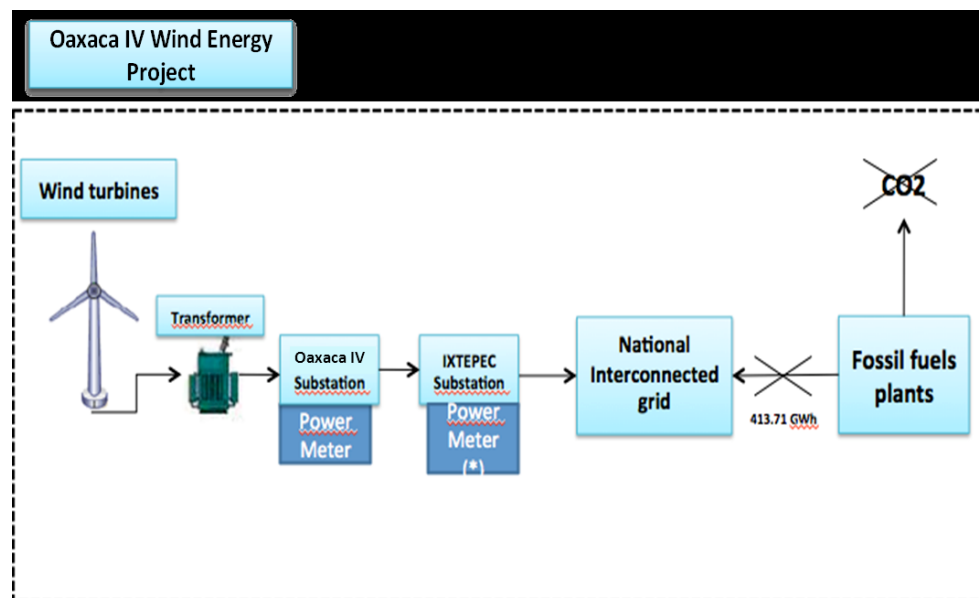
- a. Monitoring equipment shall be set up as per Mexican law and/or PPA.
- b. Monitoring equipment shall be authorized through a certificated formal process.
- c. After set up monitoring equipment shall be calibrated by CFE periodically as determined by the Mexican Law and/or PPA, and checked as necessary by CFE for accuracy.

2. Corrective and preventive actions will be followed and properly documented.

Monthly hourly readings for meters are stored in Excel sheets. Corrective and preventive actions have been made as per provision in CDM/VCS manual.

Internal audit will be done periodically as decided by management

The Line diagram reflecting the generation until metering where the GHG calculation happens is given below:



(*) The ION meters located in the Ixtepec Substation will communicate with the ION meters from the Oaxaca IV Substation, to determine the energy provided from Oaxaca IV.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

The emission reduction ER_y by the project activity during a given year y is the difference between baseline emissions (BE_y), project emissions (PE_y) and emissions due to leakage (Ly), as follows:

$$ER_y = BE_y - PE_y - Ly.$$

Baseline emissions include only CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The baseline emissions are calculated as follows:

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

BE_y = Baseline emissions in a year y (tCO_2)

$EG_{PJ,y}$ or EG_y = Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y (MWh)

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

$EF_{CO_2,grid,y}$ = CO_2 emission factor of the grid in year y (tCO_2/MWh)

Net electricity supply to the grid ($EG_{facility,y}$) is used to calculate VCUs.

Baseline emission factor (EF_y) has been calculated ex-ante and will not be updated during the crediting period of ten years. As per PDD registered, $EF_y = 0.5805$

$$BE_y = 804749 \text{ MWh} \times 0.5805 \text{ tCO}_2 = 467156 \text{ tCO}_2e$$

Hence the baseline emission calculated for the reported monitoring period is 469,413 tCO_2e
i.e., $BE_y = 467156 \text{ tCO}_2e$

5.2 Project Emissions

No project emissions are applicable to this wind electric power project, since the electricity generation is based on wind resources, which does not involve in combustion or generation of emissions from fossil fuels. Hence, these emission sources are neglected.

$$\text{i.e., } PE_y = 0$$

5.3 Leakage

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

$$\text{i.e., } LE_y = 0$$

5.4 Net GHG Emission Reductions and Removals

The Formula used to calculate the net emission reduction for the project activity is

$$ER_y = BE_y - PE_y - LE_y$$

Where,

ER_y : Emission Reduction in tCO₂/year

BE_y : Baseline emission in tCO₂/year

PE_y : Project emissions in tCO₂/year

LE_y : Leakage Emissions in tCO₂/year

For the project activity during the current monitoring period, as per section 5.1

$$BE_y = 467156$$

$$PE_y = 0$$

$$LE_y = 0$$

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2019 (01/12/2019 to 31/12/2019)	29,291	0	0	29,291
Year 2020 (01/01/2020 to 31/12/2020)	230,496	0	0	230,496
Year 2021 (01/01/2021 to 30/11/2021)	207,369	0	0	207,369
Total	467,156	0	0	467,156

As per the registered PDD, the amount of CERs generated annually is 245,015 tCO₂e. Therefore, the amount of estimated ex ante for this monitoring period is identified as explained below.

The total number of days in this monitoring period of 01-December-2019 to 30-November-2021(first and last day included) is 731 days. Hence, the amount of estimated ex ante for this monitoring period
 $= 245,015 * (731/365) = 491,737 \text{ tCO}_2\text{e}.$

The actual VER is about 4.9% lower than the estimated VER. This variation is majorly due to the variations in wind flow pattern, grid availability and other parameters which are not in the control of PP. Since, the actual emission reduction is lower than the estimated emission reduction, no additional justification is required.