CLEAN DEVELOPMENT MECHANISM
PROJECT DESIGN DOCUMENT FORM (CDM-PDD)
Version 03 - in effect as of: 28 July 2006

CONTENTS

SECTION A. General description of project activity

A.1 Title of the project activity:

La Venta II ("the project").
Version 8.
24/04/2007.

A.2. Description of the project activity:

The project will be a wind power plant to be located in Mexico, in the southern state of Oaxaca. The project's purpose is renewable electricity generation to be supplied to the Interconnected Mexican National Grid ("IMNG"). The project's installed capacity and estimated yearly average generation will be 83.3 MW ("megawatts") and 307,728 MWh[1] ("megawatts hours"), respectively. The project is expected to displace 192,545 tons of carbon dioxide equivalent ("tCO2e") per year, which will account to 1,347,815 tCO2e for the first crediting period (7 years), generating the equivalent amount of greenhouse gasses emissions reductions ("ERs"). The project's greenhouse gasses ("GHG") emissions will be negligible, thus there will be no need to monitor leakage and it will not be taken into account when calculating ERs.

The project will consist in the installation of 98 wind turbine-generators (WTG) each of 0.85 MW capacity, which will add to an 83.3 MW total capacity. The WTG will be distributed in 4 rows approximately 600 meters away from each other. The WTG will be approximately 130 meters away from each other; the height of the WTG will be 44 meters approximately.

The spatial extent of the project boundary is the IMNG. The project will be connected to the IMNG through a 19 km-transmission line that connects to the Juchitán II substation of the IMNG, which belongs to the *Comisión Federal de Electricidad* ("*CFE*"). The total expected generated electricity will be dispatched to the grid and be commercialized by CFE, which is the developer operator and owner of the project. The project will have an expected minimum plant operating life of 21 years. The project has obtained all applicable permissions/authorizations required for its construction and operation, and complies with all environmental requirements mandated by *SEMARNAT (*Mexican Environmental authority and Designated National Authority)[2].

The project contributes to sustainable development by:

a) Assisting the *IMNG* to keep thermal plants shut down and use them only as stand-by power generation, when displacing expensive heavy fuel, diesel, coal and gas-fired generation thus reducing CO2 emissions to the atmosphere by generating energy without GHG emissions[3].

b) Employing local labor in construction and plant management.

c) Contributing to Mexico's fiscal accounts through the payment of taxes[4].

d) Helping the country improves the hydrocarbons trade balance through reduction of oil imports to be used for electricity generation.

e) Spurring Oaxaca State's economy since it consumes materials of Oaxaca such as cement, metals, wood, and construction equipments, among others.

[1] Source: The sponsor (calculation supported in the project feasibility study).
[2] Environmental requirements for the project's construction and operation mandated by *SEMARNAT* in order to keep the project's EIA approval, is monitored according to the "*Programa de Vigilancia Ambiental*", complying with country regulations.
[3] The project's technology is considered load base in the IMNG, thus the project has priority in dispatch and so dispatches all the energy that it produces.
[4] Although the sponsor is a public entity, it pays income taxes.

f) Serving as a demonstration project for clean renewable electricity generation in the country, being the first large scale wind power plant in the country to be built and that will supply electricity to the grid[5].

A.3. Project participants:

Name of Party involved (*) ((host) indicates a host Party):	Private and/or public entity(ies) project participants(*) (as applicable)	Kindly indicate if the Party involved wishes to be considered as project participant (Yes/No)
México (host)	Comisión Federal de Electricidad ("CFE").	No
Spain	International Bank for Reconstruction and Development (IBRD) as the Trustee of the Spanish Carbon Fund (SCF).	Yes
(*) In accordance with the CDM modalities and procedures, at the time of making the CDM-PDD public at the stage of validation, a Party involved may or may not have provided its approval. At the time of requesting registration, the approval by the Party(ies) involved is required.		
Note: *When the PDD is filled in support of a proposed new methodology (forms CDM-NBM and CDM-NMM),* at least the host Party (ies) and any known project participants (e.g. those proposing a new methodology) shall be identified.		

Source: World Bank

The Official Contact Person for the Clean Development Mechanism ("CDM") project activity will be:
Joelle Chassard
Carbon Fund Manager
The Spanish Carbon Fund
The World Bank
Washington DC.
USA.
Contact information is listed in Annex 1.

A.4. Technical description of the project activity:

A.4.1. Location of the project activity:

A.4.1.1. Host Party(ies):

México.

A.4.1.2. Region/State/Province etc.:

Oaxaca State/ Juchitán de Zaragoza Municipality.

A.4.1.3. City/Town/Community etc:

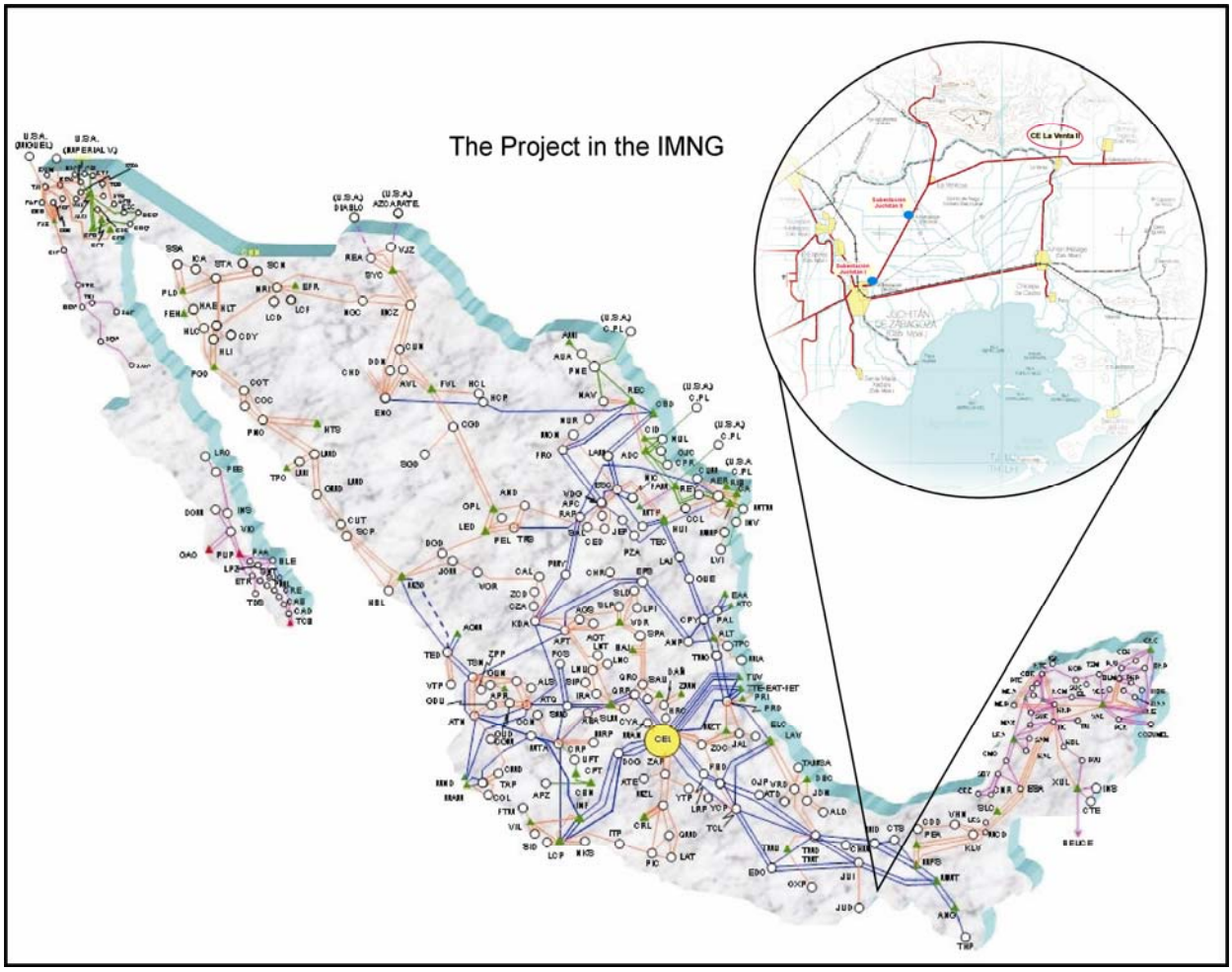
Mexican Native Community ("Ejido") La Venta.

[5] There are only 2 other wind power plants currently functioning in the country, which are off-grid Guerrero Negro (0.6 MW) and grid-connected La Venta I (1.575 MW).

A.4.1.4. Detail of physical location, including information allowing the unique identification of this project activity (maximum one page):

The project will be located in the Southern State of Oaxaca, in the Municipality of Juchitán de Zaragoza, in the Ejido La Venta. The project site is 500 meters north from La Venta locality and 30 km northeast from Juchitán de Zaragoza City (capital of the Municipality of Juchitán de Zaragoza). The project will be located at 30 masl and will impact a 949.84 hectares total area[6].

The Project in the *IMNG*



Source: The sponsor.

A.4.2. Category(ies) of project activity:

The project falls into:
Scope number: 1.
Sectoral scope: Renewable energy.

[6] According to its EIA (updated) – this area is named "*polígono de influencia*".

A.4.3. Technology to be employed by the project activity:

The technology of the project is horizontal axis wind turbines[7]. The project will be composed by 98 WTG of 3 blades each (with power control) and an active system for rotor[8] orientation. Under wind high speed, a control system will keep the power at the plant's nominal value. Under wind slow speed, a control system will optimize the energy production, selecting an optimal combination of revolutions and angle of attack[9].

The 98 WTG will be each of 0.85 MW capacity, which will add to a total capacity of 83.3 MW. The WTG will be distributed in 4 rows approximately 600 meters away from each other[10]. Te WTG will be approximately 130 meters away from each other; the hub height of the WTG will be 44 meters. The WTG will be clustered in 5 independent circuits from which the energy will be collected. Each WTG will count with an individual transformer to raise the voltage of the energy from 0.6 KV up to 34.5 KV which is the voltage required for its transmission to the project's substation ("La Venta II Substation"), in which the main transformer will be placed. This main transformer will raise the voltage again from 34.5 KV to 230 KV, for its transmission and interconnection with the IMNG through the 19 Km-230 KV-transmissions line built for this purpose. The Scada Control System will be placed in La Venta II Substation and will be accessed remotely from Juchitán's control room. There will be 7 electricity meters located in La Venta II Substation: One for each independent circuit (a total of 5 meters – recording at 34.5 KV) and two for the project's total energy generated (recording at 34.5 KV and at 230 KV). The meters located in La Venta II Substation will be of 0.2% precision level and will comply with country regulations[11].

The project will transfer environmentally safe and sound technology and know-how to Mexico by:

-Hiring local labor in all of its implementation phases[12]. During operation, the staff working in operation and maintenance of the project will be preferably local people[13], previously trained if necessary.

-Being the first large scale wind power plant in the country to be built and that will supply electricity to the IMNG, this way serving as a technological example for implementing this type of technology in Mexico.

-Diminishing the financial risk for future similar projects.

-Gamesa Eolica e Iberinco ("the contractor") will impart training to the project personnel. The training to be performed by the contractor is scheduled for October-November 2006; this course is directed to CFE staff on regards to engineering, design, operation and CENACE; the course will last 1 month approximately. After this training, the sponsor has total responsibility for operation and maintenance of the power plant; with the exception of the malfunctioning of equipment provided by the contractor that occur during the first 3-year of operation (guarantee from the contractor). Finally, the contractor will provide operation and maintenance manuals to the sponsor.

[7] Horizontal axis wind turbines meaning: A "normal" wind turbine design, in which the shaft is parallel to the ground, and the blades are perpendicular to the ground.
[8] Rotor meaning: The blade and hub assembly of a wind generator.
[9] Angle of attack meaning: The angle of relative air flow to the blade chord.
[10] Row1, Row2, Row3, and Row4 will have 23, 23, 27 and 25 WTG, respectively; and will be of 3,600 meter; 3,400 meter; 3,300 meter; and 3,700 meter - length, respectively.
[11] Please see electricity meters specifications in Annex 3.
[12] According to the project's construction contractor, during construction the personnel hired will vary per month from 5 to 250 workers, with a median of 50 workers/per month for the total construction time.
[13] According to the sponsor, there will be between 15 and 20 people permanently employed during operation. According to the Environmental Impact Assessment, during construction, it is estimated that the project will hire 90% of its non-qualified labor locally and 10% of it regionally and out of its qualified labor the project will hire 20% locally, 10% regionally, and 70% nationally.

A.4.4 Estimated amount of emission reductions over the chosen crediting period:

Once implemented, the project is estimated to reduce 192,545 tCO_2e annually, generating an expected total of 1,347,815 tCO_2e for the duration of the initial 7-year crediting period.

The project estimated annual ERs, over the first 7-year crediting period, are as follow:

Year	Annual estimation of emissions reductions in tonnes of CO_2e
2007[14]	96,272.5
2008	192,545
2009	192,545
2010	192,545
2011	192,545
2012	192,545
2013	192,545
2014[15]	96,272.5
Total estimated reductions (tonnes of CO2e)	1,347,815
Total number of crediting years	7
Annual average over the crediting period of estimated reductions (tonnes of CO2e)	192,545

Source: World Bank.

A.4.5. Public funding of the project activity:

No public funding from an Annex I country is involved in this project, meaning no Official Development Assistance ("ODA") funding is involved in this project. The project is developed by a Mexican public company; the project's initial capital structure is 100% debt since it is developed under the concept of Financed Public Project or *Obra Publica Financiada* ("*OPF*").

SECTION B. Application of a baseline and monitoring methodology

B.1. Title and reference of the approved baseline and monitoring methodology applied to the project activity:

Approved consolidated baseline methodology ACM0002-Version 6: Consolidated baseline methodology for grid-connected electricity generation from renewable sources ("the methodology").

The methodology will be used in conjunction with the approved monitoring methodology ACM0002-Version 6 ("the monitoring methodology").

B.2 Justification of the choice of the methodology and why it is applicable to the project activity:

The project will be a grid-connected zero-emission renewable power generation activity and meets all the conditions stated in the methodology (ACM0002). These conditions are:

- The project will be a wind power plant that supplies electricity installed capacity addition (83.3 MW) to the *IMNG*.

[14] From 01/07/2007 (estimated date of registration) up to 31/12/2007.
[15] From 01/01/2014 up to 30/06/2014.

- The project will not be an activity that involves switching from fossil fuels to renewable energy at the project site
- The electricity grid (the *IMNG*) will be clearly identified and information on the characteristics of this grid is available.

B.3. Description of the sources and gases included in the project boundary

CO_2 (for electricity displacement).

	Source	Gas	Included	Justification/Explanation .
Baseline	IMNG	CO2	Yes	Displacement of fossil fuel-fired power plants
		CH4	No	N/A
		N2O	No	N/A
Project Activity	Project Site	CO2	No	N/A
		CH4	No	N/A
		N2O	No	N/A

B.4. Description of how the baseline scenario is identified and description of the identified baseline scenario:

The baseline scenario is "electricity that would have been otherwise generated by the operation of grid-connected power plants and by the addition of new generating sources". Following the selected methodology: ACM0002, the baseline emission factor is calculated as a combined margin ("CM"), consisting of the weighted average of the simple operating margin emission factor ("OM") and the build margin emission factor ("BM"), weights being 75% and 25%, respectively - all margins expressed in tCO2/MWh. The project boundary for the project is the IMNG. Since no leakages or emissions were identified for the project, emissions reductions will be equal to the baseline emissions. The baseline emission factor is fixed ex-ante for the first crediting period[16].

The estimated ERs per year for the first crediting period equal 192,545 tCO2/yr[17] times seven, which is equal to 1,347,815 tCO2 or estimated ERs.

B.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered CDM project activity (assessment and demonstration of additionality):

The following steps from the "Tools for the demonstration and assessment of additionality" - Version 2 - will be completed in this section:

Step 0: Preliminary screening based on the starting date of the project activity.
Step 1: Identification of alternatives to the project activity consistent with current laws and regulations.
Step 2: Investment analysis.
Step 3: Barriers analysis.
Step 4: Common practice analysis.
Step 5: Impact of registration of the proposed activity as a CDM project activity.

Step 0 - Preliminary screening based on the starting date of the project activity

[16] The margins calculation can be seen under B.6.4.
[17] All margins were rounded to the fifth decimal, but the CERs per year were rounded down to the nearest integer.

Project participants do **not** wish to have the crediting period starting prior to the registration of the project. Hence, step 0 is waived for the project.

Step 1 - Identification of alternatives to the project activity consistent with current laws and regulations

Sub-step 1a. Define alternatives to the project activity:

In addition to the alternative of implementing the proposed project activity not undertaken as a CDM project activity, there are two identified realistic and credible alternatives available to the project participants that provide outputs or services comparable with the proposed CDM project activity:

1) Implement the project as a wind power plant development **without** CDM assistance[18].
2) Implement the project as a natural gas combined cycle power plant[19].
3) Do not implement any power generation project.

Sub-step 1b. Enforcement of applicable laws and regulations

The identified alternatives are in compliance with all applicable legal and regulatory requirements. The 3 identified alternatives comply with México's Electricity Public Service Law ("EPSL"). Articles 1, 2, 3 and 4 of México's EPSL confirm that the alternatives are a real possibility available to the project developer, as follow:

-Article 1 of México's EPSL confirms that it is the exclusive right of the Mexican nation to generate, conduct, transform, distribute, and provide electricity as a public service. Therefore, there will not be granted concessions to privates and the nation will make good use of the goods and natural resources that are required to perform this right through the CFE[20].

-Article 2 of México's EPSL confirms that every act related with the electricity public service is of public character.

-Article 3 of México's EPSL confirms that the following are not public services:

- Electricity generation for self-consumption, cogeneration or small production
- Electricity generation developed by private producers to be sold to the CFE
- Electricity generation to be exported derived from cogeneration, private production and small production.
- Electricity imported from persons exclusively for self-consumption.
- Electricity generation for emergencies because of electricity public service interruptions.

-Article 4 of México's EPSL confirms that electricity public service involved the following:

- The planning of the Mexican National Grid.
- The generation, conduction, transformation, distribution and selling of electricity.
- The developing of all constructions, installations and works that require planning, execution, operation and maintenance of the national electric system.

Because the 3 alternatives identified are in compliance with all applicable laws and regulations and are also realistic and credible alternatives available to the project participants, the project is additional under step 1.

Step 2 – Investment Analysis

[18] Defining the application area of the alternatives as the State of Oaxaca, out of the renewable energy technologies that could be used in the zone: hydro, solar and nuclear (geothermal plants will not be available in the zone): none of them can be considered as "likely": A hydro's output would have been of less quality than the project's because as Mexico's rainy season only last 2 months (September and October) the load factor of a hydro would be around 30% against that for the project which is 43%; solar technology is very sensitive to strong winds which are abundant in Oaxaca and this technology is inexistent in the IMNG; and nuclear is not a widely spread technology (there is only one nuclear power plant of 1,365 MW in the IMNG which is much larger than the project).

[19] As this technology presents the highest net efficiency conversion ("NEC") among fossil fuel-fired power plant technologies available in the country, it ousts other types of fossil fuel –fired power plant technologies that are most expensive to operate.

[20] The sponsor.

This analysis shows why the proposed project activity is economically and financially less attractive than other alternatives identified, without the revenue from the sale of CERs. To conduct the investment analysis the following four sub-steps will be taken:

Sub-step 2a. Determine an appropriate analysis method
The CDM project activity generates financial and economic benefits other than CDM related income, therefore the Cost Analysis (Option I) cannot be taken. Out of the comparison analysis (Option II) and the benchmark analysis (Option III), the comparison analysis (Option II) was chosen.

Sub-step 2b - Option II. Apply the comparison analysis
The identified financial indicator is the: The Levelized Cost of Energy Production ($/MWh).

Sub-step 2c – Calculation and comparison of financial indicators
The formula for the calculation of the Levelized Cost of Energy is the following:
The formula to calculate the levelized cost for the project is the following:

Cost per MWh = [Investment x CRF + O&M Annual] /Annual Generation (MWh)
Where,
Investment: Total investment in the project ($).
CRF: Capital recovery factor equals the equivalent annual cost of the capital investment/ capital investment.
CRF =Annuity of Investment Cost at 12% discount rate and years of annual payments equal to years of operating life[21] / Investment Cost.
O&M: Annualized operation and maintenance costs. It does neither include financial costs nor income tax[22].
Generation: Annual average generation in MWh.

$$\text{Cost per MWh (\$/MWh)} = \frac{\text{(Equivalent Annual Investment Cost + Annual O\&M Cost) (\$)}}{\text{Annual Generation (MWh)}}$$

Assumptions and Variables:

[21] And zero ending cash balance.
[22] Since the latter will depend on an unknown variable which is the project net income.

Assumptions	
Discount Rate - Source: The Sponsor	12%
Exchange Rate - Source: Official Newspaper (Jan 17, 2006)	10.7

The Project (83.3MW - 21 years) Variables:	
Installed Capacity (MW):	83.3
Annual Generation	307,728
Cost per MWh - La Venta II ($) - Source: The Sponsor	1.030
Cost per MW - La Venta II ($) - Source: The Sponsor	36,314.96
Initial Investment ($) - Source: The Sponsor	103,711,577.4

Gas Combined Cycle Plant (83.6MW - 30 years) Variables:	
Installed Capacity (MW):	83.60
Cost per MWh - CC Gas ($) - Source: COPAR	40.39
Fuel ($/MWh) - Taken from COPAR doc. Page A4 Table A1	39.21
Cost per MW - CC Gas ($) - Source: COPAR page A7	26,786.38
Load Factor - Source: COPAR Page 1.8 Table 1.2	80%
Generation (MWh)	585,869
Initial Investment ($) - Source: Gas Turbine World 2004-05 Handbook Page 38	48,989,600
NEC plant 291 MW (from COPAR doc. Page 1.8 Table 1.2)	50.36%
Income for Installed Capacity (MW-year)	125,249

Source: The stated ones in table above; mainly COPAR 2005, Gas Turbine World 2004-05 Handbook, the sponsor.

The gas CC plant's levelized cost has been subtracted in the income for capacity that the gas CC plant receives but the project does not receive, to make the comparison possible.

Levelized Cost for the project (83.3 MW – 21 years) and for a combined cycle gas-fired power plant (83.6 MW – 30 years):

The Project (83.3 MW) - 21 years	
Equivalent Annual Investment Cost	**13,714,828.5**
Annual O&M Cost	**3,341,996.01**
Generation	**307,728.00**
Levelized Cost	**55.43**

CC Gas Power Plant (83.6 MW) - 30 years	
Equivalent Annual Investment Cost	**6,081,748**
Annual O&M Cost	**15,433,004**
Generation	**585,869**
Levelized Cost	**36.72**

Source: World Bank calculation using assumptions and variables stated above.

Comparison: Since the project has a higher cost indicator than the alternative (55.43$/MWh>36.72$/MWh), the project cannot be considered the most financially attractive alternative.

Sub-step 2d. Sensitivity Analysis

The following variables will undergo a sensitivity analysis to prove the robustness of the conclusion given in sub-step 2c.

The Project:

a) Load Factor (+-20%)
b) The Initial Investment Cost (+-20%)

The Project	Load Factor*80%	Load Factor*100%	Load Factor*120%
Initial Investment *120%	80.17	64.34	53.79
Initial Investment *100%	69.03	55.43	46.36
Initial Investment *80%	57.89	46.51	38.93

Source: World Bank calculation.

Both the project's initial investment ($103,711,577) and the project's load factor (42.17%) are multiplied by 80%, 100%, 20%, respectively; and it is shown that at all scenarios the project is still more expensive than the alternative (36.72$/MWh).

By analyzing the comparative charts above, it can be concluded that the project is additional at all load factors and at all initial investment costs run in the sensitivity analysis.

Hence, since the project financially unattractiveness concluded in Sub-Step2c. has proven to be robust to reasonable variations in the critical assumption, the project is unlikely to be the most financially attractive alternative. Meaning the project is additional under step 2.

Step 3. Barrier Analysis

Sub-step 3 a. Identify barriers that would prevent the implementation of the type of the proposed project activity

Wind power plants projects face barriers that prevent them from being carried out if they are not registered as CDM activities. In particular, the project faced two main barriers: investment barrier, technological barriers and barriers due to prevailing practice.

(a) Technological barrier: The project will be the first large scale wind power plant built to be operating in Mexico. Basically the project will confirm the vast research done on strong wind potential on this region of Oaxaca – this research started some years ago. This research has been enforced by the project developer, who built La Venta I (1.575 MW) small wind power plant demonstrative project in 1994, which is as of today the largest wind power plant in operation in the country and the only one in the IMNG[23].

(b) Barrier due to prevailing practice: Mexico is rich in oil and gas reserves[24]; this clearly explains why the prevailing practice in Mexico is fossil fuel-fired electricity generation as of today, and this path is envisaged to continue, as the country still has a vast gas potential unused for electricity generation, which is to be further explored in the coming years.

National policies are currently fostering the national use of combined cycle plants as can be seen in the following table:

Programming of Installed Capacity Requirements for the IMNG (2006-2013)

[23] There is another wind power plant existent in the country named Wind Power Plant Guerrero Negro of 0.6 MW but this plant does not belong to the IMNG and is even smaller that La Venta I demonstrative project. Guerrero Negro is located in Baja California Sur.
[24] The local price of residual fuel oil in Mexico is approximately 10-12% lower than that in the international market based on the vast oil reserves existent in Mexico, because it is abundant in Mexico.

	2006	2007	2008	2009	2010	2011	2012	2013	Total (MW)	Total (%)
Gas Combined Cycle	2,269	1,168	134	1,517	1,124	1,520	1,586	904	10,222	62%
Renewable	85	754	101	101	126	101	1,001	-	2,269	14%
Coal					700				700	4%
Not Determined							1,248	1,992	3,240	20%
	2,354	1,922	235	1,618	1,950	1,621	3,835	2,896	16,431	100%

Source: World Bank with data provided by CFE – Programming Area.

The document Energy National Program 2001-2006 page 26 affirms that Mexico has the 9th place in oil reserves and the 9th place in natural gas reserves and that the fiscal income strongly depends on the income generated by the oil national industry. In page 76[25] of this document it is stated that only by a growth in the national fossil fuel industry higher than the growth in the gross domestic product, Mexico could avoid the dependency on fuel provisions from abroad. In this sense, the government has a special interest in promoting the fossil fuel potential of the country because it is the directly impacted by the performance of this industry. In page 81[26] of this document it is stated an especially favorable position towards investment in the natural gas industry, among any other source to generate energy.

The large participation of fossil fuel technology in the electricity generation matrix of the IMNG can be seen in the following table (IMNG generation average 2005-2003):

Tech. Part	Tecnology	MWh 2005-2003
15%	Coal	29,664,595
31%	Natural Gas Combined Cycle	60,513,582
0%	Wind	4,957
1%	Geothermal	1,503,031
12%	Hydro	24,146,988
5%	Nuclear	10,166,783
5%	Natural Gas Symple Cycle	9,651,782
1%	Diesel	1,783,210
30%	Residual Fuel Oil	58,554,996
	Total	195,989,924

Source: World Bank using data from CENACE.

As shown in the table above, the renewable energy share in the IMNG is only 18%, and the wind source technology is almost inexistent.

Sub-step 3b. Show how the identified barriers would not prevent the implementation of at least one of the alternatives: The two identified barriers that the project faced will not prevent the alternative: "implement the project as a natural gas-fired power plant" (alternative 2) and "not implementing any power generation project" (alternative 3).

(b) Technological barrier (Barrier 2)

(b.1.) Does not prevent Alternative 2: There is vast experience in Natural gas–fired combined cycle power plant (Alternative 2) and this technology has a higher market share in the country.

(b.2) Does not prevent Alternative 3: Technological complexities would not prevent inactivity or "not implementing any power generation project" but on the contrary it would foster this alternative for the sponsor.

[25] Under Objective 1 of the Energy Sector Program 2001-2006: Secure a sufficient provision of energy at international standards and competitive prices counting with energy companies: public and private with world class.

[26] Under Objective 3 of the Energy Sector Program 2001-2006: Promote the participation of Mexican enterprises in energy infrastructure projects.

(c) Barrier due to prevailing practice (Barrier 3):

(c.1.) Does not prevent Alternative 2: In fact natural gas-fired combined cycle power plants (Alternative 2) are foreseen to be the most attractive technology to be used in the IMNG in the coming years, and fossil fuel fired power plant in general is the widely spread technology existent in the IMNG already.

(c.2) Does not prevent Alternative 3: There are no penalties to "not investing" (Alternative 3), thus this alternative does not face any barrier.

Since the Alternatives are affected less strongly/not prevented by the identified barriers that the project has to faced, they are viable alternatives and should not be eliminated from consideration.

Two barriers have been identified that would prevent the implementation of this type of proposed project activity (wind power plants) but did not prevent/affect less strongly at least one of the alternatives identified; consequently, the project is additional under Step 3.

Step 4. Common Practice Analysis:

Sub-step 4a. Analyze other activities similar to the proposed project activity[27]

The only two wind power plants existing in the country is grid-connected La Venta I (1.575 MW) and off-grid Guerrero Negro (0.6 MW). Fossil fuel technology in the country is widely-spread, and combined cycle natural gas fired power plants are the preferable choice for the future, as it presents the highest net efficiency conversion among fossil fuel technologies available in the country.

Sub-step 4b. Discuss any similar options that are occurring[28]

No similar activities (wind power plants) are occurring without Carbon Finance help. The project will be the first large scale wind power plant to be built and to be operating in the IMNG.

Under Sub-Steps 4a and 4b, the claim that the proposed activity is common practice is not called into question. Thus, the project is not common practice but a very unusual occurrence that endangered its existence without attaining CDM Status. Meaning the project is additional under Step 4.

Step 5. Impact of CDM Registration

CDM registration will alleviate the financial hurdles of the project (**Step 2. Investment analysis)** since it would provide risk-free revenue[29], attached to the project's annual generation. The CERs revenues were used to offset the project's investment costs by about 10.2%, decreasing the project's levelized cost by about 8.2%. The sponsor considered the impact of CDM revenues very important for the project's financial viability.

As of today, taking a credible CERs price of $7.23 per tCO_2e[30] - CERs revenues could improve the project's financial gap by $4.52/MWh[31] or by 24% as follow:

[27] Analysis avoids CDM projects.
[28] Analysis avoids CDM projects.
[29] Except for CDM risk.
[30] Reference: State and Trends of Carbon Market 2006.
[31] (55.43-36.72)-(50.90-36.72)=$4.52/MWh.

The Project Levelized Cost with and without CERs revenues

Impact:	Without CERs	With CERs
Levelized Cost - Project	55.43	50.90
Levelized Cost Alternative Natural Gas Fired combined Cycle Plant	36.72	36.72
Difference w/o CERs	18.71	
Difference w CERs		14.18
Improvement	-24%	(4.52)

Source: Calculations are own production based on Investment Analysis.

As shown in the analysis, CDM registration alleviates the financial hurdles faced by the project as it impacts its levelized cost and thus alleviates the barriers faced by it, as well.

Since the approval and registration of the project as a CDM activity alleviate the economic and financial hurdles (Step 2) and other identified barriers (Step 3) to a reasonable extent, it is concluded that the project is additional under Step 5.

Because all of the above steps were satisfied, the CDM project activity is not the baseline scenario, meaning the project is additional.

B.6. Emission reductions:

B.6.1. Explanation of methodological choices:

ACM0002-Version 6 was selected for the project.

The build margin was based on the latest 20% built of power plant in generation because such sample was grater than the latest 5 power plants built in the system. The OM selected is the Simple Operating Margin Emission Factor because data for the Dispatch Data Analysis OM is not publicly available and the IMNG has less than 50% of low-cost/must-run plants since decades ago. The weights of 75% and 25% for the OM and the BM respectively were taken given that they are the default weight values for wind power plants as the project is.

B.6.2. Data and parameters that are available at validation:

(Copy this table for each data and parameter)

Data / Parameter:	
Data unit:	CM.
Description:	Combined Margin.
Source of data used:	CENACE, CFE (Generation, Programming Unit).
Value applied:	0.62570 tCO2/MWh.
Justification of the choice of data or description of measurement methods and procedures actually applied :	ACM0002 was applied to obtain the CM to be fixed ex-ante for the first crediting period. Data used for the generation was provided by CENACE; data for the net efficiency conversions was taken from information system software (Generation Unit) and official internal reports (Programming Unit) –weighted average NECs per fuel type were provided for the baseline calculation and DOE checked individual NECs per power unit and agreed with conservatism of the baseline calculation.
Any comment:	CM will be fixed ex-ante and will not need to be monitored/verified after the time of validation.

B.6.3 Ex-ante calculation of emission reductions:

Ex-ante OM = 0.70033 tCO2/MWh.
Ex-ante BM = 0.40185 tCO2/MWh.

Ex-ante CM = 0.62570 tCO2/MWh.
The annual project ERs estimated are: 192,545 tCO2e or ERs; and for the duration of the first crediting period 1,347,815 tCO2e or ERs[32].

B.6.4 Summary of the ex-ante estimation of emission reductions:

The margins calculation was performed by the following steps:

Step 1: Calculation of the ex-ante OM
The Simple OM is the generation-weighted average emission per electricity unit (tCO2/MWh) of all generation sources serving the system, not including low-operating cost and must run power plants, and was calculated as follow:

EF_OMy = Sumproduct [Fi,j,y*COEF]/Sum Generationj,y

where j refers to power sources, i refers to the fuel used, and y to the year in which actual ERs occur, and j does not take into consideration low-cost/must-run resources. Following the methodology, for the project, the COEF of imports should be zero and exports should not be discounted from the generation data. As the margin is fixed ex-ante, the calculation takes into account latest 3 years of data publicly available.

Step 2: Calculation of the ex-ante BM
The BM is defined as the generation-weighted average emission factor (tCO_2/MWh) of a sample of power plants. Such sample should be composed by either the 5 most recently built plants or the plants whose aggregated generation comprises the most recent 20% of the IMNG generation in the year of project generation occurrence, whichever group's generation is greater[33] – both lists should exclude CDM-Status plants. The methodology, gives 2 options for the calculation of the BM. The first option was selected – this option required the BM to be calculated ex-ante based on the most recent information at the time of PDD submission[34]. Imports are considered a build margin source with COEF equal to zero, since these imports come from other countries[35].

The BM was calculated ex-ante by applying to the selected sample the following formula:
EF_BMy (tCO2/MWh) = [∑i,m(Fi,m,y) x (COEFi,m)] / [∑mGENm,y];
m = plants of the selected sample, F = their annual generation in MWh, COEF = their tCO2/MWh factor, GEN= total sample's annual generation, i=technology.

Step 3: Calculation of the ex-ante CM
Following the methodology, the baseline emission factor is the CM calculated as the weighted average of the OM and the BM as follows:
$CM= w_{OM} \times OM + w_{BM} \times BM$
OM and the BM ex-ante calculation were based on most recent data available at the time of PDD submission.

[32] The calculations of the margins can be seen in B.6.4.
[33] The latest 20% added in generation to the IMNG was taken for the project's BM estimation, as this sample was larger in generation than the 5 most recent added power plants to the IMNG.
[34] 2005 generation data. Only 2005 generation data was taken because the latest 20% added to the IMNG comprises power plants that did not operate in 2004 or 2003, so a 3-year average of their generation would be biased.
[35] There is no connection between any isolated system within Mexico and the IMNG. As of today Mexico exchanges electricity with Belize and USA only. In the future, Mexico will exchange electricity with other Central American countries. The interconnection of the IMNG with the Central American Interconnection System ("*SIEPAC)"* is programmed to occur in January 2008. This will enable the exchange of electricity between Mexico and the rest of Central America through Guatemala. The transmission line Tapachula-Los Brillantes (400 KV) is the only transmission line that will use Mexico to connect with SIEPAC.

The w_{OM} and w_{BM} by default for wind-power plants according to the methodology, are 0.75 and 0.25, respectively; because of their intermittent and non-dispatchable nature.

Step 4: Calculation of the project's ERs prior to validation.
ERs per year for the project are to be calculated ex-post annually from the following multiplication: Baseline emissions (tCO2e) = ex-ante CM x (annual project generation in MWh) = ERs per year (tCO2e).

The estimated ERs per year for the first crediting period equal 192,545 tCO2/yr[36] times seven, which is equal to 1,347,815 tCO2 or estimated ERs.

Year	Estimation of project activity emission reductions (tCO2e)	Estimation of baseline emissions reductions (tCO2e)	Estimation of leakage (tCO2e)	Estimation of overall emission reduction (tCO2e)
2007[37]	0	96,272.5	0	96,272.5
2008	0	192,545	0	192,545
2009	0	192,545	0	192,545
2010	0	192,545	0	192,545
2011	0	192,545	0	192,545
2012	0	192,545	0	192,545
2013	0	192,545	0	192,545
2014[38]	0	96,272.5	0	96,272.5
Total (tCO2e)	0	1,347,815	0	1,347,815

B.7 Application of the monitoring methodology and description of the monitoring plan:

B.7.1 Data and parameters monitored:

(Copy this table for each data and parameter)

Data / Parameter:	
Data unit:	MWh.
Description:	Energy dispatched to the IMNG.
Source of data to be used:	CENACE
Value of data applied for the purpose of calculating expected emission reductions in section B.5	307,728
Description of measurement methods and procedures to be applied:	Electricity meters installed complying with country regulations; records double checked with receipt of sales.

[36] All margins were rounded to the fifth decimal, but the CERs per year were rounded down to the nearest integer.
[37] From 01/07/2007 (estimated date of registration) up to 31/12/2007.
[38] From 01/01/2014 up to 30/06/2014.

QA/QC procedures to be applied:	No especial monitoring equipment is needed. The sponsor will count with a monitoring plan and pre-programmed spreadsheets so the sponsor will just need to collect the information as described and apply the formula as directed in the monitoring plan. The Dispatch Center named *Centro Nacional de Control de Energía* ("*CENACE*") will be the only data provider for the project generation data. Although *CENACE* belongs to CFE (the project sponsor), it has independence on its procedures, own legislation and an international standards quality certification achieved. The project staff designated will confirm the data (only variable to be monitored is the electricity generated by the project dispatched to the grid) with own records and own records will be double checked with sales receipts.
Any comment:	N/A.

B.7.2 Description of the monitoring plan:

The monitoring plan consists of the following three items:

I. Emissions Reductions Calculation Procedure ("ERCP")

The data's year for the ERs monitoring is the year of project generation: July 1st-June 30th[39]. La Venta II project ERCP consists of 1 spreadsheet organized as follows:

-Worksheet #1: The Baseline Emission Factor is fixed ex-ante for the first crediting period and thus ERs depend only on the multiplication of the fixed baseline emission factor ("CM") calculated in this document to be 0.62570 tCO2/MWh times the project generation in the year – this is to be calculated by the ERCP Manager.

Worksheet#1

CEF:
0.62570 tCO2/MWh

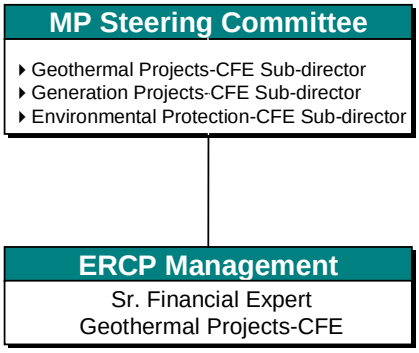
Date-time	La Venta II Generation (MWh): Provided by CENACE	La Venta II Generation (MWh): Checked by Project Developer	La Venta II ERs (tCO2e)
01/07/2007 0:15	0.00	0.00	0.00
...	...	...	...
31/12/2007 24:00	0.00	0.00	0.00
Total 1rst year of the Crediting Period		**0.00**	**0.00**

[39]Please note that: The project is not claiming for retroactive credits so, the crediting period will start only after the date of registration (estimated to be on July 1st, 2007 - as indicated in section C of the PDD).

II. The ERCP Organizational Structure and the ERCP Quality Assurance and Control Procedure

Monitoring Plan (MP) – Emissions Reductions Calculation Procedure

ERCP Organizational Structure



Source: World Bank production with responsibilities accorded with the sponsor.

Monitoring Plan (MP) – Emissions Reductions Calculation Procedure
ERCP Quality Control

Data	**The project generation data.** **Make coordination with CENACE to be able to implement this document.** **Check calibration of electricity meters, periodically.**
Quality of Data Collection	Which data comes? The above By what means does it come? By E-mail/ CD How does it come? In Excel How frequently does it come? Yearly From whom does it come? From *CENACE* To whom does it comes? ERCP Manager
Quality of Data Processing	Original Data Organized Data Entered Data Processed Data Result
Quality of Data Storage	Prevent Excel versioning problem, by keeping "a new" Excel software package. Keep all data for 2 years after the first crediting period (9 years). Save the ERCP file with the last date in which an alteration was made. Keep all written documentation in a folder.
Quality of Data Delivery	Provide to the verifier e-mails /CD through which the data provider (*CENACE*) delivered the original data Provide to the verifier receipt of sales to final clients Provide to the verifier all calculations made (all steps of data processing) by showing all preliminary versions of spreadsheets saved in disk

Source: World Bank Production.

III. Environmental and Social Monitoring

The DOE will have access to the reporting of the *Programa de Vigilancia Ambiental* established on the Environmental Authorization granted by SEMARNAT. The *Programa de Vigilancia Ambiental* includes mitigation measures in reforestation, animal rescue and protection programs (including these for birds), air quality monitoring and periodical collection of waste.

Additionally, the DOE will have access to the reporting of the social commitments with Ejido La Venta, established at the sponsor own initiative and supported in Act signed as of December 12th, 2005.

B.8 Date of completion of the application of the baseline study and monitoring methodology and the name of the responsible person(s)/entity(ies)

The baseline study and monitoring methodology were completed on 30/01/2006 on behalf of The Spanish Carbon Fund by:
Ms. Paola C. Solidoro
World Bank Consultant
The World Bank Carbon Finance Business Unit.
E-mail: psolidoro@worldbank.org
The Spanish Carbon Fund is also a project participant listed in annex 1 of this document.

SECTION C. Duration of the project activity / crediting period

C.1 Duration of the project activity:

C.1.1. Starting date of the project activity:

09/09/2005 (DD/MM/YYYY).

C.1.2. Expected operational lifetime of the project activity:

21y-0m.

C.2 Choice of the crediting period and related information:

C.2.1. Renewable crediting period

C.2.1.1. Starting date of the first crediting period:

01/07/2007 (DD/MM/YYYY).

C.2.1.2. Length of the first crediting period:

7y-0m.

C.2.2. Fixed crediting period:

C.2.2.1. Starting date:

N/A

C.2.2.2. Length:

N/A

SECTION D. Environmental impacts

D.1. Documentation on the analysis of the environmental impacts, including transboundary impacts:

An Environmental Impact Assessment ("EIA") was a legal requirement for the project. Under article 5, fraction 5, bullet I of the General Law of Ecologic Equilibrium and Environmental Protection-Ruling in Environmental Impact, any wind power plant developer should previously ask authorization to *SEMARNAT* (*Dirección General de Impacto y Riesgo Ambiental*) in regards to environmental impacts.

The environmental authorization for the project given by *SEMARNAT* date as of July 29th, 2004 and is granted upon compliance with 17 terms[40] and 5 conditions that belong to the 6th term – being the first condition: To elaborate and apply a monitoring program named "*Programa de Vigilancia Ambiental"*.

Note that the EIA and Environmental Authorization referred above are for the project with 100 MW capacity; later on, amendments/extensions to the EIA and to the Environmental Authorization were granted for the project of 83.3MW capacity. The project's EIA and is following updates are made available to the designated operational entity ("DOE")[41]. The firm that performed the EIA was *Instituto de Ecología, Asociación.Civil ("AC"),* a recognized national environmental firm.

D.2. If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party:

On the environmental authorization granted to the project, *SEMARNAT* declared that the environmental impacts of the project can be partially or completely mitigated thus not causing an ecological disequilibrium, and so are not significant. *SEMARNAT* added that the project will be in line with the Ecologic Equilibrium and Environmental Protection General Law ("EEEPGL")-Ruling in Environmental Impact.

Potential negative environmental impacts identified in the EIA were basically three:

-Bird and bats population endangered (most important environmental problem).
-Land clearing occasioning loss in fauna and in flora.
-Change in the scenery.

The potential negative social impact identified was basically one:

-Land deforestation occasioned by the project will provoke the loss of terrain for agriculture which will affect negatively the economy of the owners of such land[42].

Each potential impact identified in the EIA counts with a mitigation measure which the sponsor is keen to abide to. Note that Article 15 of the EEEPGL-Ruling states that the project developer is in the obligation of repairing, preventing or minimizing any environmental impacts of the project, assuming the totality of the costs incurred for this obligation.

The environmental monitoring program named *Programa de Vigilancia Ambiental* along with a set of terms and conditions established by *SEMARNAT* on the Environmental Authorization, will be monitored by The *Procuraduria Federal de Protección Ambiental* ("PROFEPA").

Additionally, the World Bank and CFE agreed on specific Environmental and Social Monitoring Programs for the project: *The "Manual de Vigilancia de la Fauna (Aves y Quirópteros) en la zona de influencia de la central eólica la Venta II, municipio de Juchitán*- Oaxaca" and the "Indigenous People Development Program for La Venta II", respectively.

SECTION E. Stakeholders' comments

[40] Which define the characteristics of the plant, to which the authorization is being granted.
[41] Changes to the project conditions were updated i.e. The total impacted area defined in the updated EIA/Environmental Authorization for the project of 83.3MW is 949.84 hectares.
[42] Note that land owners affected will be paid an annual rent accorded with the sponsor.

E.1. Brief description how comments by local stakeholders have been invited and compiled:

The local stakeholders identified are the habitants of Ejido or locality La Venta[43]. No houses are located within 200 m distance from the WTG. Habitants of Ejido La Venta were interviewed as part of the EIA performed by *Instituto de Ecología, Asociación.Civil*. Comments were raised through various field research campaigns organized.

E.2. Summary of the comments received:

The project has been positively accepted by Ejido La Venta, as per Act signed as of July 18th, 2004. The comments received referred basically to the following questions:

-Request for more information about the area to be affected by the project

-Request for information on who was going to be responsible for damages that the project could generate.

- Request for information on what would be the benefits of the project.

- Request that benefits be for all communities surrounding the project not only for the ones which terrain is directed affected by the project.

No other major comments or questions were received as reported in the local stakeholders' consultation of the EIA.

In addition, the sponsor visited the principal authorities of the Ejido La Venta, to inform them about the project and in such actions received the following list of requests for the Ejido:

-Pavement Streets.
-Computers
-Vehicles
-Improvements to the local school.
-Free electricity service

Among a larger list of similar requests - not directly related with the project.

The sponsor recommended that the Ejido La Venta formalize such requests through a letter. From this point in time, the Social Development Area of CFE took charge on dealing with these requests.

E.3. Report on how due account was taken of any comments received:

On regards to the information requested: The sponsor responded all information requests raised by local stakeholders described in G.2 through the meetings with the authorities of Ejido La Venta.

On regards to the social actions requested: The sponsor has opened a trust of 7,834,000 Mexican Pesos (783,400 US Dollars) to be spent in a social agenda agreed with the Ejido La Venta upon Act signed on December 12th, 2005. The social actions accorded to be covered by this budget are the following:

-A classroom for the local science and technology college of Oaxaca.
-Acquisition of computer(s) for the local school.
-Offices for the Ejido "house" or meeting room.
-Pavement of one street of the Ejido.
-Public electrification.
-Leveling of parcels that are within the area of direct impact of the project (where the WTG would be placed) named "*polígono de influencia*".

Other commitments of CFE with La Venta project are the following:

[43] 1,814 habitants, closest locality to the project site.

-Pay applicable indemnizations in time, and annual rent to land owners affected by the project.
-Restrict the activities of construction and assembling to avoid affecting additional land and/or agricultural land.
-Give training and promote the environmental consciousness among workers to facilitate the implementation of proper environmental measures.

Annex 1
CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

Organization:	*Comisión Federal de Electricidad*
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Country:	Mexico
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FAX:	
E-Mail:	
URL:	
Represented by:	
Title:	Chief Executive
Salutation:	Mr.
Last Name:	Aguinaco
Middle Name:	
First Name:	Vicente
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Organization:	The Spanish Carbon Fund
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Represented by:	
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Direct FAX:	
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Annex 2
INFORMATION REGARDING PUBLIC FUNDING

N/A

Annex 3
BASELINE INFORMATION

Margins Calculation:

Simple OM ex-ante:

Tech. Part	Tecnology	MWh 2005-2003	NEC	TJ	C	O	tCO2/tC	tCO2e
15%	Coal	29,664,595	33.05%	323,172	25.8	0.98	3.67	29,960,588
31%	Natural Gas Combined Cycle	60,513,582	45.85%	475,125	14.5	0.995	3.67	25,134,510
0%	Wind	4,957	0.00%	-	0	0	3.67	-
1%	Geothermal	1,503,031	0.00%	-	0	0	3.67	-
12%	Hydro	24,146,988	0.00%	-	0	0	3.67	-
5%	Nuclear	10,166,783	0.00%	-	0	0	3.67	-
5%	Natural Gas Symple Cycle	9,651,782	28.96%	119,977	14.5	0.995	3.67	6,346,893
1%	Diesel	1,783,210	26.10%	24,599	20.2	0.99	3.67	1,803,753
30%	Residual Fuel Oil	58,554,996	33.00%	638,843	21.1	0.99	3.67	48,930,938
	Total	195,989,924						
	Low-Cost/Must-Run	35,821,759						
	Total - Low Cost Must Run	160,168,165						112,176,682
	Imports	7,427.2						
	OM=	**0.70033**						

Source: World Bank Production with data provided by CENACE, and NECs and fossil fuels provided by the sponsor[44].

[44] Average 2005 NECs per technology were obtained using detailed data from CFE internal reports.

Plants included in the OM Calculation: Plant & unit name, technology, annual generation (MWh).

Fossil Fuel Detail	Plant Name	Unit	Technology	Annual Generation 2005	Annual Generation 2004	Annual Generation 2003
	Río Escondido	U1	coal	2,149,897	2,242,784	2,193,775
	Río Escondido	U2	coal	2,458,967	1,911,467	2,201,261
	Río Escondido	U3	coal	2,351,974	2,457,964	1,931,257
	Río Escondido	U4	coal	2,396,421	2,386,902	2,060,863
	coal Dos	U1	coal	2,563,103	2,185,490	2,251,116
	coal Dos	U2	coal	1,912,435	2,397,406	2,004,945
	coal Dos	U3	coal	2,467,998	1,913,939	2,092,666
	coal Dos	U4	coal	2,079,486	2,387,308	1,945,318
	Tula cc	U1	natural gas cc	392,570	433,312	403,972
	Tula cc	U2	natural gas cc	276,807	483,133	397,370
	Tula cc	U5	natural gas cc	454,690	350,140	515,344
	Tula cc	U3	natural gas cc	542,923	738,651	571,097
	Tula cc	U4	natural gas cc	549,377	422,093	528,452
	Tula cc	U6	natural gas cc	744,902	561,591	751,572
	Valle de México cc	U4	natural gas cc	1,608,566	819,021	-
	Valle de México cc	U5	natural gas cc	564,266	249,388	-
	Valle de México cc	U6	natural gas cc	571,084	163,348	-
	Valle de México cc	U7	natural gas cc	474,492	258,613	-
	Huinalá	U1	natural gas cc	175,122	239,253	217,804
	Huinalá	U2	natural gas cc	104,676	206,500	281,065
	Huinalá	U3	natural gas cc	82,541	170,884	279,521
	Huinalá	U4	natural gas cc	247,341	306,210	293,500
	Huinalá	U5	natural gas cc	276,040	409,581	488,271
	Huinalá dos	U1	natural gas cc	1,466,028	1,000,176	1,363,559
	Huinalá dos	U2	natural gas cc	1,340,278	1,006,600	1,326,148
	Samalayuca dos	U3	natural gas cc	324,833	837,021	809,695
	Samalayuca dos	U4	natural gas cc	182,448	453,570	457,022
	Samalayuca dos	U5	natural gas cc	838,668	757,801	781,911
	Samalayuca dos	U6	natural gas cc	458,297	412,595	447,124
	Samalayuca dos	U7	natural gas cc	832,901	907,715	635,454
	Samalayuca dos	U8	natural gas cc	459,504	484,313	354,625
	Gómez Palacio	U1	natural gas cc	369	287,364	114,577
	Gómez Palacio	U2	natural gas cc	146,176	195,358	357,204
	Gómez Palacio	U3	natural gas cc	43,502	274,228	248,999
	El Encino	U1	natural gas cc	952,643	659,200	860,398
	El Encino	U2	natural gas cc	970,336	665,911	835,365
	El Encino	U3	natural gas cc	996,553	679,827	897,210
	El Sauz	U1	natural gas cc	150,582	167,746	184,255
	El Sauz	U2	natural gas cc	143,746	143,009	188,566
	El Sauz	U3	natural gas cc	169,059	189,464	168,564
	El Sauz	U4	natural gas cc	190,980	204,136	183,532
	El Sauz	U5	natural gas cc	803,112	833,866	273,227
	El Sauz	U6	natural gas cc	886,658	786,950	279,168
	El Sauz	U7	natural gas cc	849,204	814,110	1,111,451
	Dos Bocas cc	U1	natural gas cc	366,590	459,639	481,509
	Dos Bocas cc	U2	natural gas cc	337,597	483,576	421,339
	Dos Bocas cc	U5	natural gas cc	394,911	711,977	631,504
	Dos Bocas cc	U3	natural gas cc	489,050	401,353	494,536
	Dos Bocas cc	U4	natural gas cc	423,744	433,194	391,411
	Dos Bocas cc	U6	natural gas cc	652,673	596,508	592,889
34.44%	**Valladolid cc**	**U3**	**natural gas cc**	348,410	369,315	454,350
diesel	**Valladolid cc**	**U4**	**natural gas cc**	315,684	320,014	465,262
65.56%	**Valladolid cc**	**U5**	**natural gas cc**	383,027	411,548	403,035
	Petacalco	U1	dual-mainly coal	1,932,682	1,141,470	2,246,781
	Petacalco	U2	dual-mainly coal	2,463,054	1,860,756	2,220,118
	Petacalco	U3	dual-mainly coal	2,591,692	1,133,097	2,439,832
	Petacalco	U4	dual-mainly coal	2,573,540	1,177,396	2,559,012
	Petacalco	U5	dual-mainly coal	2,535,981	1,170,644	1,882,811
	Petacalco	U6	dual-mainly coal	2,178,165	1,431,917	2,510,097
	wind La Venta	U1	wind	722	884	797
	wind La Venta	U2	wind	579	864	811
	wind La Venta	U3	wind	717	925	779
	wind La Venta	U4	wind	621	899	731
	wind La Venta	U5	wind	632	899	749
	wind La Venta	U6	wind	571	655	358
	wind La Venta	U7	wind	488	447	746
	Los Azufres	U2	geothermal	43,702	39,282	43,900

Fossil Fuel Detail	Plant Name	Unit	Technology	Annual Generation 2005	Annual Generation 2004	Annual Generation 2003
	Los Azufres	U3	geothermal	37,080	29,960	29,691
	Los Azufres	U4	geothermal	43,289	44,002	41,495
	Los Azufres	U5	geothermal	41,472	40,694	19,672
	Los Azufres	U6	geothermal	40,222	36,880	43,785
	Los Azufres	U7	geothermal	392,792	367,090	162,838
	Los Azufres	U8	geothermal	0		0
	Los Azufres	U9	geothermal	32,271	38,123	30,526
	Los Azufres	U10	geothermal	43,633	39,195	35,047
	Los Azufres	U11	geothermal	3,334	4,265	4,550
	Los Azufres	U12	geothermal	5,443	230	0
	Los Azufres	U13	geothermal	128,743	169,614	131,745
	Los Azufres	U14	geothermal	212,044	176,280	87,774
	Los Azufres	U15	geothermal	215,624	185,759	123,236
	Los Azufres	U16	geothermal	209,595	164,775	97,475
	Los Humeros	U1	geothermal	41,547	41,760	40,888
	Los Humeros	U2	geothermal	41,326	42,313	42,210
	Los Humeros	U3	geothermal	41,576	42,448	43,862
	Los Humeros	U4	geothermal	40,071	41,236	34,569
	Los Humeros	U5	geothermal	42,133	42,750	42,217
	Los Humeros	U6	geothermal	42,440	42,484	41,909
	Los Humeros	U7	geothermal	42,440	42,046	39,741
	Infiernillo	U1	hydro	334,957	574,814	510,121
	Infiernillo	U2	hydro	496,210	454,491	510,101
	Infiernillo	U3	hydro	490,877	531,177	431,836
	Infiernillo	U4	hydro	483,456	562,220	586,337
	Infiernillo	U5	hydro	464,856	674,036	510,322
	Infiernillo	U6	hydro	478,258	672,137	604,540
	La Villita	U1	hydro	337,558	417,042	350,429
	La Villita	U2	hydro	219,743	311,431	218,674
	La Villita	U3	hydro	345,661	393,766	354,151
	La Villita	U4	hydro	241,868	300,295	247,427
	Ixtapantongo	U1	hydro	0	0	0
	Ixtapantongo	U2	hydro	0	0	0
	Ixtapantongo	U3	hydro	0	0	0
	Santa Bárbara	U1	hydro	33,675	33,166	22,538
	Santa Bárbara	U2	hydro	0	0	0
	Santa Bárbara	U3	hydro	10,720	54,051	23,439
	Durazno	U1	hydro	0	0	0
	Tingambato	U1	hydro	0	0	0
	Tingambato	U2	hydro	0	48,570	39,035
	Tingambato	U3	hydro	52,930	0	0
	Micos	U2	hydro	1,424	1,058	901
	Micos	U3	hydro	1,109	2,072	1,811
	EL Salto	U1	hydro	73,659	41,715	44,897
	Falcón	U1	hydro	12,592	3,173	5,231
	Falcón	U2	hydro	18,021	2,442	9,129
	Falcón	U3	hydro	26,997	10,937	12,971
	Electroquímica	U1	hydro	9,039	9,486	9,254
	La Amistad	U1	hydro	27,342	232	9,737
	La Amistad	U2	hydro	81,497	2,724	14,653
	Novillo	U1	hydro	121,850	58,578	1,832
	Novillo	U2	hydro	95,987	38,950	448
	Novillo	U3	hydro	187,433	76,343	55,644
	Humaya	U1	hydro	194,773	73,030	25,700
	Humaya	U2	hydro	198,798	67,788	29,807
	El Fuerte	U1	hydro	114,231	50,063	42,521
	El Fuerte	U2	hydro	150,451	45,468	46,963
	El Fuerte	U3	hydro	86,613	17,276	21,392
	Oviachic	U1	hydro	28,448	12,801	15,604
	Oviachic	U2	hydro	32,382	12,603	15,300
	Sanalona	U1	hydro	39,994	22,441	14,486
	Sanalona	U2	hydro	37,227	23,627	14,556
	Bacurato	U1	hydro	205,757	64,839	27,518
	Bacurato	U2	hydro	197,567	66,127	45,103
	Comedero	U1	hydro	110,880	86,728	45,333
	Comedero	U2	hydro	89,370	49,753	54,003
	Huites	U1	hydro	581,240	290,896	199,591
	Huites	U2	hydro	582,870	318,629	153,526
	Mocuzari	U1	hydro	59,217	31,262	28,758
	Boquilla	U1	hydro	3,003	1,798	5,426

Fossil Fuel Detail	Plant Name	Unit	Technology	Annual Generation 2005	Annual Generation 2004	Annual Generation 2003
	Boquilla	U2	hydro	21,930	4,834	6,558
	Boquilla	U3	hydro	11,218	3,551	7,423
	Boquilla	U4	hydro	9,701	0	3,905
	Colina	U1	hydro	6,277	3,657	5,656
	Itzicuaro	U1	hydro	2,053	2,094	2,118
	Itzicuaro	U2	hydro	2,393	2,309	2,037
	Bartolinas	U1	hydro	905	467	1,279
	Bartolinas	U2	hydro	1,729	2,056	960
	Tirio	U2	hydro	64	163	286
	Tirio	U3	hydro	38	219	302
	Tirio	U4	hydro	2,902	2,578	2,618
	Zimapán	U1	hydro	633,192	865,038	472,928
	Zimapán	U2	hydro	639,770	821,638	511,730
	Aguaprieta	U1	hydro	91,674	123,044	103,519
	Aguaprieta	U2	hydro	91,038	126,308	106,873
	Cupatitzio	U1	hydro	199,986	215,398	181,483
	Cupatitzio	U2	hydro	203,897	215,632	205,680
	Cobano	U1	hydro	110,213	78,724	136,330
	Cobano	U2	hydro	105,078	171,247	104,703
	Intermedia	U1	hydro	6,414	10,540	9,391
	San Pedro Porúas	U1	hydro	5,497	5,970	5,522
	San Pedro Porúas	U3	hydro	120	40	229
	Zumpimito	U1	hydro	1,988	4,719	3,929
	Zumpimito	U2	hydro	3,878	4,418	4,724
	Zumpimito	U3	hydro	15,155	16,362	15,661
	Zumpimito	U4	hydro	15,805	18,244	16,501
	Aguamilpa	U1	hydro	419,587	822,078	724,612
	Aguamilpa	U2	hydro	470,437	707,761	692,161
	Aguamilpa	U3	hydro	463,056	915,163	643,980
	Las Rosas	U4	hydro	0	0	0
	Colimilla	U1	hydro	8,299	0	8,749
	Colimilla	U2	hydro	9,218	25,789	3,435
	Colimilla	U3	hydro	10,912	73	7,427
	Colimilla	U4	hydro	13,089	31,804	8,527
	Juntas	U1	hydro	0	0	2,890
	Juntas	U2	hydro	0	0	3,642
	Juntas	U3	hydro	0	597	2,382
	Santa Rosa	U1	hydro	107,207	145,842	110,688
	Santa Rosa	U2	hydro	98,411	145,567	156,042
	Jumatán	U1	hydro	408	689	844
	Jumatán	U2	hydro	828	895	981
	Jumatán	U3	hydro	1,967	2,958	3,515
	Jumatán	U4	hydro	5,679	5,829	5,057
	Platanal	U1	hydro	40,632	40,103	31,256
	Platanal	U2	hydro	7,667	12,662	13,285
	Botello	U1	hydro	21,216	27,177	31,853
	Botello	U2	hydro	39,999	23,380	24,673
	Puente Grande	U1	hydro	0	638	967
	Puente Grande	U2	hydro	0	820	39
	Puente Grande	U3	hydro	423	1,329	631
	Puente Grande	U5	hydro	18,469	21,866	14,938
	La Venta	U1	hydro	21,786	27,663	28,789
	La Venta	U2	hydro	31,696	34,100	22,977
	La Venta	U3	hydro	29,892	25,768	26,193
	La Venta	U4	hydro	31,475	35,816	30,896
	La Venta	U5	hydro	27,709	35,591	34,865
	Ixtaczoquitlán	U1	hydro	3,269	-	-
	Ixtaczoquitlán	U3	hydro	323	2,606	2,047
	Ixtaczoquitlán	U4	hydro	244	2,160	2,261
	Tamazulapan	U1	hydro	1,658	4,516	4,754
	Tamazulapan	U2	hydro	4,931	3,092	2,997
	Texolo	U1	hydro	5,094	5,426	4,010
	Texolo	U2	hydro	6,079	5,987	5,037
	Portezuelo dos	U1	hydro			
	Portezuelo dos	U2	hydro	4,315	2,602	3,967
	Portezuelo uno	U1	hydro	3,440	3,126	4,202
	Portezuelo uno	U2	hydro	3,786	3,360	4,278
	Portezuelo uno	U3	hydro	3,573	2,738	3,690
	Portezuelo uno	U4	hydro	0.0		
	Huazuntlán	U1	hydro	0.0	0	0

Fossil Fuel Detail	Plant Name	Unit	Technology	Annual Generation 2005	Annual Generation 2004	Annual Generation 2003
	Mazatepec	U1	hydro	114,983	149,712	136,316
	Mazatepec	U2	hydro	91,397	145,595	145,242
	Mazatepec	U3	hydro	107,336	149,197	146,047
	Mazatepec	U4	hydro	100,908	132,308	120,402
	Schpoiná	U1	hydro	2,449	1,148	1,744
	Schpoiná	U2	hydro	2,718	1,208	1,598
	Schpoiná	U3	hydro	5,854	5,681	6,002
	Cecilio del Valle	U2	hydro	26,265	27,562	32,734
	Cecilio del Valle	U3	hydro	25,941	29,576	30,345
	Cecilio del Valle	U4	hydro	22,576	27,601	30,119
	Colotlipa	U1	hydro	8,313	5,940	7,202
	Colotlipa	U2	hydro	8,862	8,317	7,489
	Colotlipa	U3	hydro	8,458	8,091	5,802
	Colotlipa	U4	hydro	7,173	8,099	7,361
	Peñitas	U1	hydro	350,876	259,636	296,480
	Peñitas	U2	hydro	344,065	256,843	256,647
	Peñitas	U3	hydro	304,928	342,484	201,187
	Peñitas	U4	hydro	374,161	383,896	194,372
	Angostura	U1	hydro	397,831	164,917	130,926
	Angostura	U2	hydro	486,482	179,179	73,488
	Angostura	U3	hydro	508,922	420,265	151,506
	Angostura	U4	hydro	522,616	289,353	175,612
	Angostura	U5	hydro	499,405	304,094	137,919
	Chilapan	U1	hydro	19,713	21,995	20,706
	Chilapan	U2	hydro	29,878	24,980	14,526
	Chilapan	U3	hydro	41,836	38,216	26,541
	Chilapan	U4	hydro	32,486	27,599	27,052
	Malpaso	U1	hydro	509,060	227,261	155,245
	Malpaso	U2	hydro	547,362	416,142	354,405
	Malpaso	U3	hydro	341,068	545,146	481,163
	Malpaso	U4	hydro	540,910	683,581	178,803
	Malpaso	U5	hydro	456,031	304,953	186,429
	Malpaso	U6	hydro	467,761	172,289	153,081
	Tepazolco	U1	hydro	0	0	0
	Tepazolco	U2	hydro	0	0	0
	Caracol	U1	hydro	275,440	519,015	447,769
	Caracol	U2	hydro	367,648	506,630	470,609
	Caracol	U3	hydro	207,394	322,325	450,516
	Temascal	U1	hydro	164,114	138,192	119,814
	Temascal	U2	hydro	195,224	208,012	179,255
	Temascal	U3	hydro	229,077	208,497	209,710
	Temascal	U4	hydro	142,906	144,371	124,652
	Temascal	U5	hydro	400,539	296,716	226,791
	Temascal	U6	hydro	368,804	325,553	210,120
	Tuxpango	U1	hydro	3,238	0	0
	Tuxpango	U2	hydro	12,368	0	0
	Tuxpango	U3	hydro	3,105	0	0
	Tuxpango	U4	hydro	3,338	0	0
	Minas	U1	hydro	27,502	25,262	27,256
	Minas	U2	hydro	26,463	28,242	26,957
	Minas	U3	hydro	28,046	27,376	28,244
	Encanto	U1	hydro	28,683	30,842	28,851
	Encanto	U2	hydro	27,372	30,915	26,351
	Bombaná	U1	hydro	6,610	7,980	7,164
	Bombaná	U2	hydro	6,707	8,618	7,279
	Bombaná	U3	hydro	7,343	7,153	7,180
	Bombaná	U4	hydro	6,813	6,801	6,687
	Manuel Moreno T.	U1	hydro	1,091,640	708,432	463,524
	Manuel Moreno T.	U2	hydro	1,052,032	794,175	465,068
	Manuel Moreno T.	U3	hydro	899,002	431,070	394,065
	Manuel Moreno T.	U4	hydro	1,094,297	694,724	845,620
	Manuel Moreno T.	U5	hydro	813,686	440,597	323,594
	Manuel Moreno T.	U6	hydro	261,770	77,587	-
	Manuel Moreno T.	U7	hydro	272,274	17,210	-
	Manuel Moreno T.	U8	hydro	58,782	5,303	-
	Laguna Verde	U1	nuclear	5,136,767	4,326,844	5,679,394
	Laguna Verde	U2	nuclear	5,668,139	4,867,091	4,822,114
	Valle de México tg	U5	natural gas symple cycle	0	221,370	575,644
	Valle de México tg	U6	natural gas symple cycle	0	301,800	567,278
	Valle de México tg	U7	natural gas symple cycle	0	298,592	592,639

Fossil Fuel Detail	Plant Name	Unit	Technology	Annual Generation 2005	Annual Generation 2004	Annual Generation 2003
	Universidad	**U1**	**natural gas symple cycle**	170	550	2,712
	Universidad	**U2**	**natural gas symple cycle**	212	539	2,845
	Río Bravo tg	U4	natural gas symple cycle	49,128	341,457	694,820
	Huinalá tg	U6	natural gas symple cycle	68,524	112,223	596,533
	Arroyo del Coyote	U1	diesel	0	45	740
	Arroyo del Coyote	U2	diesel	0	89	2,540
	Monclova	**U1**	**natural gas symple cycle**	408	342	2,815
	Monclova	**U2**	**natural gas symple cycle**	361	982	6,546
	Monclova	**U3**	**natural gas symple cycle**	0.0		
	Esperanzas	U1	diesel	33	176	2,517
	Tecnológico	U1	diesel	0	1,329	6,531
	Fundidora	**U1**	**natural gas symple cycle**	67	636	3,205
	Leona	**U1**	**natural gas symple cycle**	164	623	2,933
	Leona	**U2**	**natural gas symple cycle**	188	921	3,222
	Nuevo Nogales	UM	diesel	1,588	11,048	9,369
	Hermosillo	U1	natural gas symple cycle	165,091	237,511	542,349
	Ciudad Obregón dos	U1	diesel	2,072	4,150	10,717
	Ciudad Obregón dos	U2	diesel	1,676	3,883	8,425
	Industrial Caborca	U1	diesel	691	718	6,127
	Industrial Caborca	U2	diesel	2,349	7,592	26,931
	Culiacán	U1	diesel	4,355	18,390	10,449
	La Laguna tg	U5	natural gas symple cycle	5,446	20,483	19,666
	La Laguna tg	U6	natural gas symple cycle	8,715	27,046	25,686
	La Laguna tg	U7	natural gas symple cycle	8,882	21,460	18,111
	La Laguna tg	U8	natural gas symple cycle	9,370	26,626	21,246
	Chihuahua	U4	diesel	89	163	3,798
	Chihuahua	U5	diesel	830	277	0
	Chihuahua	U6	diesel	1,592	424	7,727
	Chihuahua	U7	diesel	1,548	764	7,527
	Chaveña	U1	diesel	0		
	Parque	U1	diesel	0		
	Parque	U2	diesel	2,073	812	7,866
	Parque	U3	diesel	287	2	229
	Parque	U4	diesel	3,303	713	13,637
	Parque	U5	diesel	2,305	1,013	10,592
	Industrial Juárez	U1	diesel	1,303	229	7,748
	Chávez uno	U1	natural gas symple cycle	5,456	16,101	16,883
	Chávez uno	U2	natural gas symple cycle	4,726	19,573	20,024
	Gómez Palacio tg	**UM**	**diesel**	1,837	2,329	-
	Gómez Palacio tg	**UM**	**diesel**	3,126	4,952	-
	Gómez Palacio tg	**UM**	**diesel**	2,695	2,948	-
	El Encino tg	U4	natural gas symple cycle	133,683	322,544	277,395
	El Sauz tg	U5	natural gas symple cycle	0	-	-
	El Sauz tg	U6	natural gas symple cycle	0	-	-
	El Verde	U1	diesel	0	350	56,392
	Cruces	U1	diesel	237	165	27,654
	Cruces	U2	diesel	356	236	27,900
	Cruces	U3	diesel	284	71	16,256
	Tuxpan Vapor tg	U7	natural gas symple cycle	53,506	25,794	41,161
	San Lorenzo Potencia	U1	natural gas symple cycle	107,619	56,345	50,824
	San Lorenzo Potencia	U2	natural gas symple cycle	106,411	59,352	51,868
	Ciudad del Carmen	U1	diesel	5,016	5,462	5,690
	Nizuc	U1	diesel	23,174	10,514	14,547
	Nizuc	U2	diesel	65,203	35,070	59,633
	Cancún	U1	diesel	7,746	5,098	17,884
	Cancún	U2	diesel	7,449	5,187	16,881
	Cancún	U3	diesel	26,874	15,021	32,158
	Cancún	U5	diesel	45,265	13,590	68,937
	Mérida dos tg	U3	diesel	5,447	41,157	21,941
	Nachi0Cocom tg	U3	diesel	8,784	6,912	21,222
	Xul0Ha	U1	diesel	642	4,134	2,668
	Xul0Ha	U4	diesel			
	Xul0Ha	UM	diesel	3,773	2,903	
	Chankanaab	U1	diesel	5,106	3,198	0
	Chankanaab	U2	diesel	4,180	0	0
	Chankanaab	U4	diesel	12,568	6,540	335
	Valle de México	U1	natural gas symple cycle	652,452	367,487	801,854
	Valle de México	U2	natural gas symple cycle	403,371	493,649	788,930
	Valle de México	U3	natural gas symple cycle	467,422	646,621	892,759
13.93%	**Tula**	**U1**	**residual fuel oil**	1,899,533	1,328,233	1,811,037

Fossil Fuel Detail	Plant Name	Unit	Technology	Annual Generation 2005	Annual Generation 2004	Annual Generation 2003
natural gas symple cycle	Tula	U2	residual fuel oil	1,755,598	1,669,489	1,944,489
86.07%	Tula	U3	residual fuel oil	2,009,242	1,474,379	2,002,904
residual fuel oil	Tula	U4	residual fuel oil	1,912,660	1,931,800	1,592,527
	Tula	U5	residual fuel oil	1,164,922	1,697,948	1,475,421
	Altamira	U1	residual fuel oil	998,691	1,022,039	1,124,742
	Altamira	U2	residual fuel oil	251,319	1,032,388	800,529
	Altamira	U3	residual fuel oil	1,157,522	696,171	757,129
	Altamira	U4	residual fuel oil	1,368,682	1,204,558	845,176
	Monterrey	U1	residual fuel oil	0	26,806	235,894
	Monterrey	U2	residual fuel oil	0	4,576	283,147
	Monterrey	U3	residual fuel oil	0	87,733	306,292
	Monterrey	U4	residual fuel oil	0	25,292	352,985
	Monterrey	U5	residual fuel oil	0	142,880	338,992
	Monterrey	U6	residual fuel oil	0	0	266,516
natural gas symple cycle (45.8%) & residual fuel oil (54.2%)	Río Bravo (U3)	U3	natural gas symple cycle (45.8%) & residual fuel oil (54.2%)	1,464,344	740,890	1,310,205
	Río Bravo	U1	natural gas symple cycle	0	9,118	20,132
	Río Bravo	U2	natural gas symple cycle	0	9,152	43,286
	San Jerónimo	U3	natural gas symple cycle	0	3,903	38,536
	San Jerónimo	U4	natural gas symple cycle	0	4,094	41,131
	Mazatlán dos	U1	residual fuel oil	987,420	849,963	1,022,160
	Mazatlán dos	U2	residual fuel oil	965,991	924,676	991,462
	Mazatlán dos	U3	residual fuel oil	1,740,420	1,505,003	1,663,624
	Guaymas uno	U3	residual fuel oil	4,380	4,419	76,024
	Guaymas uno	U4	residual fuel oil	10,537	36,856	118,986
	Topolobampo	U1	residual fuel oil	1,090,408	859,257	877,368
	Topolobampo	U2	residual fuel oil	1,003,357	1,023,413	1,002,549
	Topolobampo	U3	residual fuel oil	0	68,621	150,539
	Puerto Libertad	U1	residual fuel oil	639,570	787,009	644,210
	Puerto Libertad	U2	residual fuel oil	881,810	785,435	878,262
	Puerto Libertad	U3	residual fuel oil	976,496	716,305	831,997
	Puerto Libertad	U4	residual fuel oil	1,019,645	791,989	772,273
	Guaymas dos	U1	residual fuel oil	312,467	239,811	366,933
	Guaymas dos	U2	residual fuel oil	355,853	308,117	415,814
	Guaymas dos	U3	residual fuel oil	586,567	770,066	773,499
	Guaymas dos	U4	residual fuel oil	102,673	725,788	928,911
	Lerdo	U1	residual fuel oil	1,142,475	1,235,873	966,456
	Lerdo	U2	residual fuel oil	1,162,699	1,099,245	1,070,048
	La Laguna	U1	natural gas symple cycle	111,783	195,558	186,378
	Samalayuca	U1	residual fuel oil	931,575	627,451	714,687
	Samalayuca	U2	residual fuel oil	628,320	672,806	645,066
	Francisco Villa	U4	residual fuel oil	741,239	775,857	775,512
	Francisco Villa	U5	residual fuel oil	738,011	791,616	732,051
	Francisco Villa	U1	natural gas symple cycle	0	31,317	77,516
	Francisco Villa	U2	natural gas symple cycle	0	38,754	84,039
	Francisco Villa	U3	natural gas symple cycle	0	39,626	104,312
	Villa de Reyes	U1	residual fuel oil	2,085,167	1,748,751	2,178,071
	Villa de Reyes	U2	residual fuel oil	1,157,872	1,829,854	2,061,281
	Manzanillo dos	U1	residual fuel oil	2,093,934	2,221,078	1,954,528
	Manzanillo dos	U2	residual fuel oil	2,237,347	1,848,082	2,158,751
	Manuel A. Moreno	U1	residual fuel oil	1,781,597	968,973	1,996,772
	Manuel A. Moreno	U2	residual fuel oil	1,544,455	1,684,955	1,666,673
	Manuel A. Moreno	U3	residual fuel oil	971,648	1,720,643	1,596,619
	Manuel A. Moreno	U4	residual fuel oil	1,548,662	980,910	1,068,197
36.26%	Salamanca	U1	residual fuel oil	149,851	555,314	706,701
natural gas symple cycle	Salamanca	U2	residual fuel oil	710,379	540,699	813,346
63.74%	Salamanca	U3	residual fuel oil	952,439	1,241,643	1,423,858
residual fuel oil	Salamanca	U4	residual fuel oil	732,941	845,730	1,305,360
	Tuxpan Vapor	U1	residual fuel oil	1,728,609	2,538,165	2,181,924
	Tuxpan Vapor	U2	residual fuel oil	1,417,014	2,271,089	1,806,547
	Tuxpan Vapor	U3	residual fuel oil	2,645,525	2,404,120	2,274,238
	Tuxpan Vapor	U4	residual fuel oil	2,179,198	2,337,636	2,344,576
	Tuxpan Vapor	U5	residual fuel oil	2,314,210	2,238,229	2,319,945
	Tuxpan Vapor	U6	residual fuel oil	2,250,989	2,512,461	2,313,751
	Poza Rica	U1	residual fuel oil	194,332	135,822	183,565
	Poza Rica	U2	residual fuel oil	218,381	139,309	212,663
	Poza Rica	U3	residual fuel oil	178,740	166,019	171,875
	Mérida	**U1**	natural gas symple cycle	438,048	608,499	509,376
	Mérida	**U2**	natural gas symple cycle	573,340	302,951	567,247
	Valladolid	**U1**	natural gas symple cycle	246,573	207,879	192,754
	Valladolid	**U2**	natural gas symple cycle	220,434	215,030	191,052

Fossil Fuel Detail	Plant Name	Unit	Technology	Annual Generation 2005	Annual Generation 2004	Annual Generation 2003
	Nachi0Cocom	**U1**	**diesel**	127,821	112,369	145,757
	Nachi0Cocom	**U2**	**diesel**	127,577	114,282	130,312
	Lerma	**U1**	**diesel**	223,786	209,845	206,427
	Lerma	**U2**	**diesel**	165,929	211,127	216,943
	Lerma	**U3**	**diesel**	191,724	177,441	208,447
	Lerma	**U4**	**diesel**	147,556	186,025	209,524
	Topolobampo	U1	diesel	0	-	-
	Pueblo Nuevo	UM	diesel	0	3,415	11,113
	Chankanaab	UM	diesel	0	-	-
	Valle de México	U4	residual fuel oil	0	-	1,151,409
	Cozumel	UM	diesel	0	-	-
	Cancun	UM	diesel	0	-	-
	Pueblo Nuevo	UM	diesel	0	-	19,841
	Cozumel	UM	diesel	0	-	-
	Xul0ha	UM	diesel	0	-	-
	Xul0ha	UM	diesel	0	-	-
	Durazno	U2	hydro	0	-	-
	Calera	U1	diesel	0	-	-
	Calera	U2	diesel	0	-	-
	Calera	U3	diesel	0	-	-
	Industrial Caborca	U3	diesel	0	-	-
	Celaya	U1	residual fuel oil	0	-	-
	Calera	U2	residual fuel oil	0	-	-
	Calera	U3	residual fuel oil	0	-	-
	Alameda	U1	hydro	12,842	31,788	36,039
	Alameda	U2	hydro	12,739	814	
	Alameda	U3	hydro	6,095	0	
	Cañada	U1	hydro	22	0	0
	Fernández Leal	U1	hydro	514	4,572	4,629
	Juando	U1	hydro	302	817	537
	Juando	U2	hydro	5	0	
	Tepuxtepec	U1	hydro	13,975	213,591	277,540
	Tepuxtepec	U2	hydro	73,398	11,923	
	Tepuxtepec	U3	hydro	93,209	103,571	
	Necaxa	U1	hydro	29,803	57,864	325,912
	Necaxa	U2	hydro	30,239	36,949	
	Necaxa	U3	hydro	51,798	33,606	
	Necaxa	U4	hydro	33,615	36,250	
	Necaxa	U5	hydro	26,618	40,590	
	Necaxa	U6	hydro	26,798	27,537	
	Necaxa	U7	hydro	34,877	39,731	
	Necaxa	U8	hydro	11,018	1,571	
	Necaxa	U9	hydro	32,465	12,385	
	Necaxa	U10	hydro	45,611	61,145	
	Patla	U1	hydro	49,239	65,751	101,839
	Patla	U2	hydro	50,841	44,643	
	Patla	U3	hydro	5,453	34,228	
	San Simón	U1	hydro	2,325	3,280	3,016
	San Simón	U2	hydro	15	0	
	Tepexic	U1	hydro	60,510	27,668	0
	Tepexic	U2	hydro	4,582	0	
	Tepexic	U3	hydro	34,830	18,774	
	Temascaltepec	U1	hydro	51	0	0
	Temascaltepec	U2	hydro	0	0	
	Temascaltepec	U3	hydro	0	0	
	Temascaltepec	U4	hydro	0	0	
	Tezcapa	U1	hydro	2,051	1,807	5,587
	Tezcapa	U2	hydro	9,647	6,183	
	Tlilán	U1	hydro	2,709	2,104	2,545
	Villada	U1	hydro	2,121	2,337	2,969
	Zepayautla	U1	hydro	0	0	0
	Zictepec	U1	hydro	0	0	0
	Lechería	U1	natural gas symple cycle	21,882	34,616	81,624
	Lechería	U2	natural gas symple cycle	26,646	11,149	
	Lechería	U3	natural gas symple cycle	29,293	10,676	
	Lechería	U4	natural gas symple cycle	3,684	25,911	
	Nonoalco	U1	natural gas symple cycle	23,204	33,723	64,327
	Nonoalco	U2	natural gas symple cycle	28,914	23,462	
	Nonoalco	U3	natural gas symple cycle	24,220	19,878	
	Nonoalco	U4	natural gas symple cycle	27,476	24,724	

Fossil Fuel Detail	Plant Name	Unit	Technology	Annual Generation 2005	Annual Generation 2004	Annual Generation 2003
	Valle de México tj	U2	natural gas symple cycle	257	680	54,382
	Valle de México tj	U3	natural gas symple cycle	17,724	26,463	
	Valle de México tj	U4	natural gas symple cycle	0	176	
	Jorge Luque	U1	natural gas symple cycle	117,051	301,613	668,245
	Jorge Luque	U2	natural gas symple cycle	98,191	0	
	Jorge Luque	U3	natural gas symple cycle	349,920	197,415	
	Jorge Luque	U4	natural gas symple cycle	7	0	
	Ciclo Combinado Tuxpan II		natural gas cc	3,346,625	3,542,410	3,479,799
	Ciclo Combinado Tuxpan III y IV		natural gas cc	5,343,671	6,893,845	4,537,308
	Ciclo Combinado Bajío		natural gas cc	4,113,597	4,623,039	3,739,646
	Fuerza y Energía de Hermosillo		natural gas cc	1,273,181	1,207,814	1,499,511
	Ciclo Combinado Naco Nogales		natural gas cc	1,755,588	1,668,206	550,269
	Ciclo Combinado Chihuahua III		natural gas cc	1,071,285	1,418,243	505,738
	Ciclo Combinado La Laguna		natural gas cc	2,653,798	6,093	-
	Ciclo Combinado Río Bravo		natural gas cc	2,241,628	3,046,998	3,244,016
	Ciclo Combinado Saltillo		natural gas cc	1,408,750	1,277,807	1,284,187
	Ciclo Combinado Monterrey III		natural gas cc	3,055,793	2,812,453	3,008,086
	Ciclo Combinado Altamira		natural gas cc	3,034,628	3,102,593	3,082,060
	Ciclo Combinado Altamira III y IV		natural gas cc	5,759,528	6,346,757	475,233
	Ciclo Combinado Río Bravo III		natural gas cc	1,581,601	2,400,141	23,895
	Ciclo Combinado Río Bravo IV		natural gas cc	1,816,964	82,265	-
	Mérida III		natural gas cc	3,289,329	3,386,657	3,470,311
	Ciclo Combinado Campeche		natural gas cc	1,705,770	1,722,098	1,162,201
	El Salto	U2	hydro	0	43,580	54,087

Source: CENACE and CFE internal reports.

Build Margin ex-ante[45]:

Tech. Part	Tecnology	MWh	NEC	TJ	C	O	tCO2/tC	tCO2e
0%	Coal	0	33.05%	-	25.8	0.98	3.67	-
95%	Natural Gas Combined Cycle	40,963,715	45.85%	321,628	14.5	0.995	3.67	17,014,410
0%	Wind	0	0.00%	-	0	0	3.67	-
2%	Geothermal	932,226	0.00%	-	0	0	3.67	-
2%	Hydro	717,068	0.00%	-	0	0	3.67	-
0%	Nuclear	0	0.00%	-	0	0	3.67	-
1%	Natural Gas Symple Cycle	401,218	28.96%	4,987	14.5	0.995	3.67	263,836
0%	Diesel	11,431	26.10%	158	20.2	0.99	3.67	11,562
0%	Imports	143.94	0.00%	-	0	0	3.67	-
0%	Residual Fuel Oil	0	33.00%	-	21.1	0.99	3.67	-
	Total	43,025,802		-				17,289,808
	BM=	**0.40185**						

Source: World Bank Production with data provided by CENACE and NECs and fossil fuels provided by the sponsor[46].

[45] Only imports that come to the IMNG through AEP and FRONTERA entered in the BM following the methodology.
[46] Average 2005 NECs per technology were obtained using detailed data from CFE internal reports.

Plants included in the BM Calculation: Plant & unit name, technology, annual generation (MWh).

Plant Name	Unit Name	Technology	Annual Generation 2005 (MWh)
El Sauz	U1	gas natural cc	5,792
El Sauz	U2	gas natural cc	5,529
Botello	U2	hidro	21,999
Ixtaczoquitlán	U1	hidro	3,269
Tepuxtepec	U1	hidro	3,623
Tepexic	U1	hidro	60,510
Tepexic	U3	hidro	34,830
Ciclo Combinado La Laguna		gas natural cc	2,653,798
Ciclo Combinado Río Bravo IV		gas natural cc	1,816,964
Valle de México cc	U4	gas natural cc	1,608,566
Valle de México cc	U5	gas natural cc	564,266
Valle de México cc	U6	gas natural cc	571,084
Valle de México cc	U7	gas natural cc	474,492
El Sauz	U7	gas natural cc	849,204
Itzicuaro	U1	hidro	10
Manuel Moreno T.	U6	hidro	261,770
Manuel Moreno T.	U7	hidro	272,274
Manuel Moreno T.	U8	hidro	58,782
Gómez Palacio tg	**UM**	**diesel ***	1,837
Gómez Palacio tg	**UM**	**diesel ***	3,126
Gómez Palacio tg	**UM**	**diesel ***	2,695
Tuxpan Vapor tg	U7	gas natural	53,506
San Lorenzo Potencia	U1	gas natural	107,619
San Lorenzo Potencia	U2	gas natural	106,411
Ciclo Combinado Bajío		gas natural cc	14,561
Fuerza y Energía de Hermosillo		gas natural cc	61,989
Ciclo Combinado Río Bravo III		gas natural cc	1,581,601
El Sauz	U5	gas natural cc	803,112
El Sauz	U6	gas natural cc	886,658
Los Azufres	U13	Geotérmica	128,743
Los Azufres	U14	Geotérmica	212,044
Los Azufres	U15	Geotérmica	215,624
Los Azufres	U16	Geotérmica	209,595
Los Humeros	U3	Geotérmica	41,576
Los Humeros	U4	Geotérmica	40,071
Los Humeros	U7	Geotérmica	42,440
Xul0Ha	UM	diesel	3,773
Ciclo Combinado Tuxpan III y IV		gas natural cc	5,343,671
Ciclo Combinado Naco Nogales		gas natural cc	1,755,588
Ciclo Combinado Chihuahua III		gas natural cc	1,071,285
Ciclo Combinado Altamira III y IV		gas natural cc	5,759,528
Ciclo Combinado Campeche		gas natural cc	1,705,770
Imports-AEP Transmission Line		Imports	144
Fuerza y Energía de Hermosillo	0	gas natural cc	45,315
Los Humeros	U5	Geotérmica	42,133
El Encino tg	U4	gas natural	133,683
Tula cc	U6	gas natural cc	744,902
Imports-Frontera Transmission Line		Imports	0
Ciclo Combinado Altamira	0	gas natural cc	3,034,628
Ciclo Combinado Monterrey III	0	gas natural cc	3,055,793
Ciclo Combinado Bajío	0	gas natural cc	4,307,992
Ciclo Combinado Río Bravo	0	gas natural cc	2,241,628

Source: CENACE and CFE internal reports[47].

Combined Margin ex-ante:
CM=0.75*0.70033+0.25*0.40185 = 0.62570
Source: World Bank Calculation

C & O factors source: World-wide values taken from IPCC 2006 Guidelines on GHG Inventory

IMNG Net Efficiency Conversion:

Technology	NEC Weighted Average 2005
Coal	33.05%
Natural Gas Combined Cycle	45.85%
Natural Gas Simple Cycle	28.96%
Diesel	26.10%
Residual Fuel Oil	33.00%

Source: The sponsor (Generation Unit of CFE's SIMO information system-2005 report and Programming Unit CFE'annual 2005 generation report).

IMNG Exports and Imports 2005, 2004, 2003:

IMNG Exports 2005: 235,157.2 MWh.
IMNG Imports 2005: 3,613.7 MWh.

IMNG Exports 2004: 235,367.8 MWh
IMNG Imports 2004: 374.2 MWh.

IMNG Exports 2003: 188,091.5 MWh.
IMNG Imports 2003: 18,293.5 MWh.

Source: CENACE

Juchitán II and La Venta II Substations – Electricity Meters specifications (at 230 KV):

Measurement Specifications (at 25°C / 77°F)	Features
Parameter	**Accuracy ±(%Reading + %Nominal Current)**
Voltage (L-L) (L-N)	0,1%
Frequency (47 – 63Hz)	±0,01 Hz
Current (I1, I2, I3)	0,1% + 0,002%
Current (I4)	0,4%
kW, kVAR, kVA (unit PF)	**0,2% + 0,001%**
kW, kVAR, kVA (±0,5 PF)	0,3% + 0,003%
kWh, kVARh, kVAh	**Class 0,2**
Power Factor at Unity PF	0,5%
Harmonics (to 63rd)	1%
Harmonics (to 40th)	IEC 6100-4-7
K factor	5%
Crest Factor	1% Full Scale

[47] The plants are sorted in chronological order, starting with the latest capacity addition to the system (El Sauz U1) up to December 2005 (latest data available at the time of PDD submission to the DOE).

Source: The sponsor. Equipment Manual ION series 8300-8500[48].

The meters count with a self-verification and calibration function, which is manual and determined by the operation and maintenance personnel of the electricity substations. The verification is annual and consists in the comparison of the project's electricity meters with other electricity meter, that is made for this purpose, when there are errors the personnel follows with the maintenance/reappearance of the electricity meter.

Annex 4

MONITORING INFORMATION

I. Emissions Reductions Calculation Procedure ("ERCP")

The ERCP Manager must fill the following worksheet for the year of project generation –keeping the combined margin (0.62570 tCO2/MWh).fixed ex-ante for the first crediting period.

Worksheet#1

CEF:
0.62570 tCO2/MWh

Date-time	La Venta II Generation (MWh): Provided by CENACE	La Venta II Generation (MWh): Checked by Project Developer	La Venta II ERs (tCO2e)
01/07/2007 0:15	0.00	0.00	0.00
...	...	...	...
31/12/2007 24:00	0.00	0.00	0.00
Total 1rst year of the Crediting Period		**0.00**	**0.00**

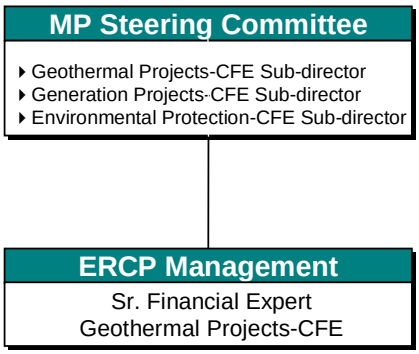
II. The ERCP Organizational Structure and the ERCP Quality Assurance and Control Procedure

The MP preparation by the sponsor is subject to the following organizational structure:

[48] It can be seen that the precision is 0.2% for the electricity measurement at 230 KV.

Monitoring Plan (MP) – Emissions Reductions Calculation Procedure

ERCP Organizational Structure



Source: World Bank production with responsibilities accorded with the sponsor.

The MP preparation by the sponsor is subject to the following quality control check:

Monitoring Plan (MP) – Emissions Reductions Calculation Procedure
ERCP Quality Control

Data	**The project generation data.** **Make coordination with CENACE to be able to implement this document.** **Check calibration of electricity meters, periodically.**
Quality of Data Collection	Which data comes? The above By what means does it come? By E-mail/ CD How does it come? In Excel How frequently does it come? Yearly From whom does it come? From *CENACE* To whom does it comes? ERCP Manager
Quality of Data Processing	Original Data Organized Data Entered Data Processed Data Result
Quality of Data Storage	Prevent Excel versioning problem, by keeping "a new" Excel software package. Keep all data for 2 years after the first crediting period (9 years). Save the ERCP file with the last date in which an alteration was made. Keep all written documentation in a folder.
Quality of Data Delivery	Provide to the verifier e-mails /CD through which the data provider (*CENACE*) delivered the original data Provide to the verifier receipt of sales to final clients Provide to the verifier all calculations made (all steps of data processing) by showing all preliminary versions of spreadsheets saved in disk

Source: World Bank Production.

III. Environmental and Social Monitoring

Geothermal Projects Department (representative designated for the MP Steering Committee) should have ready at hand the annual reporting of the *Programa de Vigilancia Ambiental* prepared for *PROFEPA*, and an annual reporting of the social commitments with Ejido La Venta, established at the sponsor own initiative and supported in Act signed as of December 12th, 2005.