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Energía Costa Azul nursery (ECA)

# 2013 IEnova **Environmental Report**

At IEnova, we are committed to protecting and maintaining the environment and the health and safety of our employees, our consumers and the various communities in which we operate and provide service.

We present our first environmental report that contains the results in the following areas:

- Emissions into the atmosphere
- Waste generation and management
- Water
- Conservation of biodiversity

This document presents the sum of the efforts we have made in order to measure and keep a record of our environmental impact. We know that quantifying and managing both our environmental impact and investments are important aspects for the sustainability of our business. That is why this year, we are presenting the environmental management and measurement actions implemented in IEnova's business segments.

The Report is a translation from the original version in Spanish. In case of discrepancy, the Spanish version prevails.

At IEnova, we know that operating in strict compliance with environmental regulations gives us a competitive advantage that provides benefits to the environment and, therefore, to society.

We are committed to the respect, protection and conservation of the environment and to the satisfaction of our consumers' needs in a sustainable manner.







To have a better understanding of this report we put into context the scope and operations that we have in our business segments:

- a. Gas Segment
- b. Power Segment

### Gas Segment

Natural gas, a primary energy source for development, is the main product that we store, transport and distribute. Natural gas is the cleanest of all fossil fuels; it is non-toxic and non-corrosive, and, in addition, its combustion generates very low emissions of gases, such as NOx, SOx and CO.

In terms of the gas segment, unless otherwise indicated, the Environmental Report does not include data of the assets belonging to Gasoductos de Chihuahua, which is a joint venture with Pemex Gas y Petroquímica Básica (PGPB) and in which IEnova has a 50% stake.

# IEnova's environmental advantage

**Enables almost** 100,000 consumers

to reduce their carbon dioxide (CO<sub>2</sub>) emissions by up to 20%, in comparison with the use of other types of fuel

### **Power Segment**

Termoeléctrica de Mexicali (TDM) is a modern and efficient natural gas-powered combined-cycle plant that uses advanced environmental technologies, which meet or exceed the standards applicable in both Mexico and the US state of California, which is recognized for its environmental care performance.

At IEnova, we are currently developing a wind facility, Energía Sierra Juarez, in the state of Baja California. The first phase includes the installation of approximately 47 wind turbines. Projects of this nature contribute to the production of clean energy to improve the environment. With the implementation of these projects, we are working to ensure that a greater number of people can gain access to cleaner energy, thereby reducing their carbon footprint.

# **Environmental Policy**

IEnova's companies will:

- Meet all the laws, regulations and requirements set forth in environmental permits.
- Collaborate with our consumers, government officials and other community leaders in the sound and responsible care of our environment.
- Advocate for public policies that protect the environment, using sound science, effective technology in terms of cost, rational thinking and common sense as the bases of these policies.
- Encourage the development and use of efficient, clean and effective technologies in terms of cost to help our consumer meet their energy needs in an environmentally responsible way.
- Lessen our impact on the environment through activities such as recycling and waste minimization.
- Incorporate appropriate administration and environmental compliance in strategic planning and operational decision-making.
- Encourage innovation and improvement of the cost effectiveness of our compliance methods and the use of practical means to evaluate our
- Implement appropriate environmental training and education programs for employees and shareholders;
- Review the results and existing operating and management practices to enable continuous improvement.
- Perform jobs in a manner consistent with this environmental policy.

### Storage

- "Environmental Quality" Certificate granted by the Federal Environmental **Protection Agency** (PROFEPA). (Annex 1)
- Environmental Management System.
- Environmental programs: monitoring of marine mammals, compensation, conservation and reforestation program, monitoring of benthic fauna and atmospheric emissions, monitoring of water quality and management of nonhazardous waste.

### Power

- "Clean Industry" Certificate granted by the Federal Environmental Protection Agency (PROFEPA). (Annex 2)
- Environmental Management System.
- Reforestation and water use programs.
- For the fifth consecutive year, TDM is included in the greenhouse gases reporting program, certified by The Climate Registry. TDM is founding member of the program. (Annex 3)

### Pipelines and **Distribution**

- "Clean Industry" or "Environmental Quality" Certificate granted by the Federal Environmental **Protection Agency** (PROFEPA). (Annexes 4, 5, 6, 7 y 8)
- Environmental Management System.
- Pipelines: Active reforestation and environmental compensation programs developed by specialists.

# Sonora Pipeline construction

# Sustainable Resource and Environmental Impact Management

Our business segments differ from each other; therefore, the way in which resources are managed and the actions taken to improve the environment is also different. However, we have a common denominator: a view of continuous improvement focused on environmental processes and Quality Management Systems.

At IEnova, we have tools that enable us to identify and control the environmental impact, which in turn, allow us to continuously improve our environmental impacts.

We have our own Environmental Management Systems based on the requirements defined in the international environmental standards (ISO 14001), and the requirements of the Ministry of the Environment and Natural Resources (SEMARNAT). Management manuals cover the following topics:

- Water.
- Atmospheric pollution.
- Environmental emergencies.
- Hazardous waste.
- · Special waste management.
- Perimeter noise.



IEnova has state-of-the art technology that enables us to measure the emissions we produce accurately.

For the fifth consecutive year, TDM is included in the greenhouse gases reporting program, certified by The Climate Registry.

## **Emissions**

IEnova is committed to the control and reduction of emissions; therefore, our operations implement continuous monitoring. Due to the nature of the operations, the ECA and TDM plants are subject to strict measurement, as described below.





In ECA, emissions are measured on a permanent basis using a scanning electron microscope (SEM). This is the most effective system for taking environmental measurements using highly-reliable equipment inserted into gas turbines and gas heaters.

We currently have the best technology to ensure the maximum-possible efficiency of gas turbines and fuel gas heaters, which has enabled us to reduce our emissions. Gas emissions are caused by the combustion of natural gas and are of 30 ppm (parts per million), an amount that is far below the level indicated by Mexican Official Standard NOM-085-SEMARNAT-2011 for natural gas heaters.





At Termoeléctrica de Mexicali, we maintain strict control and we monitor atmospheric emissions 24 hours a day. Our technology includes an emission control and monitoring system, a catalytic reducing module to reduce carbon monoxide (CO) discharges and a Selective Catalytic Reduction (SCR) system to control nitrogen oxides (NOx).

IEnova's total atmospheric emissions report\*

Type of emissions	Gas emissions	Quantity in metric tons
	CH <sub>4</sub>	55
Direct emissions	CO <sub>2</sub>	1,410,154
	N <sub>2</sub> 0	130
Indirect emissions	CO <sub>2</sub> e	2,549

\*Most emissions are generated by ECA and TDM. 2013 emissions have not been audited and are therefore subject to change.

Distribution consumers' emissions from the use of our product.

Type of emissions	Gas emissions	Quantity in CO <sub>2</sub> e metric tons
Other	Natural gas sold to consumers	505,323.47

# **Waste Generation and Management**

At IEnova, we are focused on reducing waste by improving the use of resources and managing their disposal, ECA and TDM, due to the nature of their processes. have the most relevant waste generation and management programs.



ECA has a scheduled maintenance plan to provide safe and reliable operation at its facilities. We have preventive and corrective maintenance procedures that enable us to minimize the risks of explosion, fire and other damage. Thanks to these programs, in 2013, no accidental spills or related waste generation were reported.

ECA was registered at the state level as a generator of special-management waste, which implies a greater commitment to improving our environmental processes. We are currently developing metrics to measure progress on the adequate disposal and the reduction of this type of waste. 2013 is the third year of Energía Costa Azul's hazardous waste reduction plan, which has reduced the amount of waste generated by 30%. Best waste disposal practices were implemented, which include the recovery of energy and the recycling of the hazardous wastes generated by ECA.

At IEnova, we conduct rigorous maintenance processes to reduce the generation of waste materials.



Energía Costa Azul (ECA)



TDM also has rigorous preventive and corrective maintenance procedures focused on the prevention of operating failures and spillages. In 2013, four spills were reported of an estimated 200 liters of sulfuric acid and 59 liters of oil. However, they were contained by the respective containment pits and no member of the operating personnel or the soil was affected; therefore, no remedial action was needed.

At TDM, the main source of solid waste is from residues that contain oils, which are managed and disposed of by a specialized company.

### IEnova's total waste report\*

Type of Waste	Disposal	Quantity (Tons)
	Waste confined in controlled containers	11
Hazardous waste	Incinerated waste	3
	Waste recovered (including recovered energy)	2
	Waste recycled by other institution	4
Non- hazardous waste	Non-hazardous waste and bi-products	10,416
	Waste confined in controlled containers	10,353
	Waste recycled by other institution	3

<sup>\*</sup>Most residues are generated by ECA and TDM. 2013 data has not been audited and is therefore subject to change.



# Water

We have processes and actions in place focused on the care of water, which include intensive use, saving and recycling processes. ECA and TDM are the plants that have the most intensive water-related processes. The water-related processes in place at these assets are described below.





We have a program to collect information on the quality of the water of the marine zone in the vicinity of the ECA Terminal and to keep control of the physical-chemical properties of the water that is discharged into the sea. In order to achieve this goal, we engaged the services of a laboratory accredited for sample collection and analysis.

For the monitoring of the quality of the sea water, samples are collected at three different depths at three points in front of the Terminal. This monitoring is carried out quarterly and the parameters to be monitored were established according to the type of water discharges (the wastewater treatment plant, the regasification system and the reverse osmosis plant) and are considered as part of the environmental quality indicators.

At ECA, the water used in the process is not contaminated because it is only used for heating and does not come into contact with other materials.

98% of the water we use is process and only 2% is residual, which is why we have a treatment plant.



At TDM, as part of its commitment to the environment and natural resources, the only source of water used in the power generation process is the waste water from the Zaragoza lagoon, in the city of Mexicali. This water is processed by biological physical-chemical treatment and through the use of technologies such as reverse osmosis and demineralization. We are able to obtain ultra-pure water quality through these processes.

Approximately 30% of the water that is treated and used in the power generation process is returned, clean, to a branch of the Nuevo river, the quality of which meets the standards of Official Mexican Standard NOM-001-SEMARNAT-1996.

At IEnova, we pursue the best practices for the collection and treatment of this valuable resource in our operations.



Termoeléctrica de Mexicali (TDM)

**TDM only uses** waste water in its processes. This sustainable practice favors the environment and the community.

# Water Savings in the TDM Cooling Tower

In order to increase the reuse of water at TDM, in 2012, we installed an on-line plotter and monitoring computer, which achieves real-time chemical control of the water. This makes the process more efficient and enables the water to be reused up to 6.5 times before being finally discharged.

### IEnova's total water discharge report\*

Type of discharge	Quantity (M³)
Water discharged into municipal treatment plants	7,068
Water discharged to other sources	1,431,954
Water discharged into the sea	2,080
Total water discharged	1,441,102
Water returned to its original extraction source in the same or better conditions	97,939,874**

<sup>\*</sup>Most reused water is in ECA and TDM

### IEnova's total report of water by type of extraction source\*

Water extraction by type of source	Quantity (M³)
Ground water	3,198
Municipal waste water	5,339,170
Municipal water	7,093
Water obtained from other sources	91,852
Total water extracted	5,441,313

<sup>\*</sup>Most reused water is in ECA and TDM

# **Conservation of Biodiversity**

At IEnova, we implement biodiversity conservation projects, such as:

- Conservation and compensation of flora
- Wildlife protection and rescue
- Reforestation

The protection and conservation of flora and fauna are an integral part of our overall conservation, protection and rescue programs at the sites where we operate. The type of programs to be undertaken depends on the specific project, the type of ecosystem affected and the applicable regulations.

At IEnova, we are aware that business development must be accompanied by the improvement of the environment and the preservation of biodiversity.



<sup>\*\*</sup> Total water discharged: 97,941,954 m³ and the water that is returned to the source from where it was extracted in the same or better conditions: 97,939,874 m³ (water discharged less the amount of water treated by the waste water treatment plant)

# Conservation and compensation of flora

### Gasoducto Rosarito, Energía Costa Azul and Termoeléctrica de Mexicali

The restoration, reforestation and compensation programs implemented in previous years, which remained active in 2013 are listed below.

Type of project	Start Year	Project	Description
	January 2008	Restoration of the ecosystems affected by the construction of Gasoducto Rosarito Expansion project.	6,392 specimens of different species of endemic plants were cultivated for the restoration of ecosystems, which were planted in the project's row.
			Seeds of different species were planted directly in the project's row.
			Reforestation along 73 km of the pipeline.
			Environmental monitoring is currently being carried out to follow-up on the restoration of the habitat.
Rescue and Restoration	September 2006	The Rescue, Replanting and Protection of Endemic and Endangered Plants adjacent to the Construction and Operation of Gasoducto Rosarito Expansion project.	Rescue of the Coast barrel cactus (Ferocactus viridescens) and associated species.  5,061 plants of nine endemic species of Baja California were rescued in the project's row.
			1,192 Coast barrel cactus specimens were rescued, which are species considered as endemic and endangered (Official Mexican Standard NOM-059-ECOL-2010).
			The species rescued were housed in a nursery to ensure their survival before being replanted in their natural habitat.
			A total of 1,192 Coast barrel cactus specimens were replanted.
			5,061 endemic plants were replanted along the first 19 Km of the pipeline.
			The replanted specimens are now being monitored to ensure their survival.
			This program complies with the requirements established by SEMARNAT for the project.
	2003 Prote		TDM's reforestation program counted 35 ironwood specimens at the start of construction.
		Protection of ironwood	As a result of the irrigation and care of the ironwood specimens counted, today there are approximately 180 trees of different heights.

	March 2011	Development and implementation of a reforestation program of Jeffrey's Pinus, or black pines (Pinus jeffreyi), in Sierra Juárez, Baja California.	Certified Jeffrey's or black pine seeds were collected and acquired.
			A nursery was built where pine seedlings were cultivated.
			60 hectares was reforested with pines and an interval drip irrigation system was built.
			The replanted pines are being monitored to ensure their survival.
			This program complies with the requirements established by the SEMARNAT for the project.
	of (Pr wa April 2009 im) are the Ga	A reforestation program of the Mesquite tree (Prosopis juliflora) was developed and implemented in the areas affected by	236 mesquite trees were established with an automatic drip irrigation system in an area adjacent to the compression station site.
			The reforested areas are monitored and maintained to ensure the survival of the trees planted.
		the construction of Gasoducto Rosarito Compression Station.	The current survival rate is 100%.
Compensation and Conservation by Reforestation	Reforestation programs with Prosopis juliflora and Prosopis chilensis mesquite trees in areas affected by the construction of Gasoducto Rosarito.		50 Prosopis juliflora mesquite trees were established with an automatic drip irrigation system in an area adjacent to Gasoducto Rosarito.
,		50 Prosopis chilensis mesquite trees were established with an automatic drip irrigation system at a local high school.	
		the construction of	The reforested areas are monitored and maintained to ensure the survival of the planted trees.
			The current survival rate is 100%.
	2006	Energía Costa Azul's Flora Rescue and Conservation Plan.	We identified highly ecologically valuable specimens prior to construction. We rescued and replanted more than 4,500 Coast barrel cactus (Ferocactus viridescens) and coastal scrubland species in a greenhouse that simulated natural conditions. Once the construction was completed, the original plants were relocated to areas dedicated to environmental Conservation adjacent to ECA. We have continued to repopulate the area with newly germinated specimens recording and survival rate of 71% and reaching up to 89% in certain zones. By collecting germplasm, more than 28,000 coastal scrubland species, including Ferocactus viridescens have been germinated in our greenhouse. These survival rates and the seasonal processes observed in terms of the consolidation of the habitat lead to the conclusion that the goals of Energía Costa Azul's Flora Rescue and Conservation Plan have been met and surpassed.



We rescued and replanted more than 4,500 Coast barrel cactus (Ferocactus viridescens) and coastal scrubland species.



### Flora Rescue, Protection and Conservation Plan

The main objective of this plan is to develop a functional endemic flora community. From January to December 2012, we implemented a wide range of activities related to:

- · Consolidation of the habitat
- Risks in newly-planted areas and in nurseries
- Weed control

Site visits to the planted sites were also conducted to assess the physiological status of the plants. These activities were carried out in three different areas: Conservation, Compensation and Process.

In the qualitative monitoring, the native plants, in particular the barrel cactus (Ferocactus viridescens) were observed as vigorous, since the vegetation associated with the planting of barrel cactus showed a well-marked seasonal behavior, with shoots and revival in the spring, as well as loss of leaves in the fall and a pale gray color in the winter.

The results of the quantitative evaluation of the survival rate of the barrel cactus showed an average of 71%, and in some areas up to 89%.

These survival rates and the seasonal processes observed, in terms of the consolidation of the habitat, lead us to conclude that the goal of the Costa Azul Flora Rescue, Protection and Conservation Plan has been met.

### Wildlife Protection and Rescue

IEnova has wildlife protection processes. The procedures differ depending on the state and the type of habitat where we operate; however, in all cases, they ensure the strictest care of the species that inhabit the sites.

Gasoducto Rosarito and TGN 📈





In pipeline projects, we implement wildlife rescue programs, which employ specialized staff to identify the fauna species present within the right-of-way of the project and use right-of-way and relocation techniques. Strict administrative controls are applied to ensure the utmost care for the wildlife on the sites.



Nine years of monitoring of marine mammals.

Rescue and relocation of

904,017 specimens of high commercial and ecological value.

More than five years followingup on flora reforestation and compensation programs, with the support of educational specialists and institutions.



The Energía Costa Azul LNG Terminal is being developed in two ecosystems: land and marine that were demarcated and characterized before the construction of the Project in order to monitor the potential effects on the abiotic and biotic components of each eco-system generated by the construction, operation and maintenance activates. The area of the project is adjacent to the migratory routes of the gray whale (Eschrichtius robustus) and with the presence on important commercial species such as the sea urchin and the sea cucumber.

Monitoring of marine mammals: At Energía Costa Azul, we built monitoring stations on the LNG Terminal construction site to study the migration patterns of marine mammals, in particular the gray whale, in order to ensure that their migration was not affected by the construction and operation of the Terminal.

We developed a successful marine mammal monitoring program with the help of the Ensenada Center for Scientific Research and Higher Education (CICESE) and the Universidad Autónoma de Baja California (UABC). During construction, if we detected the presence of whales and other marine animals in the area, the work teams were instructed cease immediately all activity that may affect or interrupt their migration routes. This program has been maintained during the berthing and casting-off maneuvers of tanker vessels during the whales' migration season. From 2003 to date, we have had sightings of 13 species of marine mammals.

Benthic Wildlife Rescue, Protection and Conservation Program: prior to the construction of Energía Costa Azul, we implemented a rescue, transfer, planting and monitoring plan of 904,017 highly commercially and ecologically valuable specimens, such as sea urchins, sea cucumbers and sea conches, among others. We implemented this program jointly with local fishermen and scientists from the Universidad Autónoma de Baja California (UABC).

The survival rate following transferal was greater than 99%. During this time, we also worked with fishermen to train them in the harvesting of sea urchins in a sustainable way to help protect and propagate the species. Yearly, we conduct two monitoring studies to follow-up on these species.

Flora and Fauna Rescue, Protection and Conservation Plan	Quantity
Marine mammal species monitored	13
Number of specimens of the different species used for propagation of flora	28,203
Inventory of plants in nursery production	34,901
Rescue and transfer of relevant marine organisms	904,017

### **Projects under construction**

### Gasoducto Sonora



We have set high environmental standards and we employ specialized personnel for the implementation of the Flora and Fauna Rescue and Relocation Program, the Environmental Awareness Program, the Soil Conservation Program and the Revegetation Program.

At December 31, 2013, we have an advance of 257, 375 meters of rescued flora and fauna, which implies a total of 12,444 plant specimens and 160 animal specimens saved.

In the event that the trunks or roots of any individual specimen rescued is damaged, specialized staff of Gasoducto Sonora takes care of the specimen in a temporary nursery by applying fungicides and preventive healing measures in order to avoid any problem that could put their health at risk.



### **Bird and Bat Monitoring Program**

Construction of the Energía Sierra Juárez wind park began in 2013. During the development phase of the project, we worked with San Diego Zoo to prepare a study to be able to understand better the flight patterns and territories of the Californian condor and the Golden Eagle on the Mexico-US border, near the construction zone.

Additionally, the Jalapa Ecology Institute (INECOL, Spanish acronym) conducted sightings studies of birds and bats and evaluated their flight and migration patterns. Birds and bats will continue to be monitored during the construction and operation of the project to evaluate and, if necessary, mitigate any negative impact.

### Rescue and Relocation of Fauna

From November 2013 until December 31, 2013, an effort of an average of 45 hours per week was made, registering 154 traces and sightings of wildlife in the Energía Sierra Juárez project area, which include seven different species.

### Rescue and Relocation of Flora

We have a nursery as a collection center for a considerable amount of specimens rescued and a seed bank for the propagation of specimens by the germination of seeds. This entire inventory will be used in the rehabilitation of the areas affected by the temporary installations.





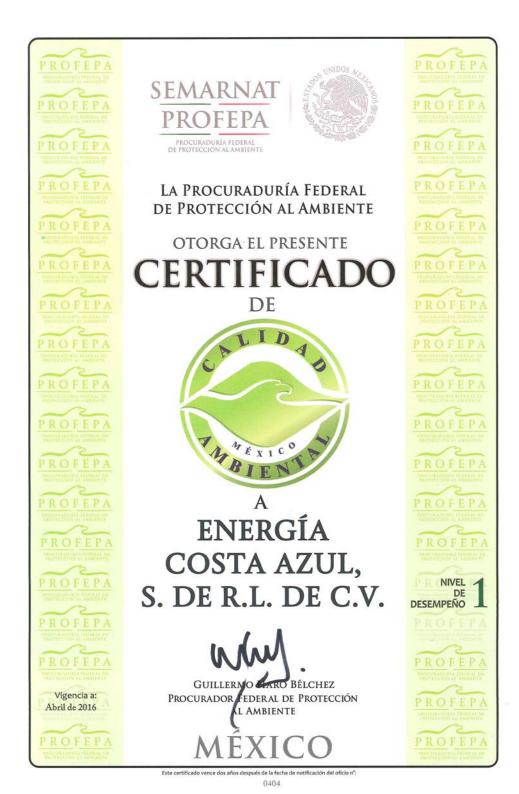




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May 1, 2014

Dear Member,

Congratulations on achieving Climate Registered™ status!

Measuring and verifying your organization's greenhouse gas inventory to The Climate Registry's standards is a major milestone that sets your climate initiatives apart. To celebrate this achievement, The Climate Registry is presenting your organization with this Climate Registered™ Certificate.

As a Climate Registered™ Member of The Climate Registry, your organization's commitment to measuring and publicly reporting the highest quality carbon data is paving the way on the measurable path to sustainability. Use this certificate, along with The Registry's Climate Registered™ logo, to communicate your organization's accomplishment to your staff, stakeholders, customers and the public.

The Climate Registry will also highlight your achievement of reporting a high quality and credible carbon footprint to the only state-backed GHG registry in North America on our website, <a href="https://www.theclimateregistry.org/members">www.theclimateregistry.org/members</a>, and social media platforms.

We look forward to continuing to support and promote your environmental leadership in the years to come!

Sincerely,

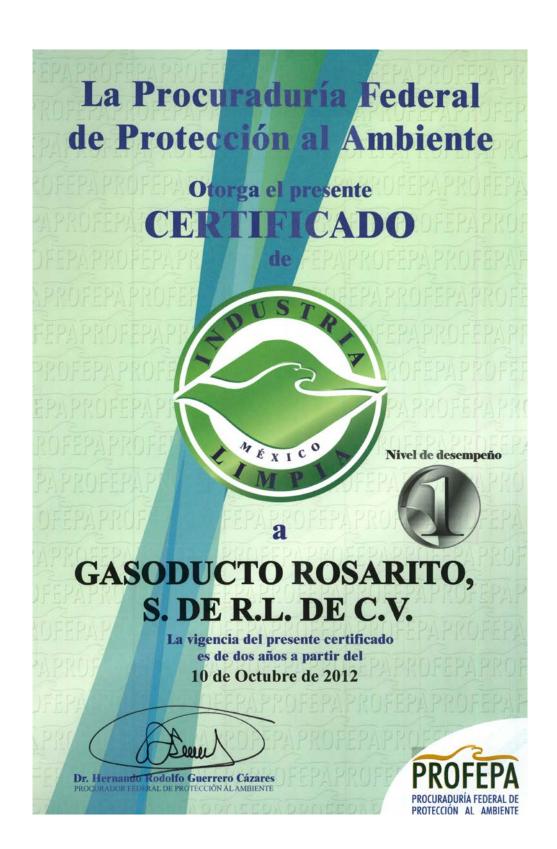
David Rosenheim Executive Director

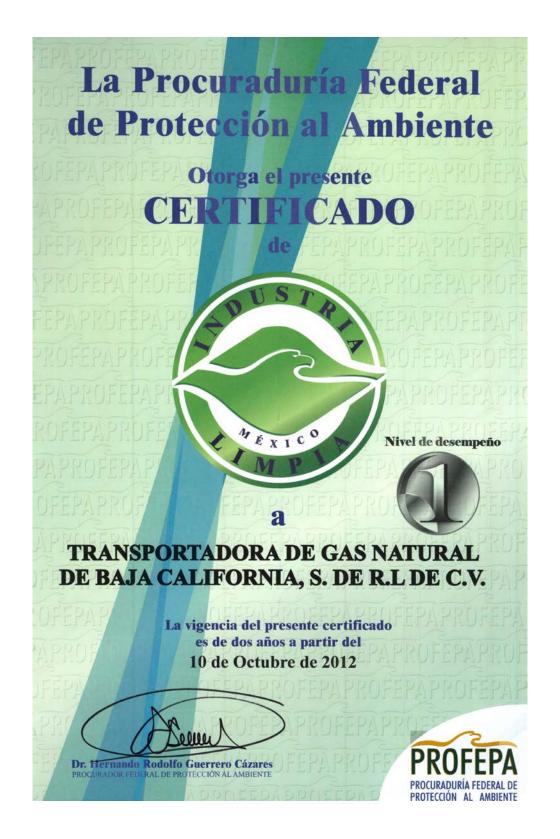
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CLIMATE REGISTERED™ The Climate Registry awards Termoelectrica de Mexicali, S. de R.L. de C.V. Climate Registered status in recognition of its climate leadership for reporting & verifying its 2012 carbon footprint to the highest standard. Douges PDcott David Rosenheim Doug Scott Executive Director, The Climate Registry Chairman of the Board, The Climate Registry President, Illinois Commerce Commission

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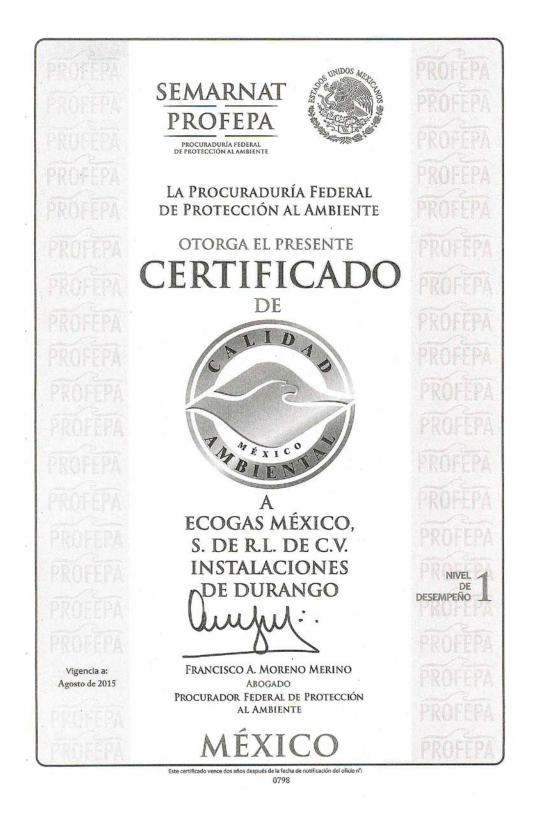




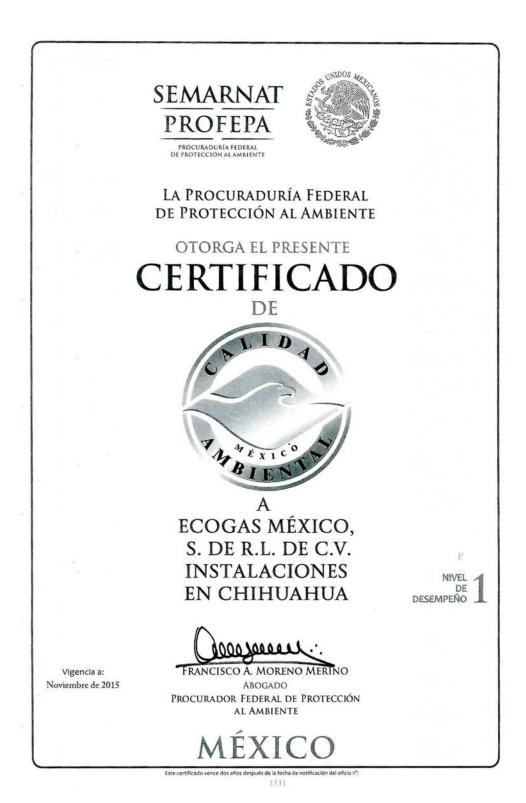
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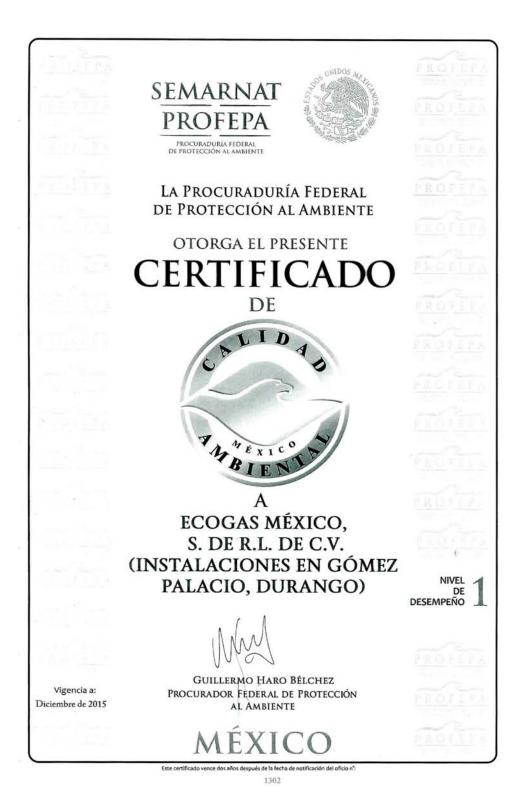
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