



Mexico's Energy Regulatory Commission: Challenges and Opportunities in Reforming the Energy Industry

Washington, DC
September 23rd, 2016

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Chairman

www.gob.mx/cre

@CRE_Mexico



Mexico's landmark energy reform is now a reality, creating significant investment opportunities throughout the entire value chain

239 billion dollars:
Public and Private Investment



Hydrocarbons “Rounds One and Two”

Round 1:

1st Tender: **2.7** billion USD
2nd Tender: **3.1** billion USD
3rd Tender: **1.1** billion USD
4th Tender: **4.4** billion USD
Trión: **11** billion USD

Round 2:

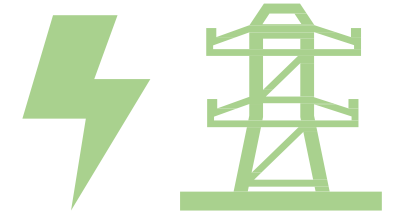
1st Tender: **11.3** billion USD
2nd Tender: **5** billion USD

Seismic data: 2.5 billion USD



Natural Gas and Petroleum Products

Gas pipelines: **16** billion USD
Petroleum Products: **7.8** billion USD*



Power Sector

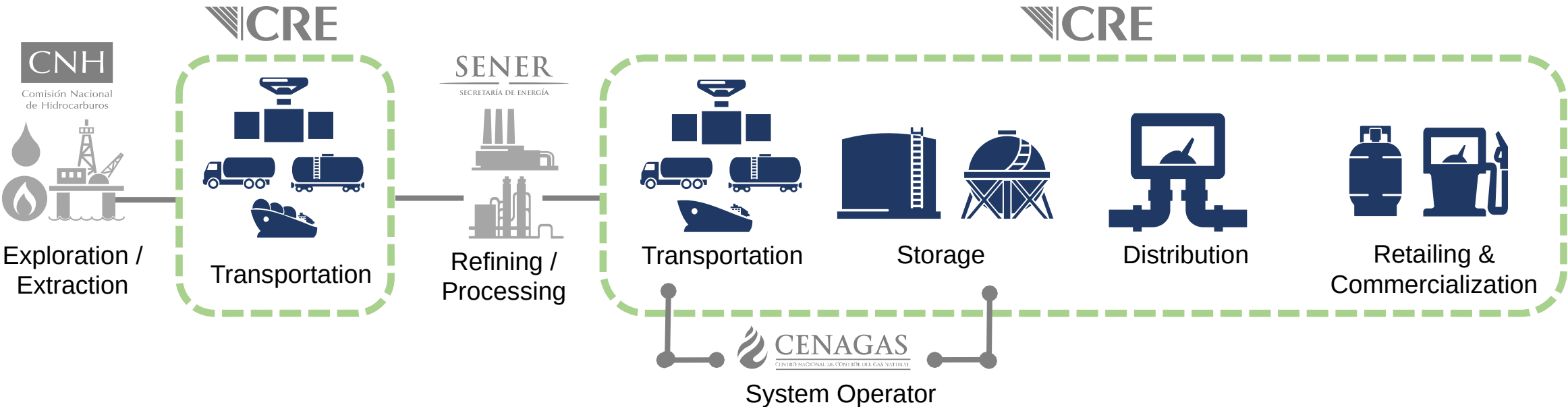
First Power Auction: **2.6** billion USD
Generation: **98.7** billion USD *
Transmission: **15.3** billion USD *
Distribution: **17.7** billion USD *

*Total expected investment throughout 2030. Source: Mexico's Ministry of Energy, 2016.

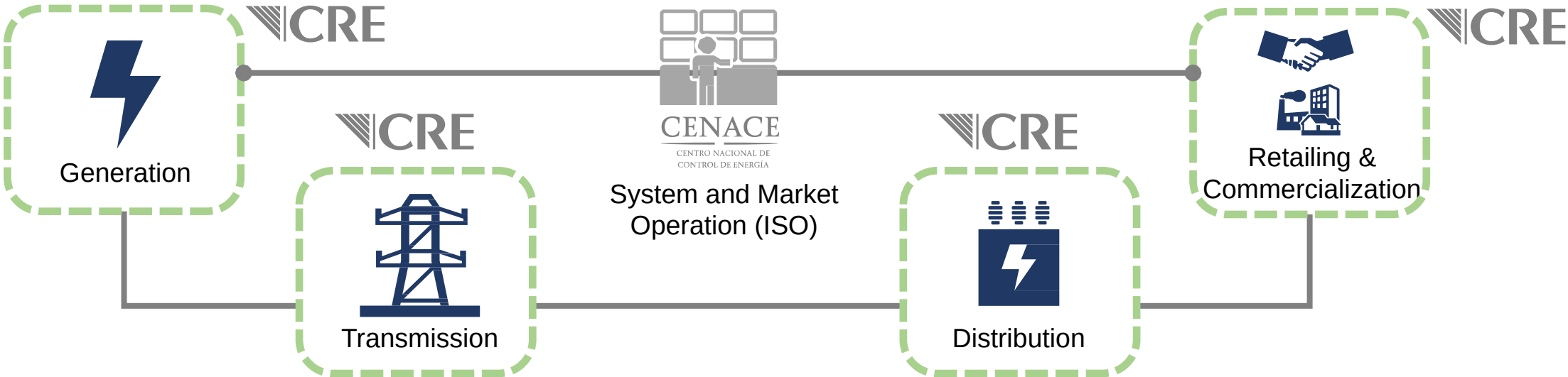
The Energy Regulatory Commission (CRE) has effectively become the regulator of the mid and downstream segments of the oil and gas value chain, as well as the entire electricity supply chain



Hydrocarbons



Electricity



CRE in comparison to other North American energy regulators



CRE

Federal regulator of the mid and downstream segments of the oil and gas value chain, as well as the entire electricity supply chain.



FERC

Federal regulator for **interstate** transmission of electricity, natural gas, and oil.



NARUC

Local regulators for **energy**, telecommunications, **power**, water, and transportation utilities.



NEB

Federal regulator for **Inter-provincial and international** oil, gas and electric imports and exports, as well as construction and operation of power lines and pipelines.



CAMPUT

Provincial and territorial regulators in charge of the **electric**, water, **gas**, and **pipeline** utilities.



NERC

Not-for-profit international regulatory organization that develops protocols for the reliable operation of North America's electric systems.

"Mexico's Grid Code includes 10 NERC standards in the Baja California Region"

CRE faces several challenges and opportunities ahead...



“Ensure that all energy flows are delivered to industrial, commercial and residential consumers in the demanded quantities, with the appropriate specifications, and at competitive costs.”



Strengthen the link between **natural gas and electricity**; without a robust natural gas market, an efficient electricity market won't be feasible



Guarantee efficient operation and costs for the **hydrocarbons and petroleum products transportation and storage network** (including LP gas)



Oversee **generation** activities, as well as the operation of the **wholesale electricity market**.

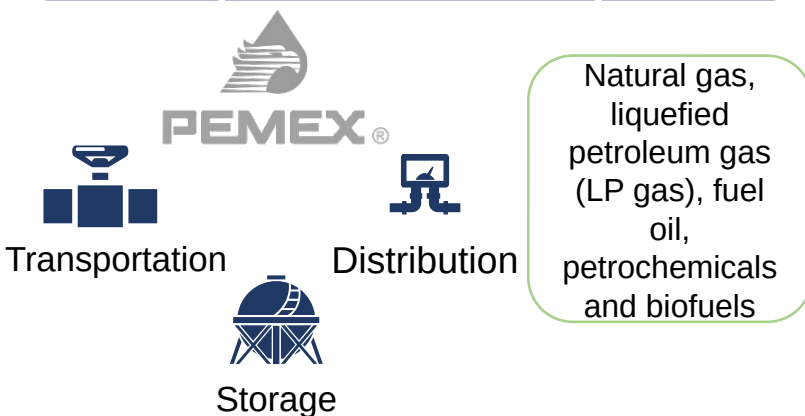
On **transmission and distribution**, guarantee open access to the grid and set competitive rates that foster long-term investment. CRE must also monitor **retailing and commercialization** activities



Promote a competitive environment for the uptake and deployment of **renewable energy sources**

CRE's regulatory obligations in the hydrocarbons sector

Monopolistic Industry Model (1995/2008-2012)

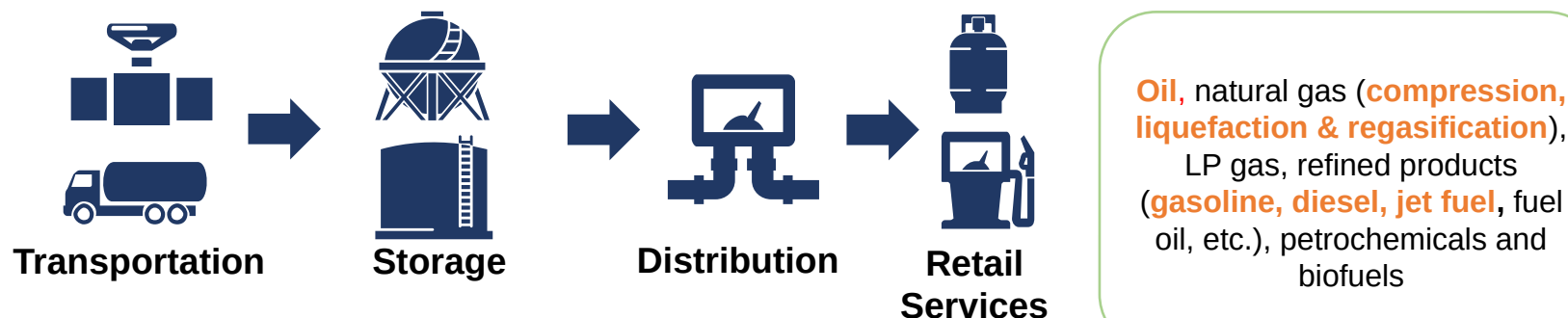


Regulatory Obligations

15

- Pemex maintained a substantial market share in the entire value chain.
- CRE approved terms and conditions for transportation, storage and distribution.
- CRE issued rate-calculation methodologies.

Open Industry Model (2013/2014 - onwards)



Regulatory Obligations*

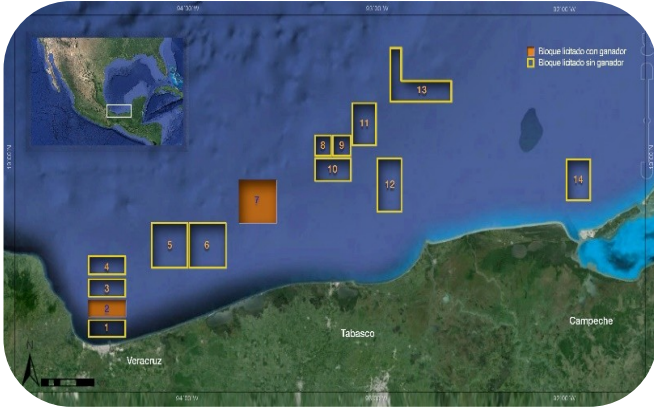
Hydrocarbons Law

61

1. **Regulate** several participants in a competitive environment.
2. **Issue** transportation, storage, distribution, retail services and commercialization permits.
3. **Set** transportation, distribution (by pipeline) and storage rates.
4. **Set** maximum prices for First Hand Sales (FHS).
5. **Regulate** technical conditions for related products and services.
6. **Regulate** technical conditions for service operation and product quality.

* The Energy Regulatory Agencies' Law comprises 54 additional regulatory obligations.

Mexico's upstream contracting and licensing "Round One" has started and yielded positive results

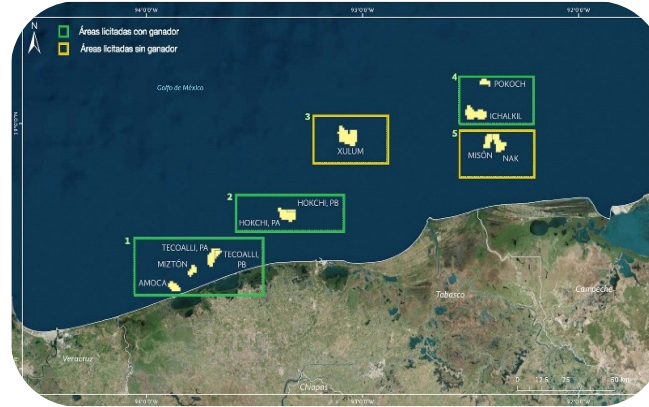


First Tender: Shallow Offshore Exploration

Contract: Production-Sharing
Awarded on July 15th, 2015
Outcome: 2/14 blocks awarded

 **Talos Energy & Sierra Oil & Gas:**
2 blocks awarded

Total expected investment:
2.7 billion dollars



Second Tender: Shallow Offshore Extraction

Contract: Production-Sharing
Awarded on September 30th, 2015
Outcome: 3/5 blocks awarded
Equilibrium Price: \$15 USD

 **Fieldwood Energy & Petrobal:**
1 block awarded

Total expected investment:
3.1 billion dollars



Third Tender: Onshore Extraction

Contract: License
Awarded/Signed on May 10th, 2016
Outcome: 25/25 blocks awarded
Equilibrium Price: \$14 USD

 **Roma Energy Holdings:**
1 block awarded

Total expected investment:
1.1 billion dollars

- In just two months, private oil companies in the country managed to increase production by **22.5%** (from 6,544 to 8,019 barrels per day).

The fourth tender of Round One comprises substantial deepwater prospective resources in the Gulf of Mexico



Type of contract: **License**

10 exploration areas

Depth: **500-3,600 Meters**

Resources: **super light, light and heavy oil, dry and humid gas**

New risk balancing model designed to **attract greater investments and provide access to cutting-edge technology**

Block	Surface (km²)	Average Prospective Resources (MMboe)*	Seismic 3D Coverage %	Depth (m)	Type of expected hydrocarbons
1	1,678.0	273.5	100	1,000 – 3,100	Super Light
2	2,976.6	1,439.7	79.2	2,300 – 3,600	Light & Super Light Oil, Humid Gas
3	1,686.9	1,304.0	100	500 – 1,700	Light & Super Light Oil
4	1,876.7	540.5	100	600 - 2,000	Light & Super Light Oil
5	2,381.1	1,851.9	100.0	2,000 – 3,100	Light & Super Light Oil
6	2,411.2	1,446.0	62.5	2,000 – 3,000	Heavy & Light Oil
7	3,287.1	1,668.9	100.0	1,000 – 2,500	Light Oil & Humid Gas
8	2,358.7	392.1	100.0	1,000 – 1,500	Heavy & Light Oil, Gas
9	2,573.2	621.4	100.0	1,000 – 1,500	Heavy & Light Oil, Gas
10	2,605.5	999.2	100.0	500 – 1,000	Heavy Oil
Total	23,835	10,537			



*Million Barrels of Oil Equivalent

26 national and international oil companies have pre-qualified to participate in the fourth tender



31

Companies have shown **interest**



21

Companies have been granted access to the **Data Room**



23

Companies have requested access to the **Data Room**



26

Companies have initiated the **pre-qualification** process*

	Operating companies		Financial Partners
	1. Atlantic Rim México (Anadarko)		1. Galp Energia
	2. BHP Billiton Petróleo Operaciones de México		2. Inpex Corporation
	3. BP Exploration México		3. Lukoil International Upstream olding
	4. Chevron Energía de México		4. Mitsubishi Corporation
	5. China Offshore Oil Corporation E&P México		5. Mitsui & Co. Ltd
	6. Eni México		6. ONGC Videsh Limited
	7. ExxonMobil Exploración y Producción México		7. Ophir Mexico HoldingsLimited
	8. Hess México Oil and Gas		8. Petro-Canada
	9. Murphy Sur		9. Petróleo Brasileiro (Petrobras) México
	10. NBL México (Noble Energy)		10. Sierra O&G Exploración y Producción
	11. PC Carigali México Operations (Petronas)		
	12. Petróleos Mexicanos (Pemex)		
	13. Repsol Exploración México		
	14. Shell Exploración y Extracción de México		
	15. Statoil E&P México		
	16. Total E&P México		

Contracts will be awarded on **December 5th, 2016**

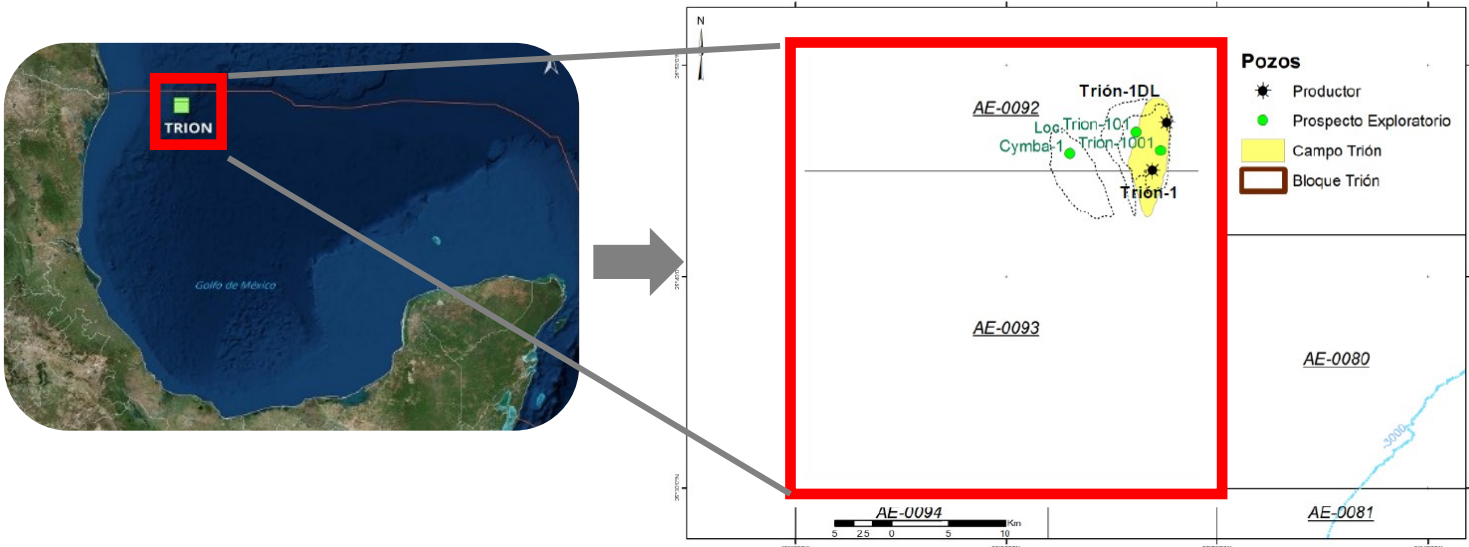
*/Includes 16 operating companies and 10 financial partners. Source: CNH, August 24th ,2016

Pemex will partner to develop the Trion block, which shows great potential for oil production in deepwaters



Gulf of Mexico

Block, Field and Exploration Prospects



Registered Companies			
	BHP Billiton		Lukoil Overseas Netherlands
	BP		Mitsubishi Corporation
	Chevron		PC Carigali México Operations (Petronas)
	ExxonMobil		Shell
	Inpex Corporation		Total

Trion block:
Required investment:
Migration area:
Depth:
Total reserves (3P):
First commercial barrel:
Business proposal:
Contract award:

Discovered in 2012
USD\$11 billion (exploration and production)
1,250 Km²
+2,500 mts
485 million barrels of oil equivalent*
2022
Partnership with Pemex, seeking to share risks and investment
December 5th, 2016

*Estimate as of January 1, 2016.

The First Tender of Round Two comprises prospective resources in shallow waters of the Gulf of Mexico (Veracruz, Campeche and Tabasco)



Type of contract: **Production sharing**

15 exploration areas

Resources: **light and heavy oil, dry and humid gas.**

Bidding principles: transparency, maximum disclosure, equality, competitiveness and simplicity

Submission of proposals and contract awards:
March 22, 2017

Block	Surface (km ²)	Average Prospective Resources (MMboe)*	Seismic 3D Coverage %	Type of expected hydrocarbons
1	544.4	61.7	73	Light Oil
2	548.7	108.1	100	Light Oil
3	546.4	141.0	97	Light Oil
4	556.8	168.9	99	Dry Gas
5	824.5	133.1	88	Humid Gas
6	559.3	78.7	86	Light Oil
7	590.8	25.3	100	Light Oil
8	586.0	57.1	100	Light Oil
9	562.3	73.3	100	Light Oil
10	532.6	78.0	100	Light Oil
11	532.7	142.4	100	Light Oil
12	521.3	194.0	100	Light Oil
13	564.4	108.4	100	Heavy Oil
14	466.4	100.1	100	Heavy Oil
15	971.6	116.3	100	Humid Gas
Total	8,908.2	1,586.4		

* Million of barrels of oil equivalent

The Second Tender of Round Two comprises prospective resources in onshore fields located in the Burgos and Southeast Basins



Type of contract: **License**

12 exploration and extraction areas
(10 areas have their own infrastructure)

Resources: **light and super light oil, dry and humid gas.**

First comercial oil barrel: **2018**

Bidding principles: **transparency, maximum disclosure, equality, competitiveness and simplicity**

Submission of proposals and contract awards:
April 5th, 2017

Block	Surface (km²)	Average Prospective Resources (MMboe)*	Seismic 3D Coverage %	Type of expected hydrocarbons
1	360	44.3	100	Humid Gas
2	375	33.9	100	Humid Gas
3	448	36.7	67	Dry and Humid Gas
4	440	26.7	87	Humid Gas
5	445	30.5	100	Humid Gas
6	479	50.1	97	Humid Gas
7	445	34.4	82	Humid Gas
8	416	59.9	100	Humid Gas
9	464	40.0	100	Humid Gas
10	426	120.4	NA	Super Light Oil and Humid Gas
11	419	119.0	45	Light and Super Light Oil
12	349	47.3	83	Light Oil, Super Light Oil and Humid Gas
Total	5,066	643.2		

* Million of barrels of oil equivalent

39 months have passed since the last critical alert on record restricted natural gas consumption in the country



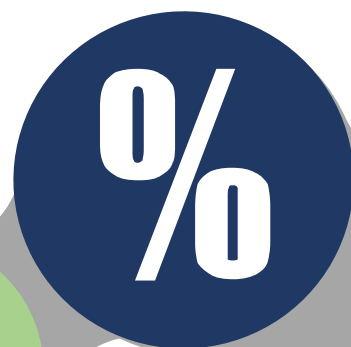
From **January 2012 to June 2013**, **35 critical alerts** were issued in Mexico, curtailing natural gas consumption



Pemex limited the natural gas volumes used by the manufacturing sector



With this information, the **Bank of Mexico** built a **"shortage index"** which represents the percentage of natural gas that was restricted *



The impact of natural gas shortage on the manufacturing sector and the national GDP **was quantified ***



Estimate:
Shortage of natural gas reduced the GDP annual growth rate by 0.28 percentage points in the second quarter of 2013



The energy reform laid the foundations for an open and competitive natural gas market



1. Enhance
natural gas
availability
throughout the
country



2. Separate
pipeline transportation
from natural gas
commercialization



3. Establish
open access and
pipeline capacity
reserve conditions



4. Issue
asymmetric regulation
for high market
concentration and in
case of price
distortions (First-Hand
Sales in the south,
portfolio transfer)



5. Publish
volumes, prices, discounts,
locations and trade
information for retailing and
commercialization of natural
gas

Mexico's Gas Pipeline Network will expand considerably from 2012 to 2019



Total expected investment

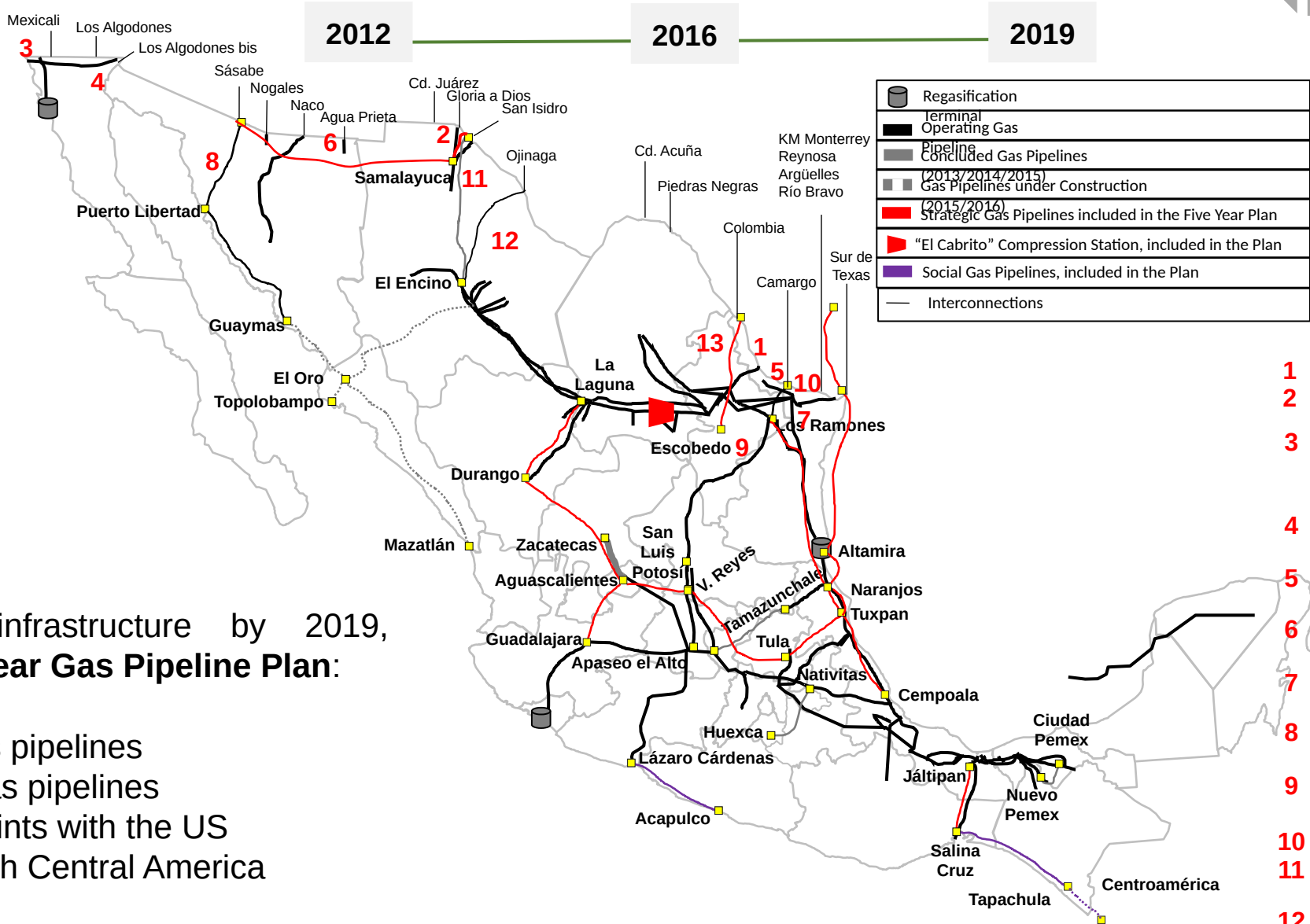


16

billion dollars

New transportation infrastructure by 2019, according to the **Five Year Gas Pipeline Plan**:

- 10 new strategic gas pipelines
- 2 social coverage gas pipelines
- 7 interconnection points with the US
- 1 interconnection with Central America



Pipelines*

- 1 Kinder Morgan (operating)
- 2 Gasoductos de Chihuahua (operating)
- 3 Transportadora de Gas Natural de Baja California (operating)
- 4 Gasoducto Rosarito (operating)
- 5 Gasoductos del Noreste (operating)
- 6 Gasoducto de Aguaprieta (operating)
- 7 Gasoductos de Tamaulipas (operating)
- 8 Gasoducto de Aguaprieta-Sonora (operating)
- 9 TAG Pipelines Norte (operating)
- 10 Arguelles Pipeline (operating)
- 11 Gasoducto de Aguaprieta (San Isidro)
- 12 Gasoducto de Aguaprieta (Ojinaga)
- 13 Midstream de México

*Participation of American capital in Mexico's Gas Pipeline Network
Source: Five Year Gas Pipeline Plan 2015-2109, <http://www.gob.mx/sener/acciones-y-programas/plan-quinquenal-de-gas-natural-2015-2019>

Geographic Areas of Natural Gas Distribution *



Total investment**

1,847
Million dollars

Pipeline network

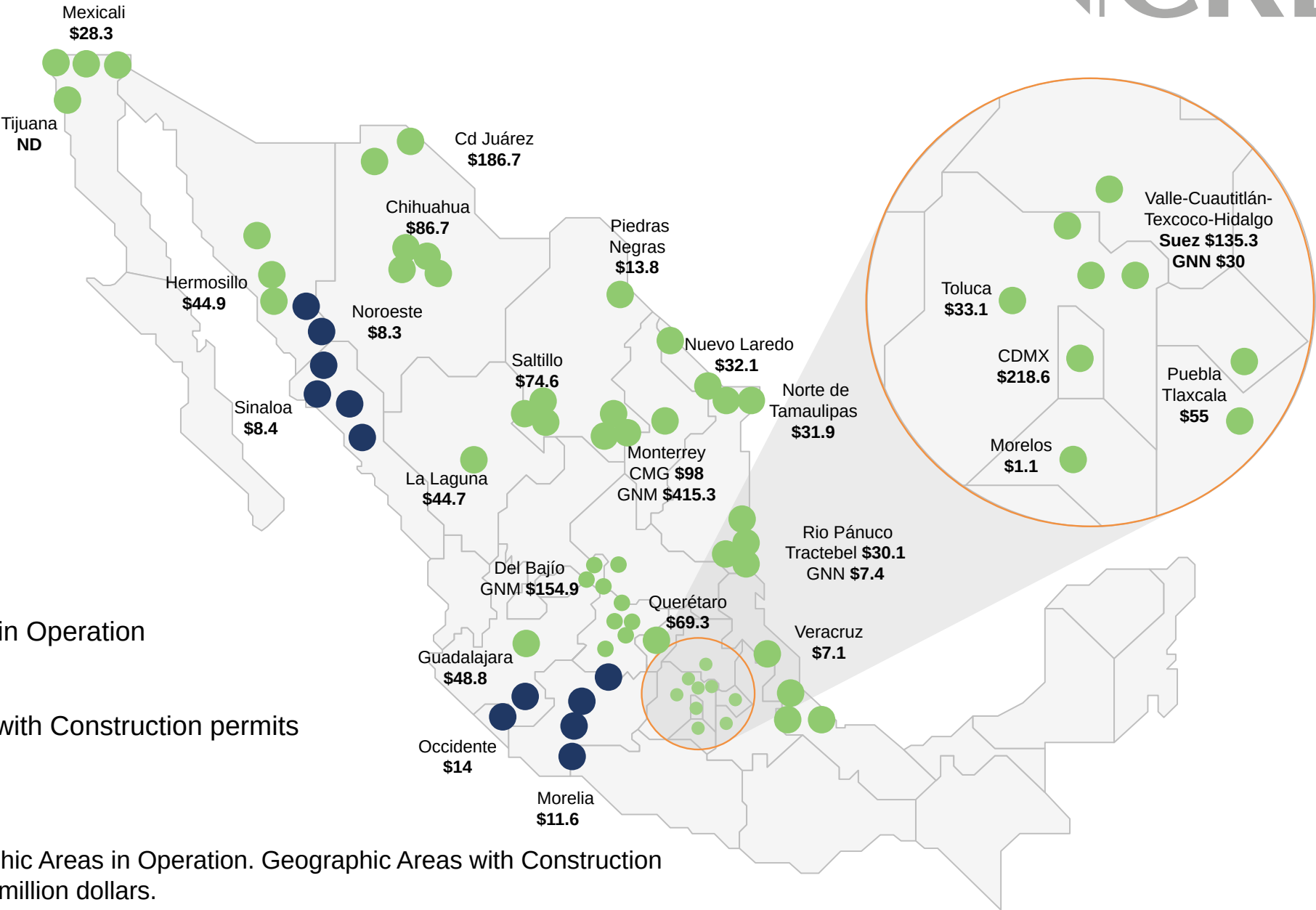
52,818
kilometers



Geographic Areas in Operation



Geographic Areas with Construction permits



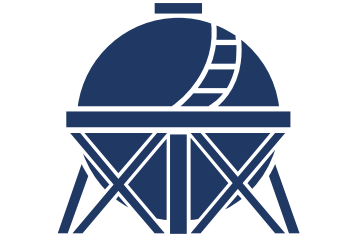
*/ Units in million dollars (USD)
**/ Investment corresponds to Geographic Areas in Operation. Geographic Areas with Construction permits estimate an investment of 42.3 million dollars.

CRE has strengthened its natural gas regulatory obligations. As of September 2016, the following operating permits have been issued:



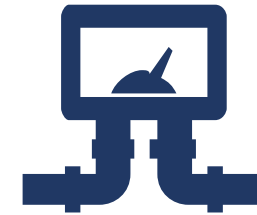
249

Transportation
permits



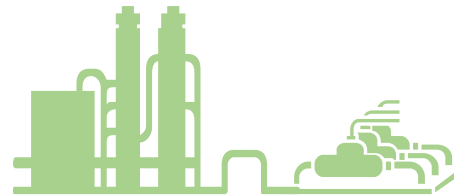
4

Storage
permits



38

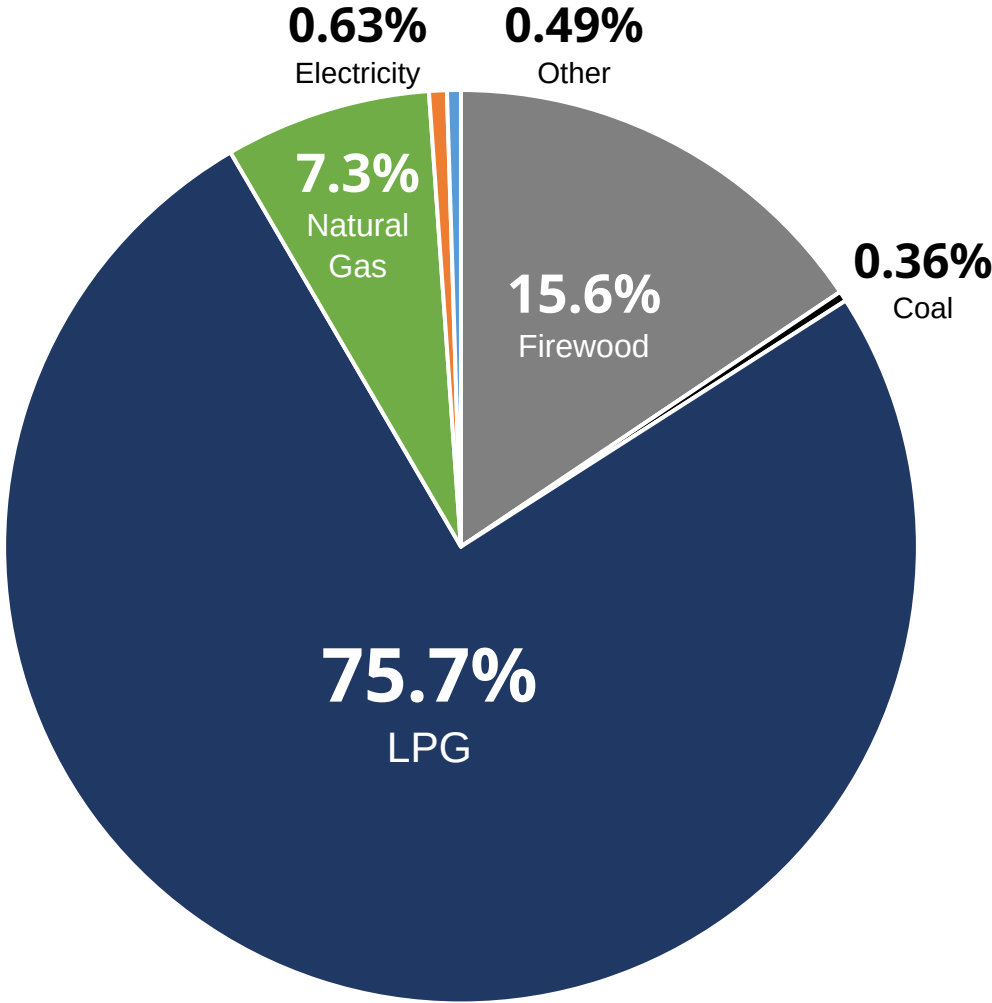
Distribution
permits



53

Compression, Decompression, Service Stations,
Liquefaction and Regasification
permits

76% of Mexican households use Liquefied Petroleum Gas (LPG) as the main fuel for cooking and water heating, followed by firewood with 16% of households



Social Lagging Indicators	Share of Households
Unavailability of power	1.0%
Earthen floor	3.5%
Unavailability of tap water from the public grid	5.1%
Unavailability of drainage	6.0%
Firewood Use	15.6%

The **government** has various **tools** to **promote** a **competitive environment** in the LP Gas industry

1.

Provide
accurate and timely
Information + transparency
2.

Incorporate
storage capacity
with open access
3.

Establish
new forms of distribution
4.

Encourage
the replacement of firewood
with LPG
5.

Deregulate
LPG prices by 2017

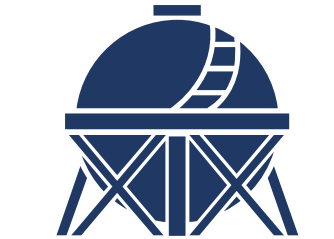
Source: Encuesta Nacional de Ingresos Gastos de los Hogares (ENIGH), 2014 and CONEVAL 2015.

CRE has issued various permits for LPG. As of September 2016, the following permits have been granted:



207

Transportation
permits



26

Storage
permits



1,211

Distribution
permits



520

Self Supply
permits

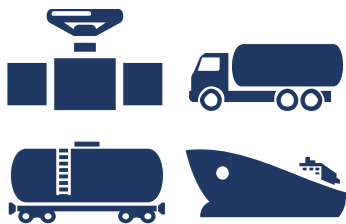


3,206

Service Station
permits

Permits issued since the Energy Reform: 371

As a result of the energy reform, CRE now issues the following permits along the hydrocarbons supply chain:



1,842

Petroleum products
Transportation and Distribution
permits (oil, petroleum products
and petrochemicals)



143

Petroleum products
Storage permits



11,622

Gas Station¹ permits



371

**LP Gas Transportation,
Storage, Distribution, Service
Station and Self Supply** permits



89

**Hydrocarbons, Natural Gas
and Petroleum Products²
Commercialization** Permits

Open Season for Pemex Logística

- In 2016, CRE will approve rules and procedures to enable Pemex Logística to conduct an Open Season.
- CRE will establish equal competition conditions and efficient methods for capacity allocation.
- The process will be aligned to international best practices in terms of transparency and customer protection.

Data as of September
2016
1/ Includes self use
service stations and
aerodrome service
stations
2/ Includes
commercialization of
diesel, LPG, jet fuel and
aviation fuel.

In 2015, CRE granted over 11,000 gas station permits, reducing application costs and processing times; paperwork was completely eliminated



Actions

1

Publish basic requirements for permit applications.

2

Manage pre-existing and operating gas station database.

3

Automatization of permit filing procedures.

4

Establish streamlined reviewing criteria to process permit requests.

The Numbers

Permits granted:*

Regular Gas Stations: **10,788**

Self-Use Gas Stations: **242**

- **Cost reductions** for applicants
- Cut down on **processing times**
- No physical **paperwork**

Permit application **average response time : 13 days**



* As of December 2015.

The opening of refined product logistics (gasoline, diesel and jet fuel) has triggered the interest of new investors in the energy sector.



MONTERRAENERGY **Monterra Polyduct**

- **Route:** Tuxpan, Veracruz - Tula, Hidalgo
- **Project:** 1 storage terminal and 1 polyduct
- **Diameter and length:** 18 inches and 270 Km
- **Operational capacity:** 100 thousand barrels per day
- **Will transport:** gasoline, diesel and jet fuel
- **CRE's approval (TA):** March 22, 2016
- **Final ruling:** July 1, 2016
- **Opening:** Second half of 2018
- **Estimated investment:** 600 million USD

invex **Polyduct INI4**

- **Route:** Tuxpan, Veracruz — Tizayuca y Tula, Hidalgo
- **Project:** 3 storage terminals, 1 polyduct and 3 pumping stations
- **Diameter and length:** 24 inches and 265 Km
- **Operational capacity:** 140 thousand barrels per day
- **Will transport:** gasoline and diesel
- **CRE's approval (TA):** March 22, 2016
- **Final ruling:** 20 working days after the deadline for receipt of applications
- **Opening:** First trimester of 2018
- **Estimated investment:** 350 million USD

Dos Águilas **Dos Aguilas Polyduct**

- **Route:** Corpus Christi, Texas — Nuevo Laredo, Tamps. — Santa Catarina, Nuevo León
- **Project:** 4 storage terminals and 1 polyduct
- **Diameter and length:** 12 inches and 242 Km (USA) and 218 Km (Mexico) = 460 Km
- **Operational capacity:** 90 thousand barrels per day
- **Will transport:** gasoline, diesel and jet fuel
- **CRE's approval (TA):** March 10, 2016
- **Final ruling:** May 23, 2016
- **Opening:** First trimester of 2018
- **Estimated investment:** 500 million USD



Gasoline and diesel storage is a business line which is also drawing investment attention



1 Cabo Fuels Las Torres, S.A. de C.V.

- **Capacity:** 7,532 barrels
- **Investment:** 24.6 million pesos
- **Location:** La Paz, Baja California Sur

2 Interport FTZ S.A. de C.V.

- **Capacity:** 300,000 barrels
- **Investment:** 1,277.5 million pesos
- **Location:** San Luis Potosí, San Luis Potosí

3 Gas Natural del Noroeste S.A. de C.V.

- **Capacity:** 60,000 barrels
- **Investment:** 380.3 million pesos
- **Location:** San José Iturbide, Guanajuato

4 Orizaba Energía, S. de R.L. de C.V.

- **Capacity:** 2,670,520 barrels
- **Investment:** 2,308.8 million pesos
- **Location:** Tuxpan, Veracruz

5 Combustibles de Oriente, S.A. de C.V.

- **Capacity:** 6,230 barrels
- **Investment:** 143.3 million pesos
- **Location:** Matamoros, Tamaulipas

6 VOPAK México, S.A. de C.V.

- **Capacity:** 430,852 barrels
- **Investment:** 787.1 million pesos
- **Location:** Veracruz, Veracruz



- New storage projects in development
- Pipelines

Furthermore, the Energy Reform allows greater competition and differentiation in product supply, services and retail prices at gas stations in Mexico



Announcement
of competitors



New storage
projects in
development

Pipelines



The National Advisory Committee on Standardization of Hydrocarbons, Oil and Petrochemicals unanimously approved the "NOM-016-CRE-2016 Specifications of refined products"



3 MAIN OBJECTIVES OF NOM-016



Promote uninterrupted fuel supply in the country

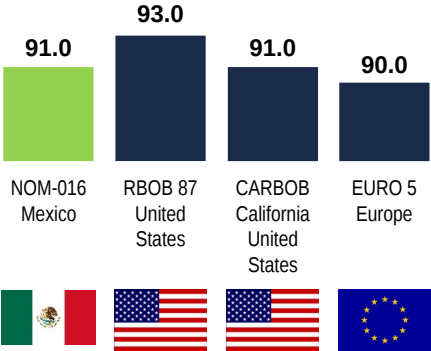


Establish conditions of efficiency and competitiveness in the refined products market



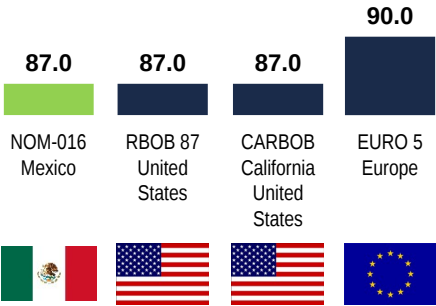
Encourage the transition to fuels with less environmental and public health impact.

Octane (Minimum) Premium

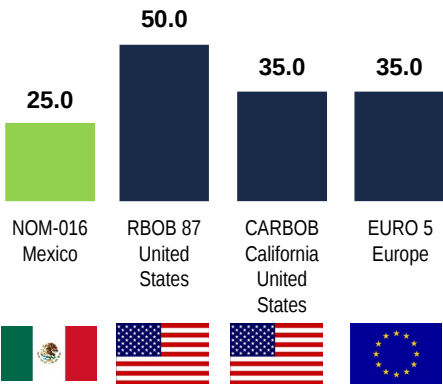


In order to limit the formation of ozone, gasoline oxygenated with ethanol will be banned in the three major metropolitan areas (Valle de Mexico, Guadalajara and Monterrey).

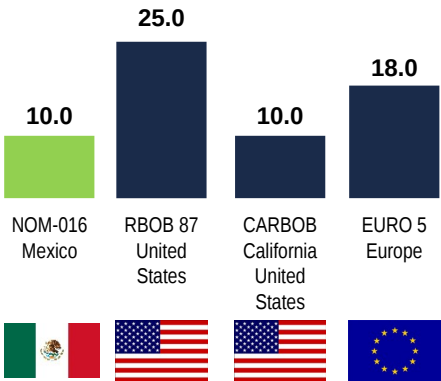
Octane (Minimum) Magna



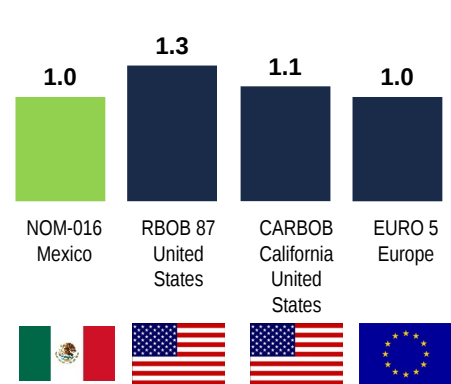
Aromatics (%. Maximum Vol)



Olefins (%. Maximum Vol)



Benzene (%. Maximum Vol)



Note: The values shown in the graphs correspond to Magna and Premium gasoline sold in the Mexico City Metropolitan Area.

Since January 2016, we have recorded different gas stations offering discounts to consumers



Competitive prices

Discounts between 10 and 50 cents per liter of gasoline at service stations in Mexico City, La Paz, Los Cabos, Puebla, Monterrey, Tijuana and Toluca.

New products and services for the benefit of the consumer

- Promotional cards
- Electronic purse
- Smart phone apps
- Supermarkets and restaurants



Mexico is moving forward with the gradual and orderly liberalization of gasoline and diesel prices starting January 2017 (pending approval by Congress)



2017

CRE, with prior non binding opinion of COFECE, will set the **calendar to gradually and regionally liberalize gasoline and diesel prices** throughout 2017 and 2018.



2018

The Ministry of Finance will establish **maximum prices in regions which have not yet been liberalized** according to the calendar, or in cases where CRE, with prior non binding opinion of COFECE, identifies any price behavior inconsistent with market conditions.



2019

Starting in 2019, **CRE may regulate prices when COFECE determines there are no effective competition conditions in place** in a certain region (CRE can do this preemptively while COFECE deliberates).



CRE will operate a **fuel price information system**. A public version of the system, directed at consumers, will be available online.



Permit holders will prominently **display the sale price per liter for each fuel at every service station**, ensuring maximum visibility.



- Permit holders will report to CRE:
- **Retail prices** every time they change, at least 30 minutes in advance;
 - Information regarding **traded volumes**;
 - An annual report of the **station's corporate and capital structure**.

CRE's regulatory obligations in the electricity sector

Monopolistic Industry Model (1995-2012)



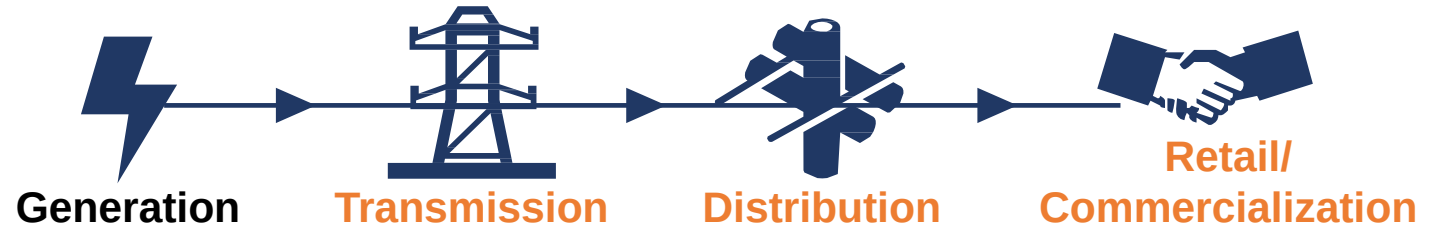

**Private
Sector
Generation**

Regulatory
Obligations

16

- CRE issued generation permits: self-supply, cogeneration, imports, exports, independent power production (IPP's) and small-scale generation.
- Basic regulation between CFE and permit holders.

Open Industry Model (2013/2014 - onwards)



Regulatory
Obligations*

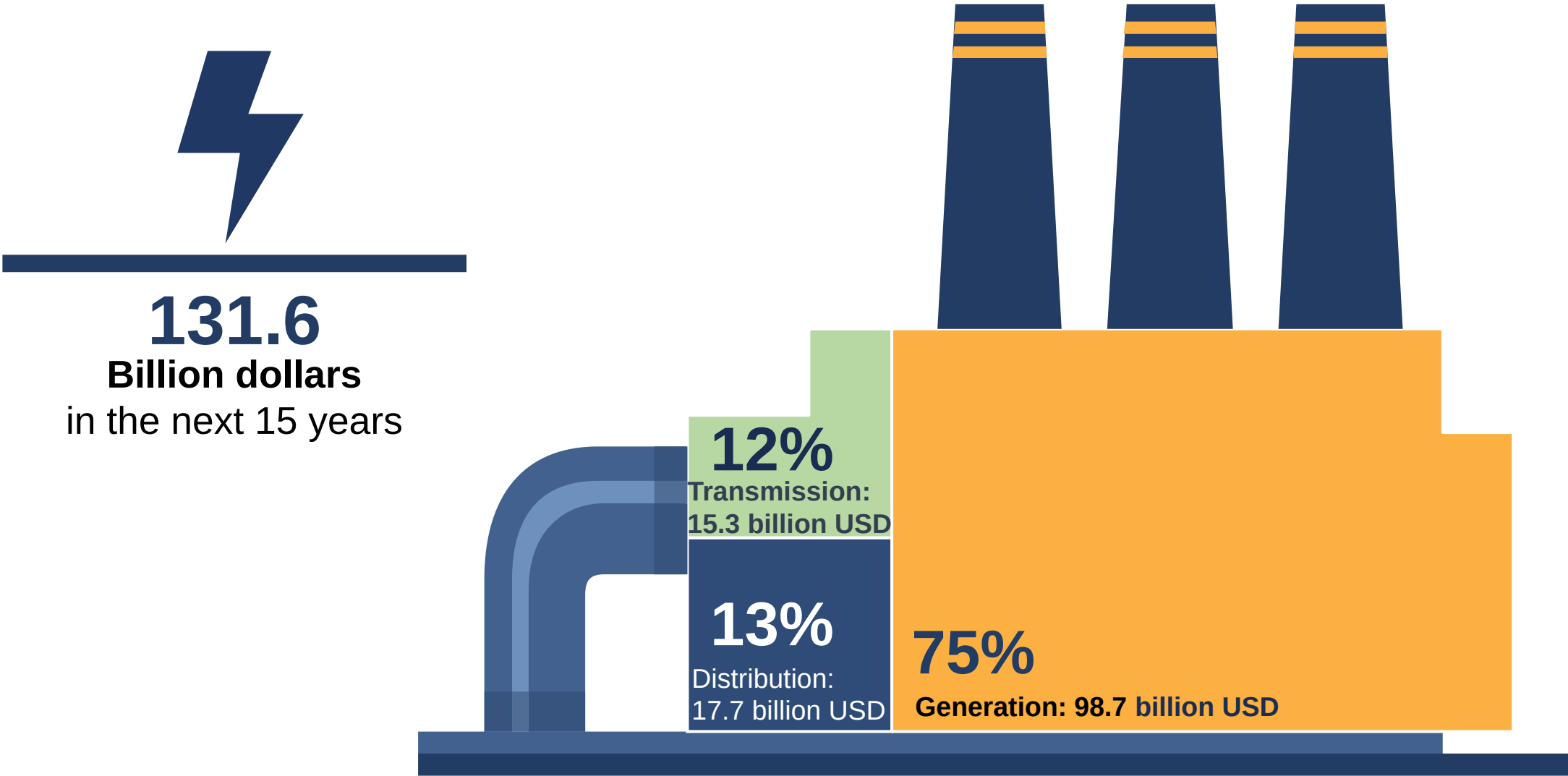
Electric Industry Law

60

1. **Regulatory obligations** throughout the entire value chain.
2. **Issue** generation and retail permits, as well as import and export approvals.
3. **Oversee** the wholesale electricity market.
4. **Set** transmission, distribution and basic retail rates.
5. **Regulate** technical conditions supporting the National Electricity System.
6. **Regulate** conditions for the provision of services.

*The Energy Regulatory Agencies' Law comprises 54 additional regulatory obligations.

Power sector planning through 2030 is essential to boost Mexico's economic competitiveness



Energy production and use accounts for two-thirds of GHG emissions at a global level. In this regard, Mexico is working closely with the international community to meet multilateral climate goals



PARIS2015

CONFÉRENCE DES NATIONS UNIES
SUR LES CHANGEMENTS CLIMATIQUES

COP21·CMP11

<2°C max
global average
temperature increase

187
signatory countries
are invited to submit their
INDCs*

55 ratification
instruments
+ **55%** of global GHG*
conditions for entry into
force¹

On March 28th, 2015, Mexico **became the first developing country to present its INDC**. Mexico has committed to:

25% Unconditional
reduction of its Greenhouse
Gases and Short Lived
Climate Pollutants emissions
by 2030

Up to 40%
Conditional reduction
subject to a global
agreement providing an
international price on
carbon, access to financing
and technology transfer

On **September 21st, 2016**, Mexico ratified the Paris Agreement

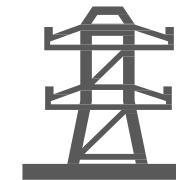
NORTH AMERICAN LEADERS' SUMMIT

OTTAWA
2016



45% reduction of
methane emissions in
North America by 2025

50% of clean power
generation by 2025



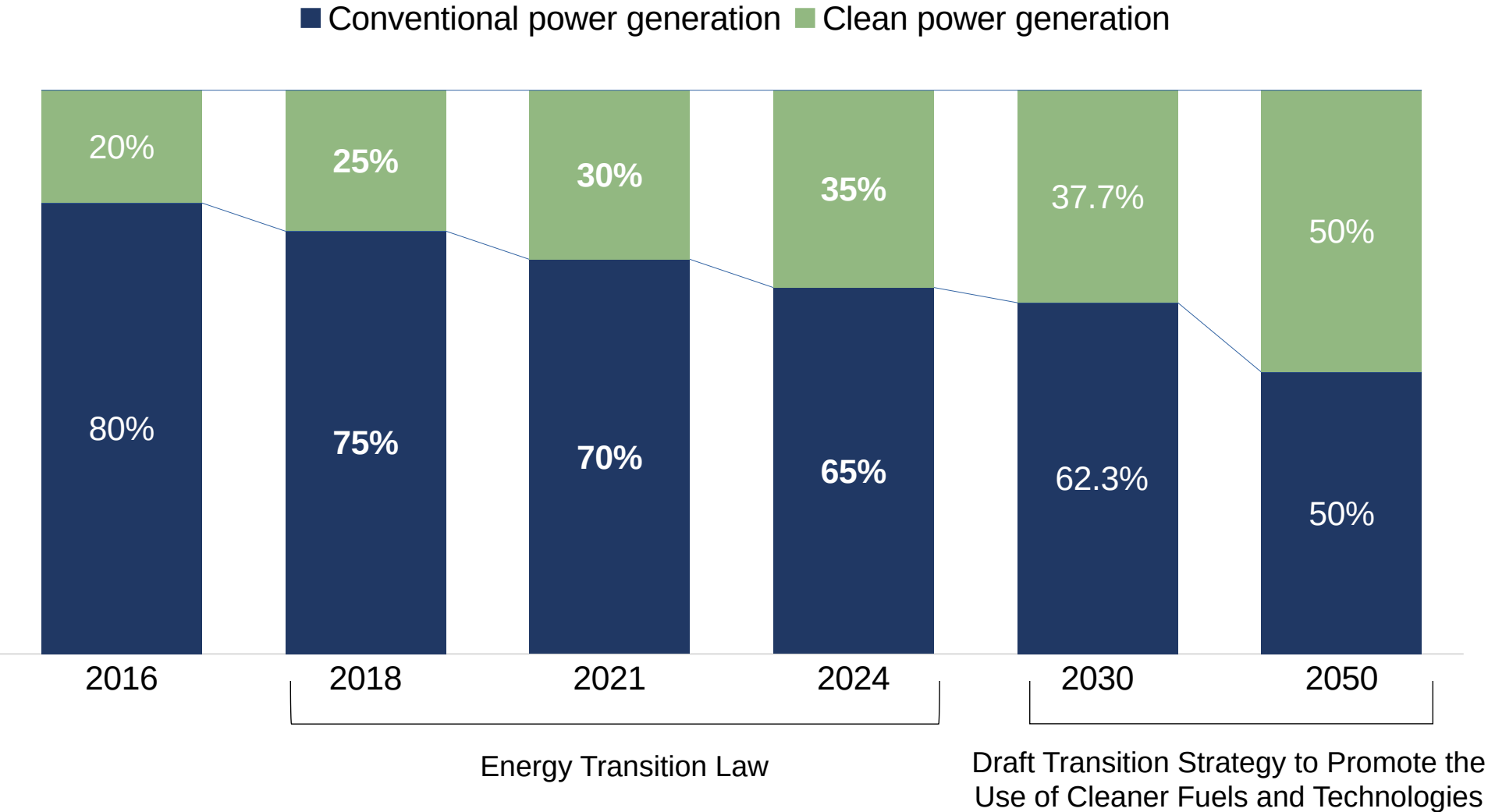
Collaborating on cross-border transmission projects

- At least 6 transmission lines currently proposed or in permitting review, such as the Great North Transmission Line, the New England Clean Power Link, and the Nogales Interconnection, **would add approximately 5,000 MW of new cross-border transmission capacity.**

¹ As of September 22nd, 60 Parties have ratified accounting for 47.6% of the total GHG emissions.

* INDC: Intended Nationally Determined Contributions; GHG: Greenhouse Gas

The Mexican law establishes clean power generation targets



Clean Energy Certificates (CEL) promote investment and encourage the generation of clean electricity, reducing greenhouse gas emissions significantly



SENER

SECRETARÍA DE ENERGÍA

- Establishes **requirements and criteria** to acquire and grant CEL



CRE

- Awards and regulates CEL
- Manages the S-CEL platform:
 - The registration of electricity generation and consumption
 - Issuance, transactions, liquidation and cancellation of CEL
 - Compliance of clean energy obligations
- Sanctions



CENACE

CENTRO NACIONAL DE CONTROL DE ENERGÍA

- Operates the **Wholesale Electricity Market**
- (Spot Market / Auctions)
- Secondary CEL Market



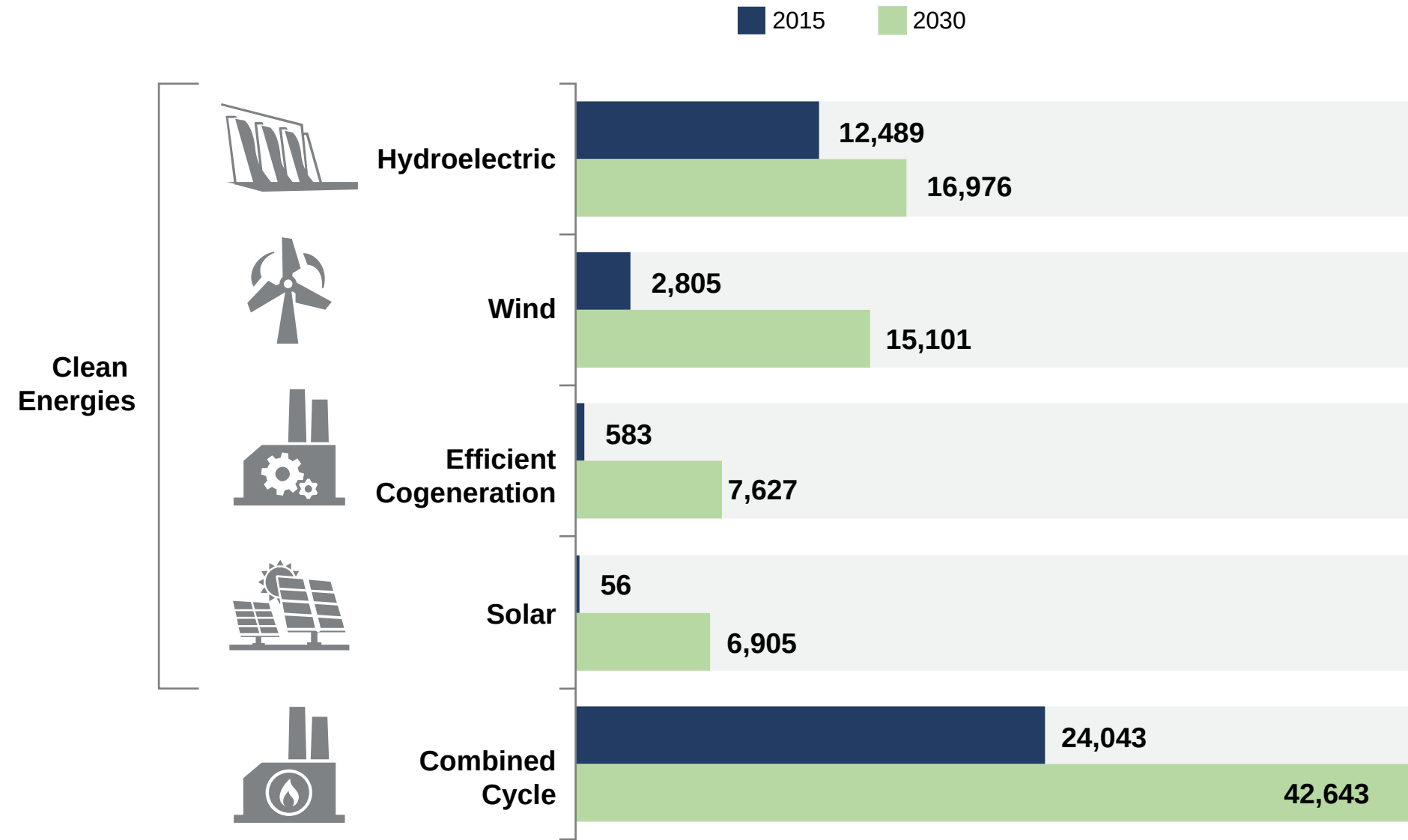
Clean Generators (1 MWh = 1 CEL)

- Renewable energies: solar, wind, hydro, geothermal.
- Nuclear energy
- Cogeneration

Compelled Participants

- Suppliers
- Qualified Users
- Isolated Power Supply
- Interconnection Legacy Contracts that are not supplied entirely by clean energies

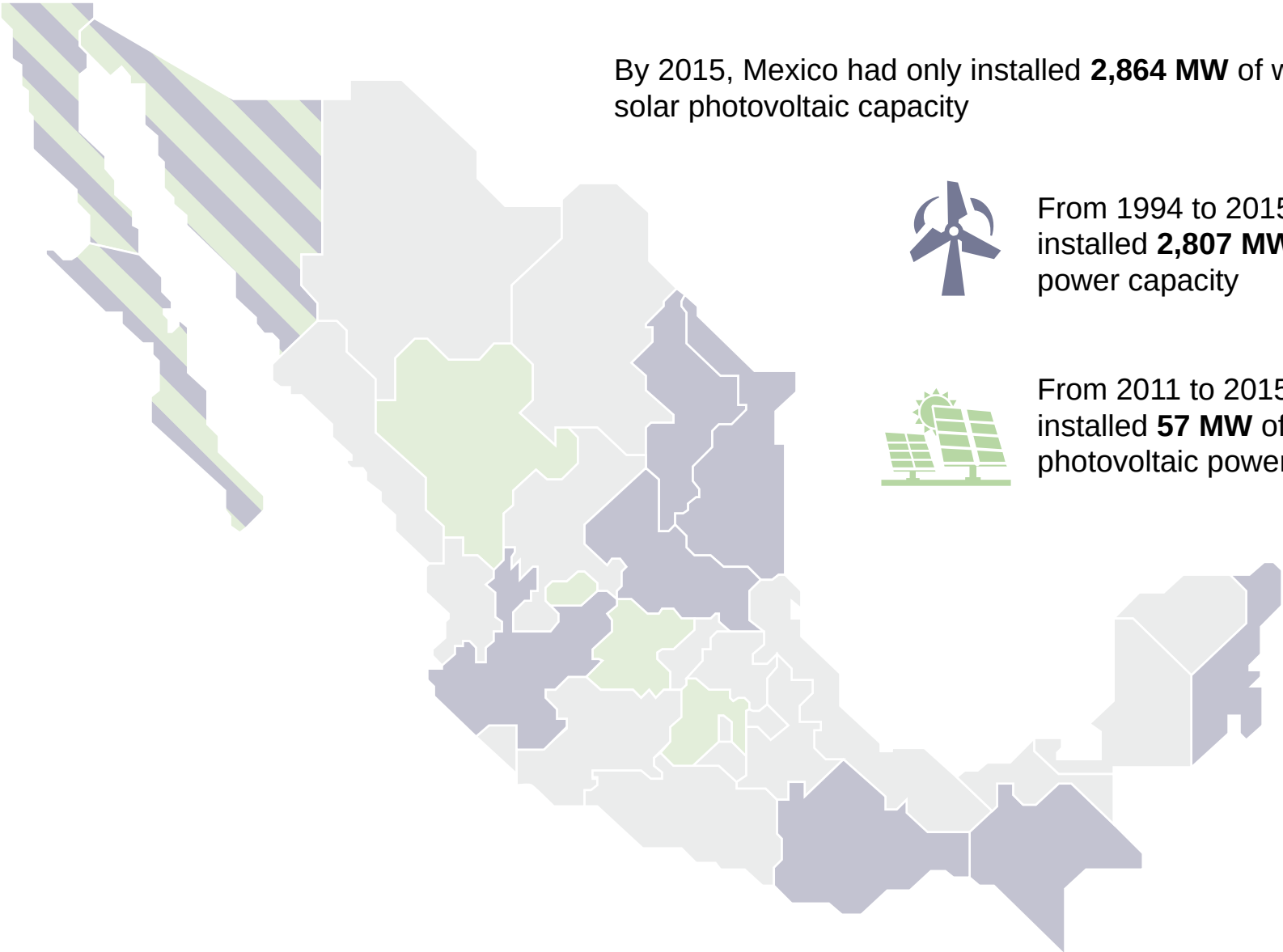
Power sector planning 2016-2030: cleaner energy for the next 15 years



200%
Capacity Increase in Clean Energy Sources

75%
Capacity Increase in Natural Gas Combined Cycle Plants

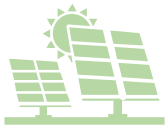
The First Long-Term Auction of the Wholesale Electricity Market meant the takeoff of clean energy in Mexico



By 2015, Mexico had only installed **2,864 MW** of wind and solar photovoltaic capacity



From 1994 to 2015, Mexico installed **2,807 MW** of wind power capacity



From 2011 to 2015, Mexico installed **57 MW** of solar photovoltaic power capacity

State	Wind power plants Capacity (MW)	Solar power plants Capacity (MW)
AGS	-	1
BC	166	6
BCS	1	31
CHIS	32	-
DGO	-	16
GTO	-	1
JAL	50	-
MEX	-	1
NL	22	-
OAX	2278	-
QR	2	-
SLP	200	-
SON	2	1
TAMPS	54	-
TOTAL	2,807	57

The First Long Term Auction increased existing wind and solar power capacity by 75%





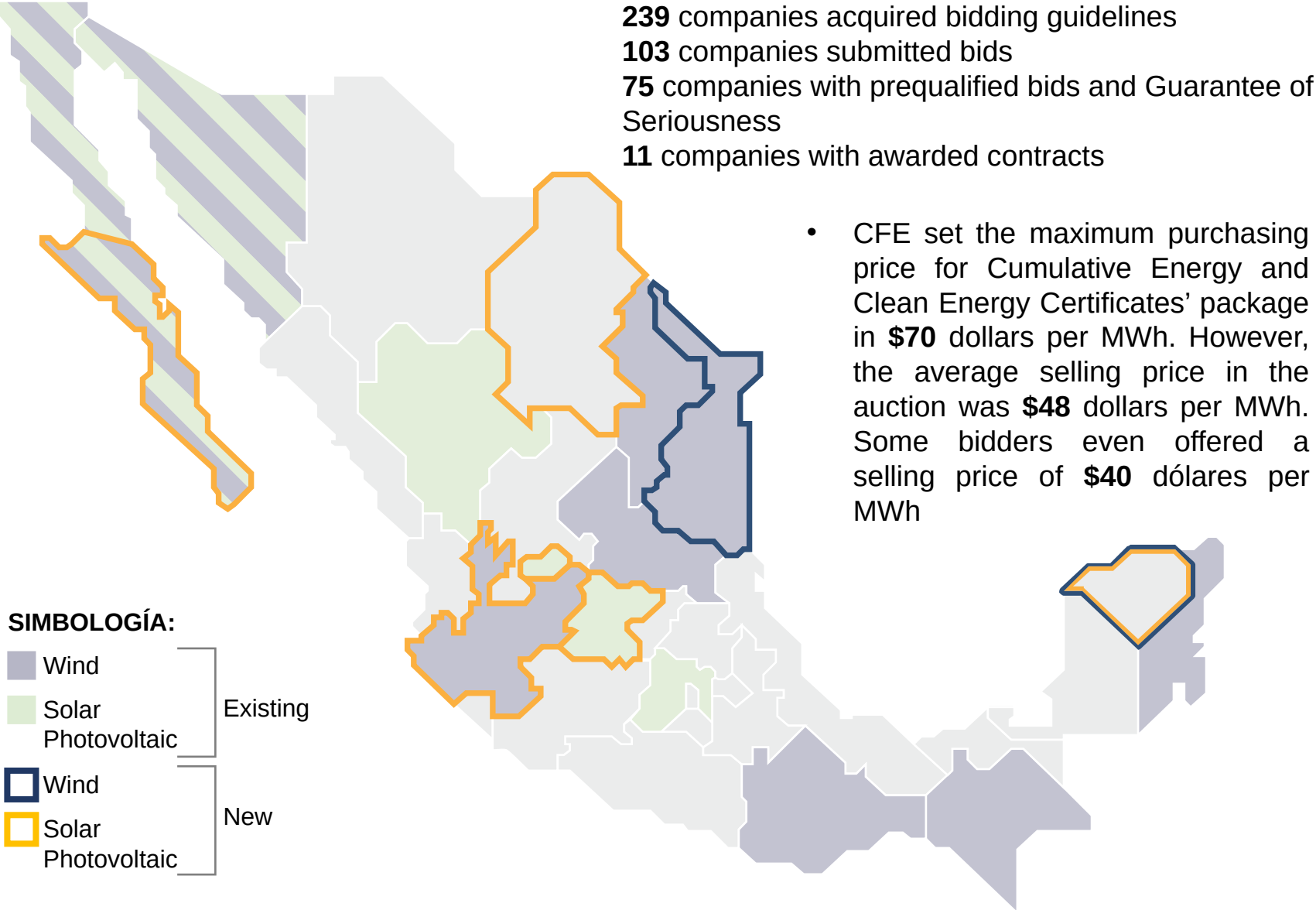
2,055 MW to be installed:
1,691 MW solar and 364 MW wind



1.9% increase in annual power generation



2.6 billion dollar investment



State	Wind power plants Capacity (MW)	Solar Power plants Capacity (MW)
AGS	-	63
BCS	-	23
COAH	-	580
GTO	-	307
JAL	-	100
TAMPS	168	-
YUC	196	618
TOTAL	364	1,691

Some examples of international press coverage of Mexico's first long-term power auction

Bloomberg NEW ENERGY FINANCE

Mexico auction result in record low PV prices

Analyst Reaction by Lilian Alves / 31 March 2016

Mexico's first power auction was marked by drama, first in a false start announcement of the wrong winners then later by producing the lowest subsidy-free solar project contract we have ever seen. The auction contracted 5.4 TWh of clean energy power from wind and solar and another 5.4m clean energy certificates (CELs) at an average Price of \$47.8/MWh

The Economist

Solar Energy

Follow the sun

Let the sunshine in

Italy's Enel Green Power (EGP) is also attracting attention. In February it won a tender to provide Peru with 20 years of power from solar PV at just under \$48 a MWh. Just over a month later Mexico awarded it a similarly lengthy contract to generate solar power in the arid northern state of Coahuila at a price of about \$40 per MWh. Bloomberg New Energy Finance (BNEF), a research firm, called it "the lowest subsidy-free solar contract we have ever seen". EGP's head of business development, Antonio Cammisecra, says there is a clear trend of falling prices. "We are trying to drive it," he says.

MAY 8, 2016 @ 12:01 AM 25,435 VIEWS
Steven Chu: Mexico's Energy Auction Reveals True Price Of U.S. Renewables



Jeff McMahon

CONTRIBUTOR
I cover green technology, energy and the environment from Chicago.

FULL BIO >

Opinions expressed by Forbes Contributors are their own.



Steven Chu,

Former US Secretary of Energy and Co-winner of the Nobel Prize

Forbes

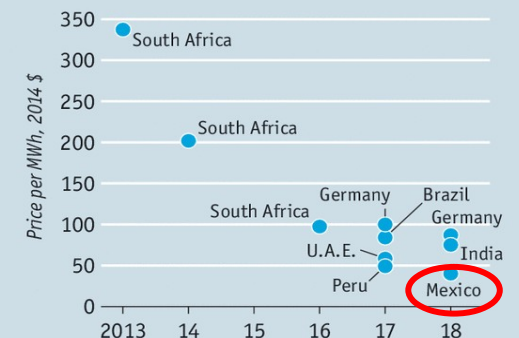
Steven Chu: Mexico's Energy Auction Reveals True Price Of U.S. Renewables

"If you want to know the true price of renewable energy in America—free from subsidies and mandates—look to Mexico, former Energy Secretary Steven Chu said Friday."

...
"So I look to the South," Chu said of Mexico's auction. "This is the best way to actually back out what the subsidies are. What are other economies doing nearby with great wind and great solar the way that we have?"

Panel beaters

Tenders for solar-energy installations



Source: IEA

The second long-term power auction will take place between May and September, 2016. Just as the first auction, bidders will offer capacity, cumulative energy and clean energy certificates



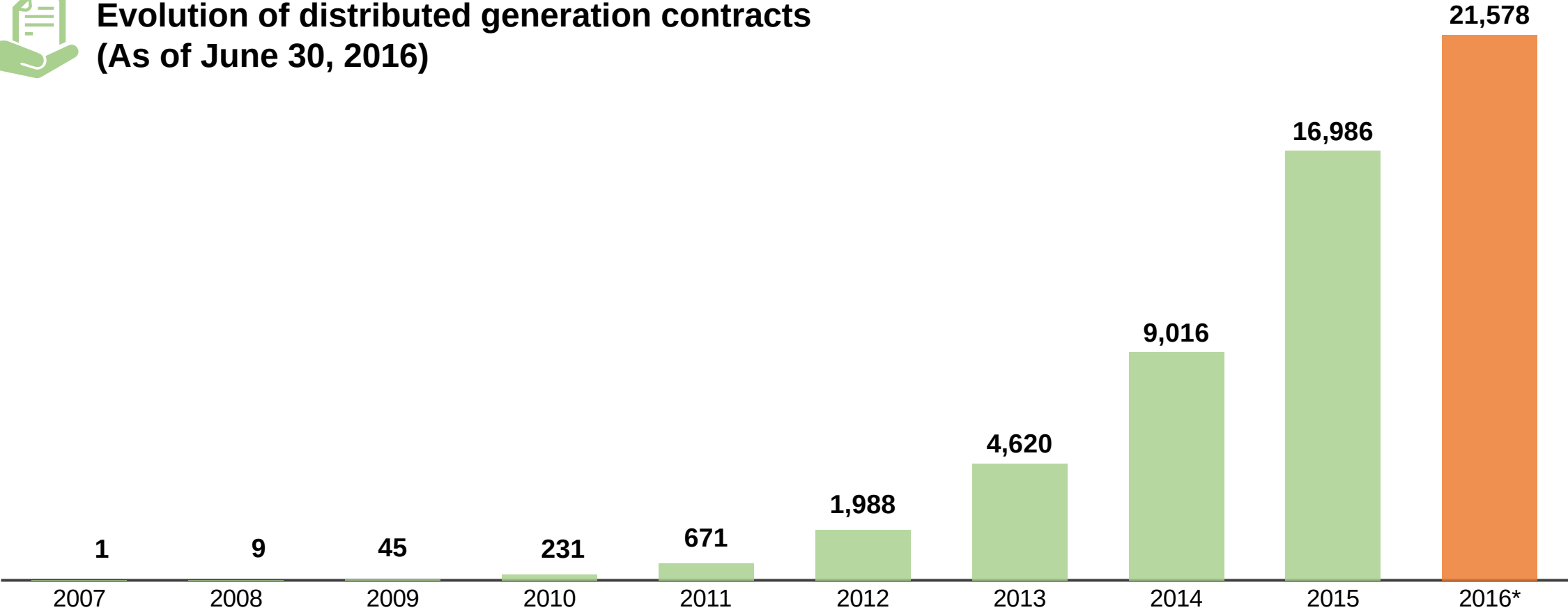
	Total Amount Offered (First Auction)	Total Amount Offered (Second Auction)	Maximum price (First Auction)	Maximum price (Second Auction)
Capacity	500 MW/year (It wasn't awarded, since the maximum purchasing price was considered too low)	1,483 MW/year (+196%) (Includes 500 MW / year that weren't awarded in the previous auction)	\$10,000 MXN \$538 USD per MW	\$1,688,706 MXN \$90,928 USD per MW
Cumulative Energy	6,300,000 MWh/year (5,385,720 MWh / year were purchased, that is to say 84.66%)	10,629,911 MWh/year (+69%)	\$884 MXN \$48 USD per MWh	\$750 MXN \$40 USD per MWh (-15%)
CEL's	6,300,000 CEL/year (5,426,580 CEL's were purchased, that is to say 85.3%)	10,629,911 CEL/year (+69%)	\$444 MXN \$24 USD per CEL	\$375 MXN \$20 USD per CEL (-15%)

From the first to the second auction, CFE lowered the maximum price per package of energy and certificates from \$ 70 to \$ 60 per MWh

In addition to large-scale generation projects, there has been significant growth of distributed generation in Mexico. It is expected that this trend will continue in the coming years

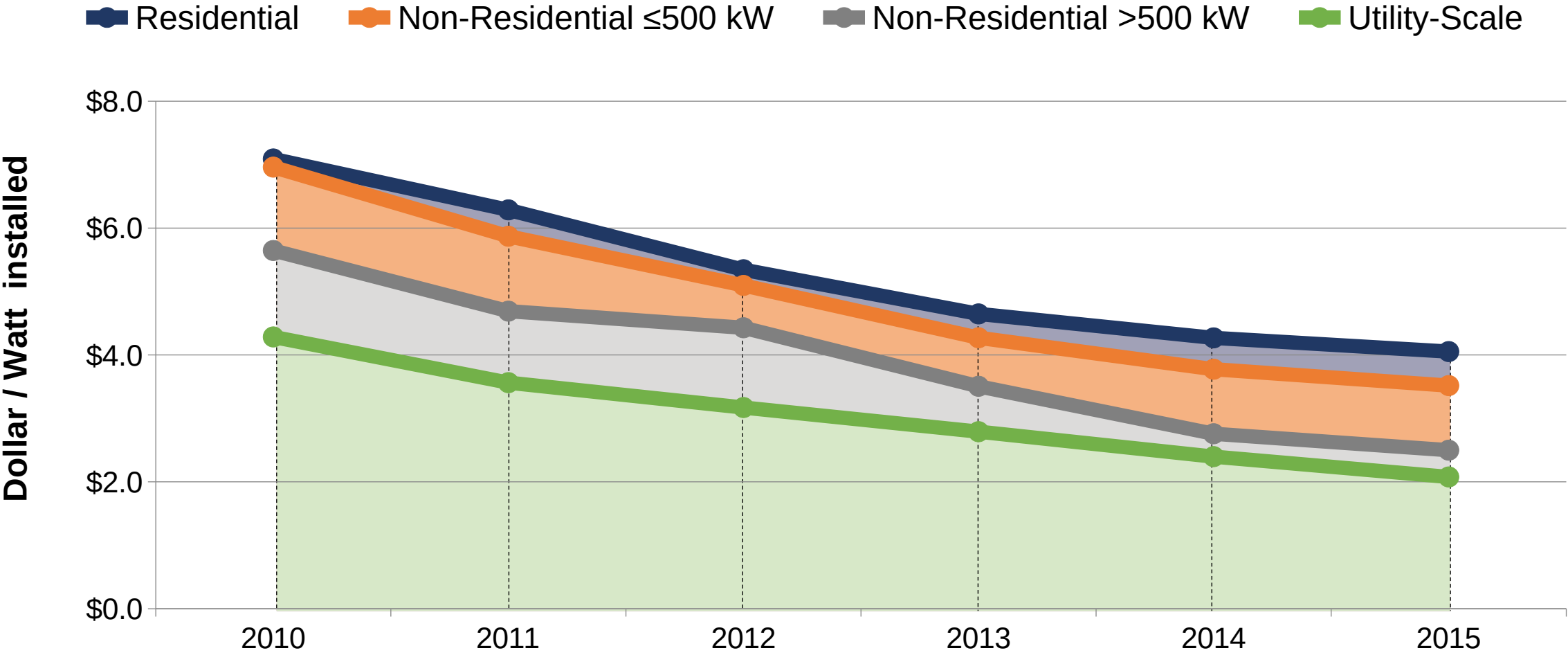


Evolution of distributed generation contracts
(As of June 30, 2016)



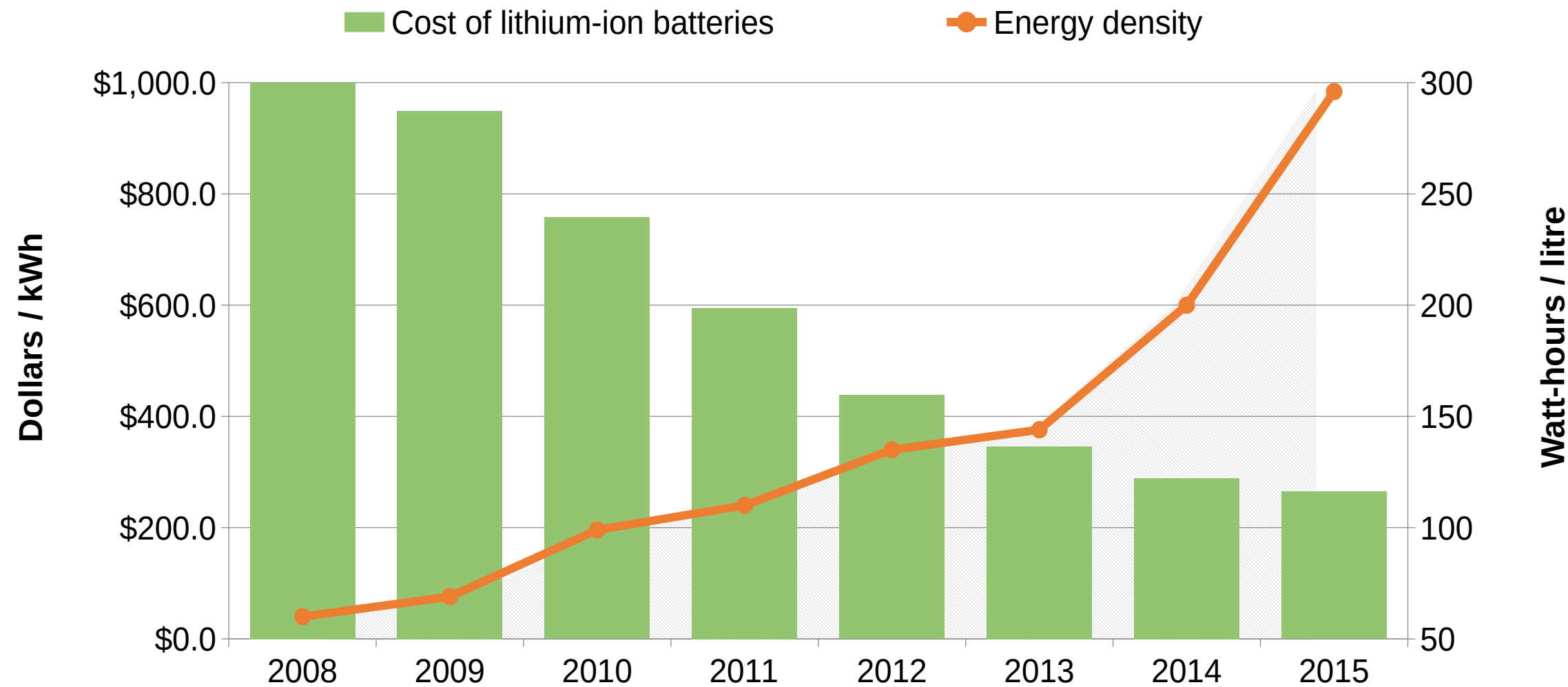
Note: Elaborated with information provided by CFE. Preliminary data for the first half of 2016.

Installation prices of solar energy have decreased significantly over the last 5 years. Utility-scale solar is already cost competitive with conventional forms of electricity generation.



Fuente: Scientific American. The Price of Solar Is Declining to Unprecedented Lows (2016); Tracking the Sun IX: The Installed Price of Residential and Non-Residential Photovoltaic Systems in the United States (2016); Utility-Scale Solar 2015: An Empirical Analysis of Project Cost, Performance, and Pricing Trends in the United States (2016)

In recent years, the cost of batteries has dropped, while their efficiency has increased



Source: U.S. Department of Energy, 2016.

There are applications available to optimize the roll-out of distributed solar energy and calculate the benefits and savings for consumers



112 Stanley St, Redwood City, CA 94062, EE. UL

Analysis complete. Your roof has:

1,830 hours of usable sunlight per year
Based on day-to-day analysis of weather patterns

1,434 sq feet available for solar panels
Based on 3D modeling of your roof and nearby trees

\$9,000 savings

Estimated net savings for your roof with a 20-year lease

FINE-TUNE ESTIMATE

Fine-tune your information to find out how much you could save.

What's your average monthly electric bill?

We use your bill to calculate how much electricity you use based on typical utility rates in your area.

\$0

100

\$500

Your recommended solar installation size

This size will cover about 100% of your electricity usage.
Solar installations are sized in kilowatts (kW).

3.75 kW

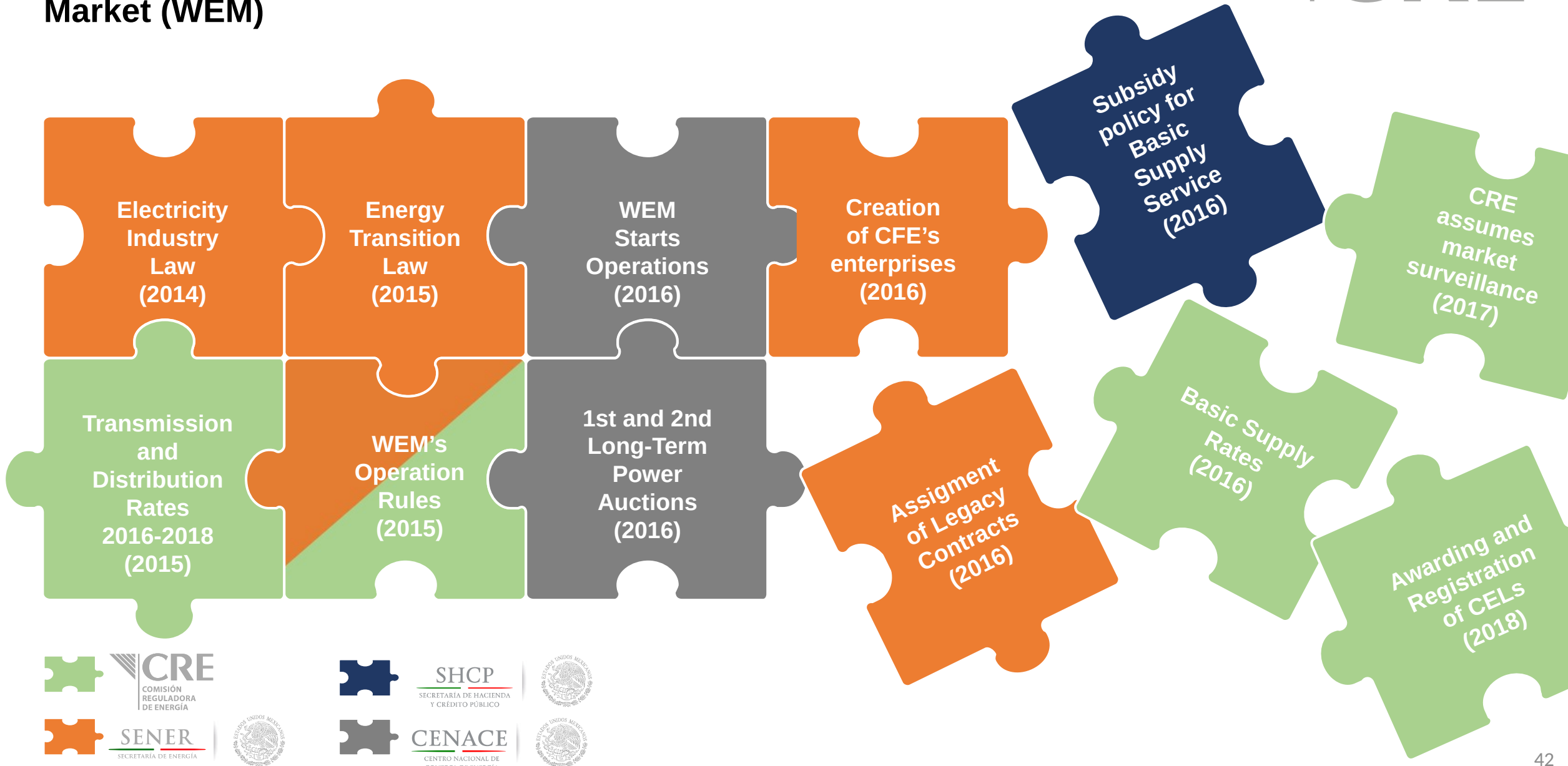
(264 square feet)

Buscar en Internet y en Windows

11:04 p. m.

24/08/2016

The implementation of the Energy Reform is moving towards the consolidation of a dynamic and competitive Wholesale Electricity Market (WEM)



SHCP
SECRETARÍA DE HACIENDA
Y CRÉDITO PÚBLICO

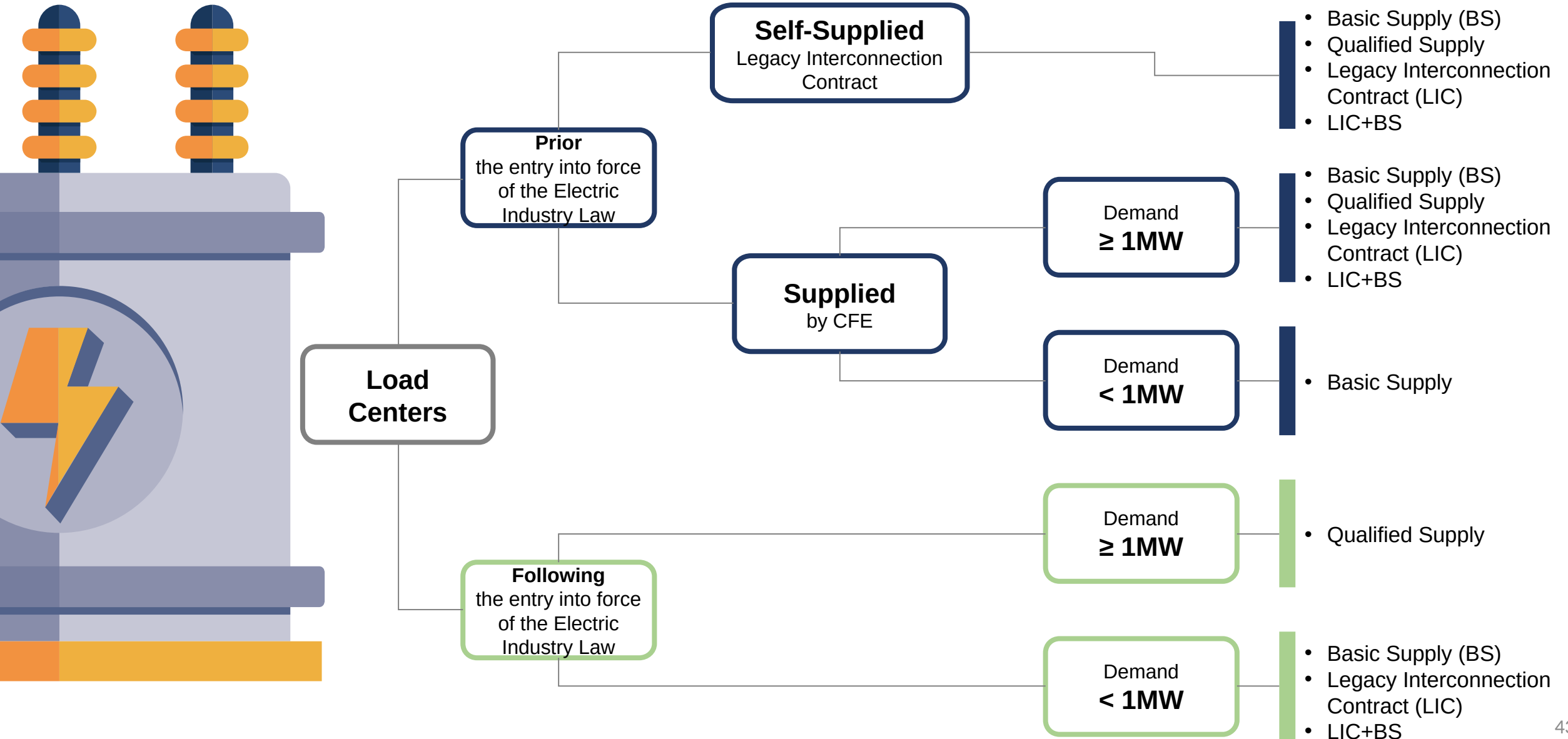


CENACE
CENTRO NACIONAL DE
CONTROL DE ENERGÍA



Load classification

and types of supply



CRE has launched the Qualified User Registry. A qualified user is an electricity consumer who must register with CRE due to its high level of demand



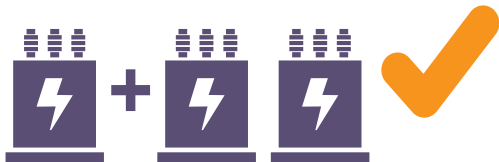
1 ¿Who can participate?



Load centers (consumers) with a power demand greater than 1 MW.



Load centers of Interconnection Legacy Contracts, regardless of their demand .



Load centers that, by aggregation of loads, reach a minimum demand of 1MW and meet the requirements set by Ministry of Energy:

2 A Qualified User can:



Access a competitive market with multiple suppliers.



Obtain competitive prices.



Freely negotiate terms and prices.

Additional benefits:

Users with a demand of 5 MW and an annual consumption of 20 GWh can:



Participate in the market without intermediaries.



Sign contracts directly with generators.



Acquire certificates without third party support

3 Sign up!

1. To fill out the registration form, enter the microsite and provide the following information:



- a) General information about the legal entity and its legal representative.
- b) Features of the load center.
- c) The last receipt or unique identification number service (RPU).



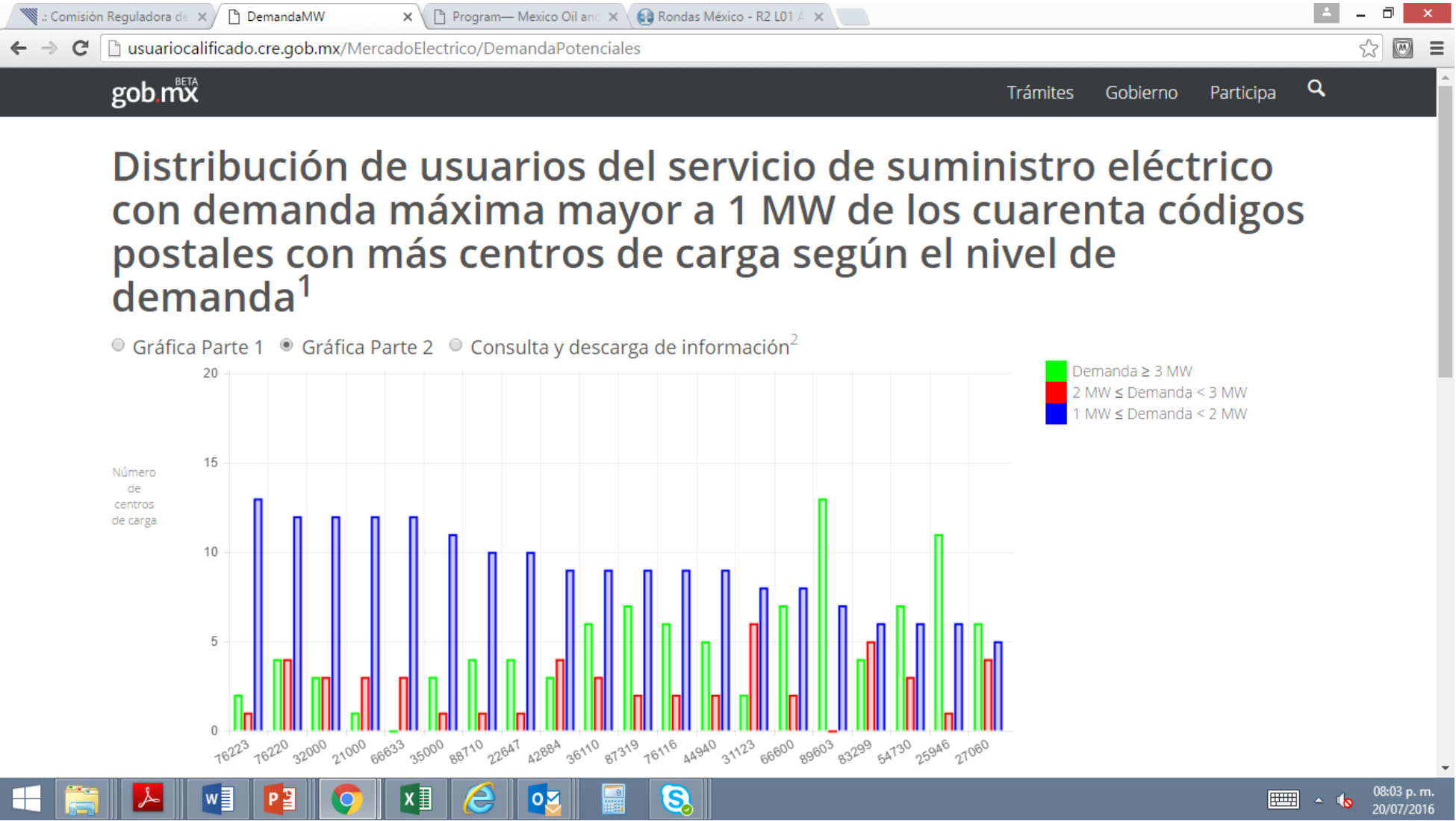
2. Admission and application review.



3. Granting of registration certificate.

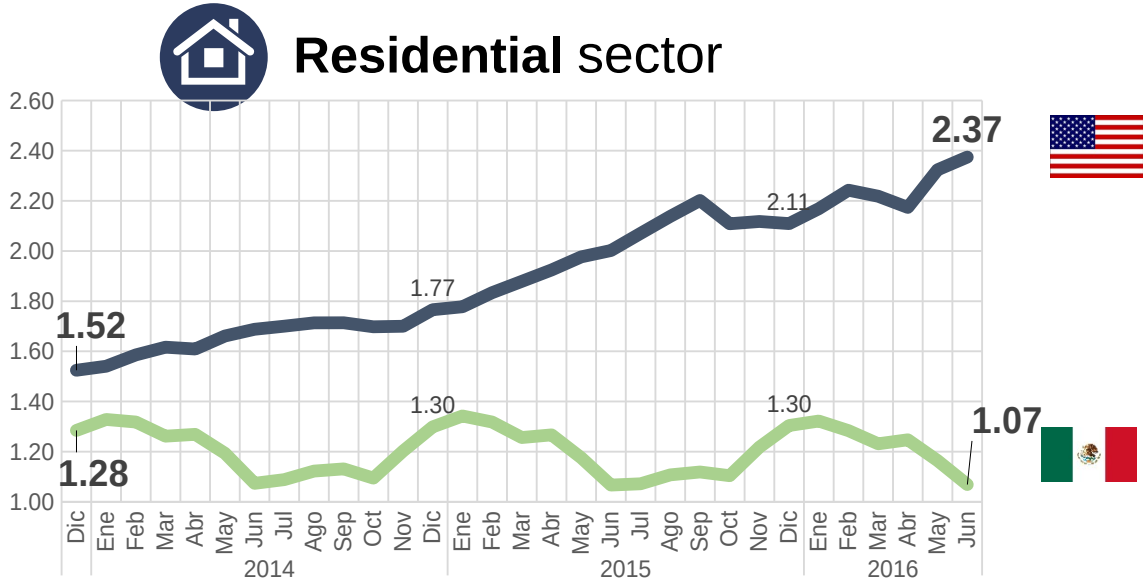
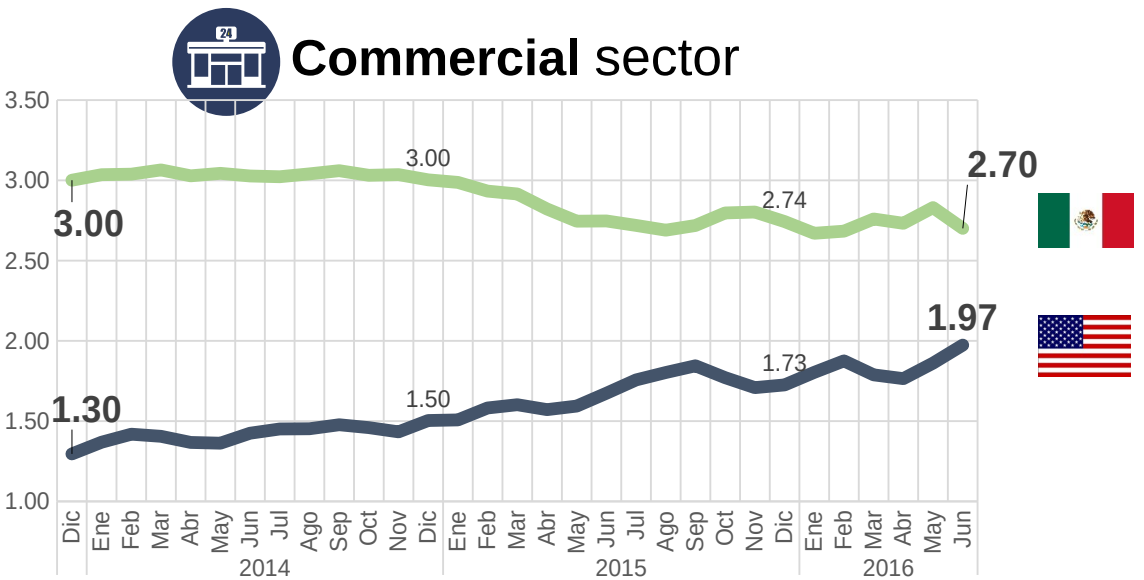
Estimated length of the process: 30 business days upon receipt of the complete record.

CRE's website already provides information on the geographic distribution of potential qualified users, classified by load center number and zip code



<http://usuariocalificado-dev.cre.gob.mx/MercadoElectrico/DemandaPotenciales>

Comparative analysis of average electricity rates by consumption sector from December 2013 to June 2016 (Pesos/Kwh)



Source:
1). U.S. Energy Information Administration (EIA)
online: <http://www.eia.gov>
2)) Sistema de Información Energética (SIE)
online <http://sie.energia.gob.mx>



A priority for CRE is to maintain the **reliability** of the **National Electricity System**. This endeavor allows the efficient use of infrastructure and the deployment of a **robust telecommunications network**.



CRE works closely with the Ministry of Energy, the Ministry of Communications and Transportation and the Federal Telecommunications Institute to issue the access regulation to the National Electric System



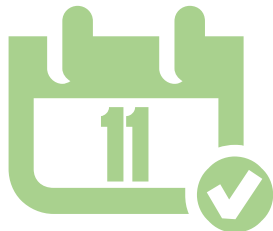
Establish basic access principles for the **National Electricity System**.



Meet technical standards to ensure the safety and reliability of the **National Electric System**.



Make public and transparent the **availability of the infrastructure**.



Establish principles to **address, process and approve applications**.



Establish **rights and obligations for infrastructure owners** and users of other industries.



Make the contracting process more effective: **direct negotiation between CFE and users**.

The Energy Reform has encouraged the participation of new players in the electricity market. As of September 2016, the following power sector permits have been issued:



284

Generation
permits



1

Basic
Retailing
permit



11

Qualified Retailing permits
(First retail/supply operation:
September 8th, 2016)



13

Qualified User Registry*
(4,100 potential qualified users,
equal or greater than **1 MW**)



Non-retailing Trader
Registry

There are 1,072 additional generation permits under the pre-reform legacy legal framework.

*/ Includes 320 Load Centers.

Power generation permits by energy source: 1,356 Total



50.9%

691 TOTAL

Clean
Energies

40.7%

552
LSPEE
(Legacy)

5.2%

70
LIE CFE

4.9%

66
LIE Private

0.2%

3
LIE Migration

Fossil
Fuels

49.1%

665 TOTAL

38.4%

520
LSPEE
(Legacy)

6.7%

91
LIE CFE

3.7%

50
LIE Private

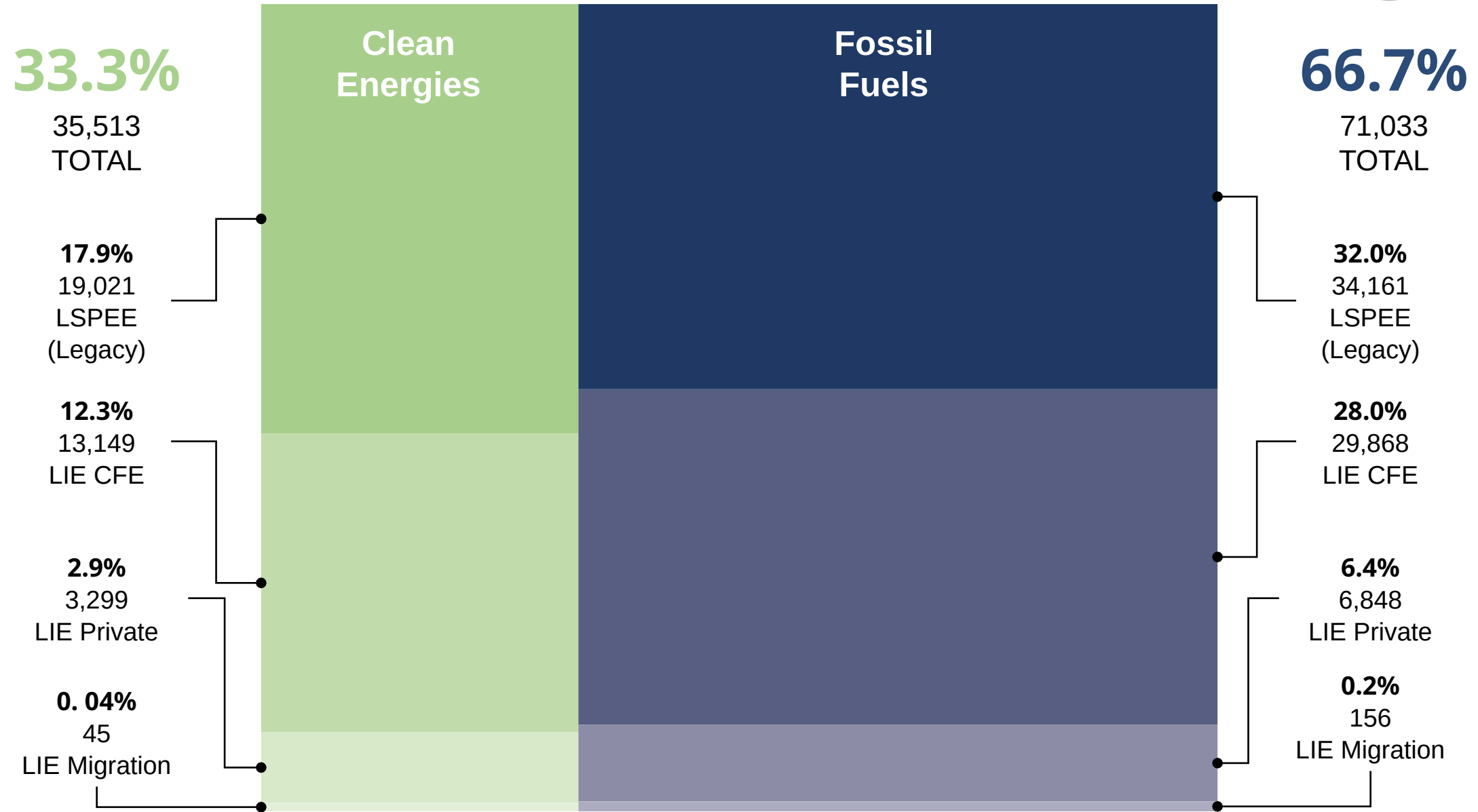
0.3%

4
LIE Migration

* LIE: Electricity Industry Law

* LSPEE: Electric Power Public Service Law

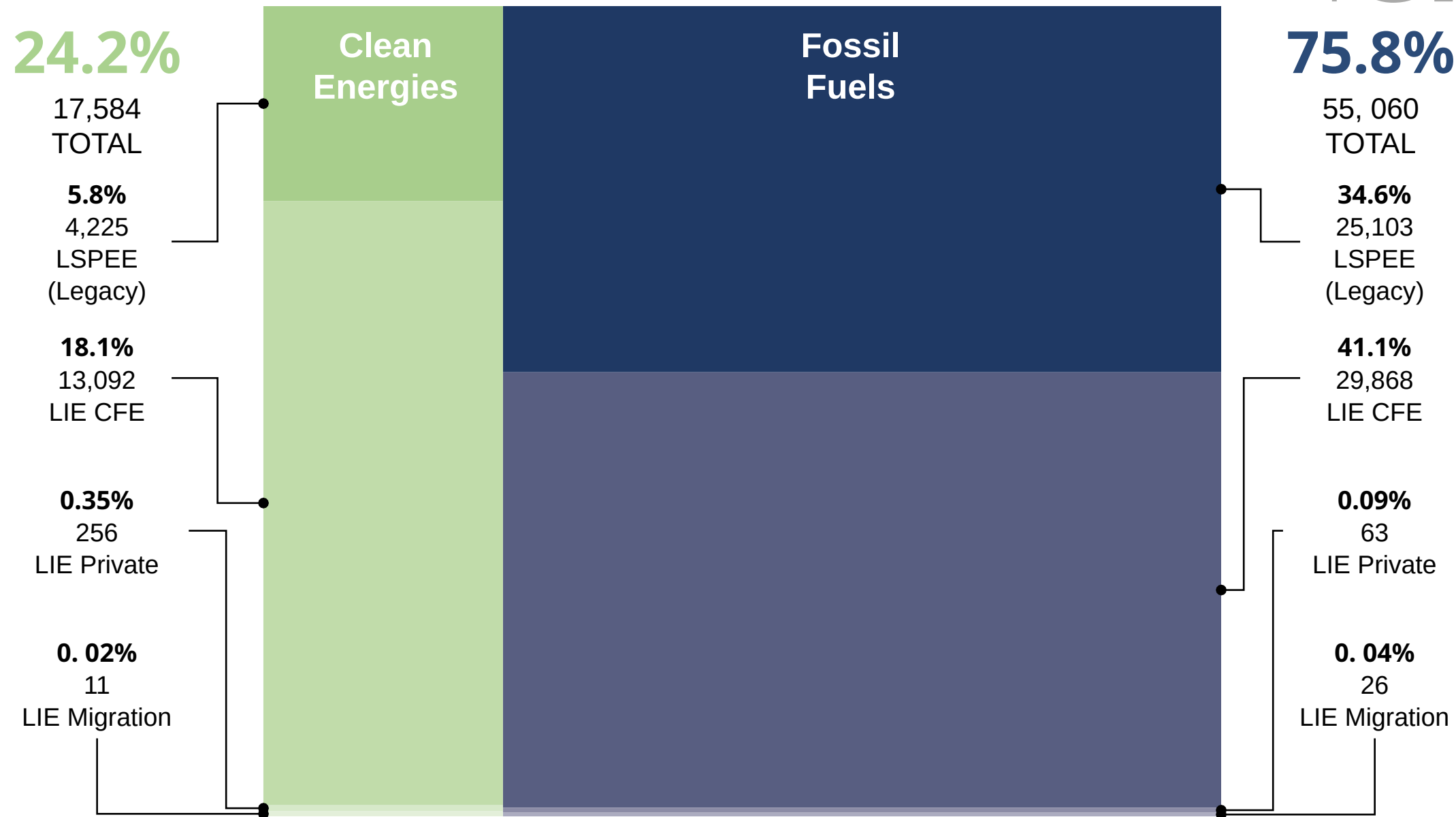
Authorized capacity by energy source: 106,546 MW Total



* LIE: Electricity Industry Law

* LSPEE: Electric Power Public Service Law

Installed capacity by energy source: 72,644 MW Total



* LIE: Electricity Industry Law

* LSPEE: Electric Power Public Service Law

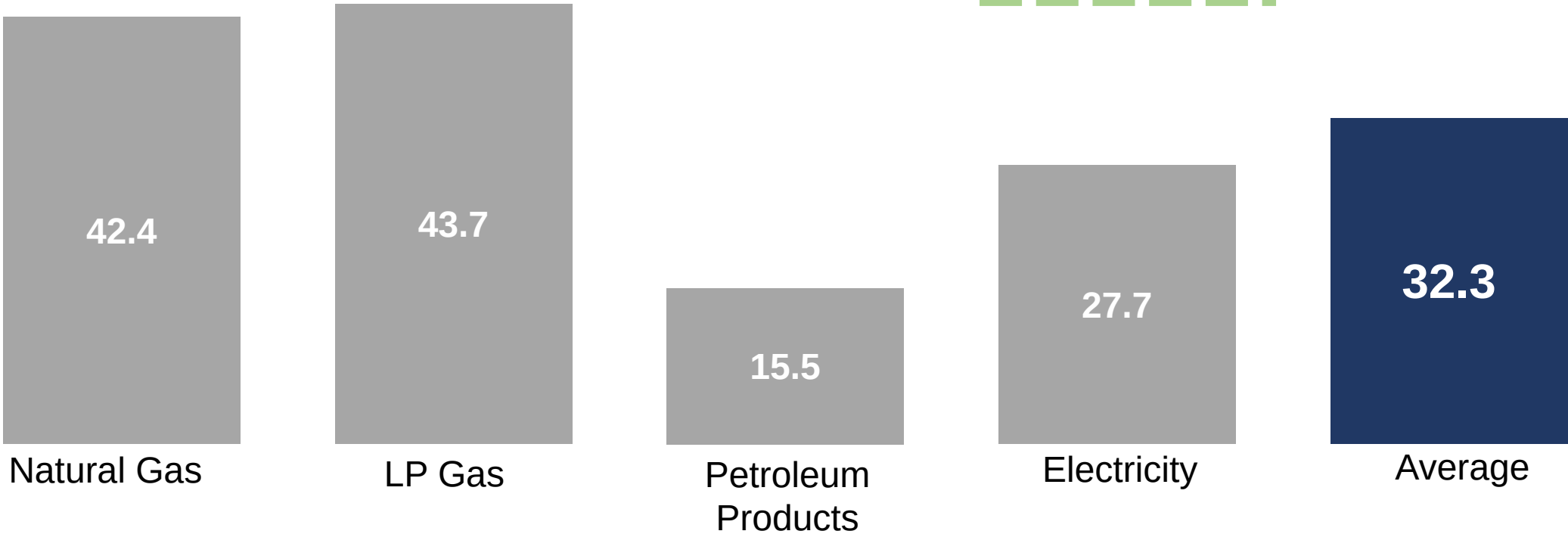
On average, CRE processes permits within the time frames mandated by law, or even less



Maximum Number of Working Days allowed to Process Hydrocarbons Permits: 90



Maximum Number of Working Days allowed to Process Electricity Permits: 60



Note: comprises data between January 2015 and September 2016.

CRE has published online tutorials and initiated a workshop program to explain the application process and issuance of permits. Obtaining a permit is easy, fast and transparent



Talleres

Gas LP
10:00–12:00 hrs
Contacto
Fátima Nava
fnava@cre.gob.mx
5283 1500 ext. 1088

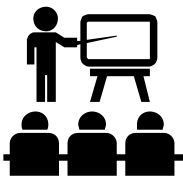
Petrolíferos
16:30–18:00 hrs
Contacto
Ma. Elena Hernández
mhernandez@cre.gob.mx
5283 1500 ext. 6036

Electricidad
12:00–13:00 hrs
Contacto
Maricela Aguilar
madelrosario@cre.gob.mx
5283 1500 ext. 1141

Gas Natural
9:00–10:00 hrs
Contacto
Danae Burgueño
dburgueno@cre.gob.mx
5283 1500 ext. 3017

Septiembre 2016

DOM	LUN	MAR	MIE	JUE	VIE	SAB
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	



Procedures and Online Services
Format for requesting hearings
18 working days, on average, to hold a hearing.

Mexico is taking steps in the right direction in terms of strengthening its transparency, accountability and anti-corruption frameworks. Recent legal reforms and policies are designed to reinforce the rule of law and enable a more attractive business environment



Establishment of a **National Anticorruption System (NAS)**. Constitutional amendment and 7 legal reforms.



NAS: institutional coordination platform among federal and local authorities. Checks and balances.



Steering Committee led by an independent citizen to oversee the NAS's performance.



Streamlined and strengthened procedures focused on **preempting, overseeing and penalizing** corruption.



Establishment of a **National Transparency System (NTS)** covering federal, state and municipal authorities.



New transparency framework enhancing access to **public information**, increasing the number of **regulated entities** and promoting **open government** best practices.

Legal certainty and the Energy Reform: The case of Eólica del Sur in Oaxaca



In 2015, representatives of indigenous inhabitants of Juchitan, Oaxaca filed a Constitutional trial (Mexican Amparo) against CRE, alleging due process violations regarding the prior consultation conducted before issuing the permit for a specific wind generation project.



Constitutional trial (Mexican Amparo)

Filed on September 15, 2015

The ruling was issued on June 9, 2016



District Court Ruling

On August 12, 2016, CRE was notified that the 7th District Court of Oaxaca ruled in favor of CRE considering the following:

1. That the authorities did not violate the “pro homine” principle*
2. Authorities were able to prove that they respected the constitutional rights of indigenous communities



Future legal steps

Apparently, and as expected, the ruling was appealed before a Circuit Court

The legal process is still under way, but so far, the outlook remains positive for CRE

*According to this principle, authorities must always interpret the rules in benefit of citizens, especially for the most vulnerable.

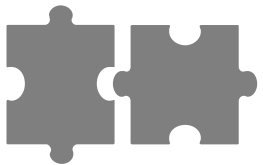
In 2018, CRE will host the World Forum on Energy Regulation (WFER)



In 2018, Mexico will host
7th WFER
in the Mayan Riviera.



Every three years, this
Forum brings together
more than 1,000 energy
regulators, academics
and industry stakeholders



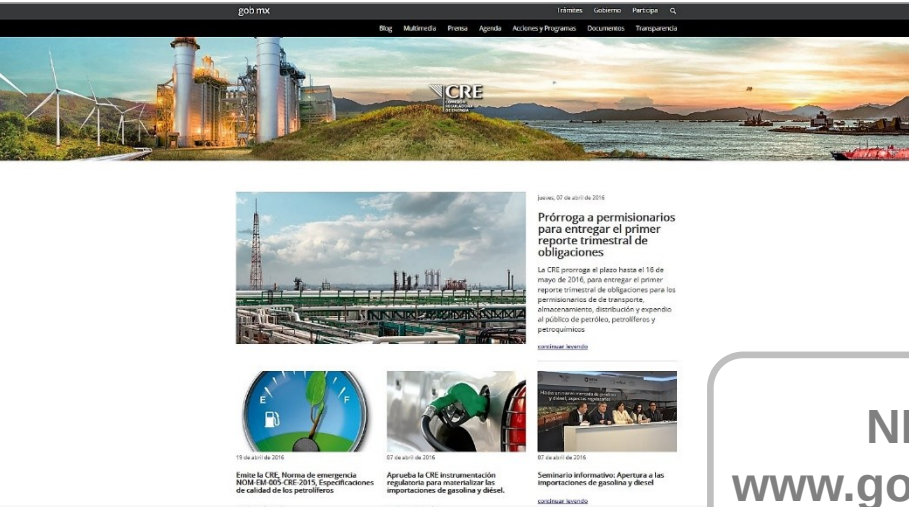
The Forum is promoted
by the International
Confederation of Energy
Regulators (ICER),
where CRE has been an
active member



We want to share the
results of Mexico's
Energy Reform and
provide a platform to
discuss cutting-edge
regulatory best practices
worldwide

A **paradise** full of **ENERGY**.

CRE promotes a policy of permanent communication with permit holders and the general public based on the principles of transparency and accountability



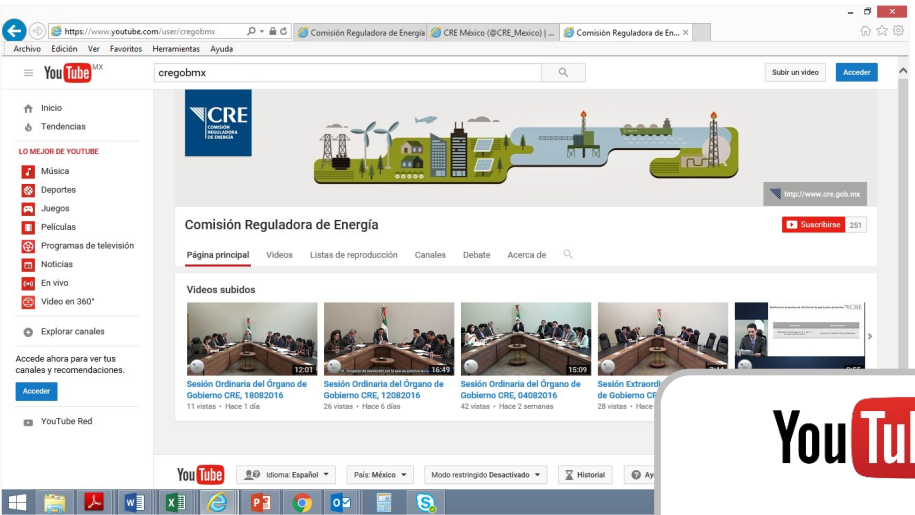
NEW
www.gob.mx/cre



NEW
@ComisionReguladoraEnergia

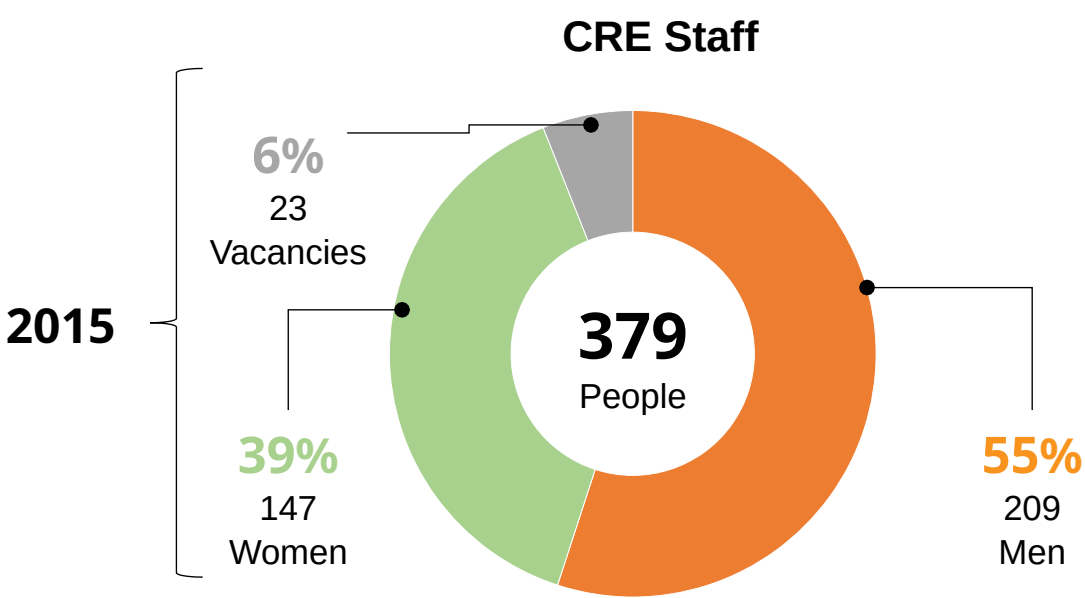
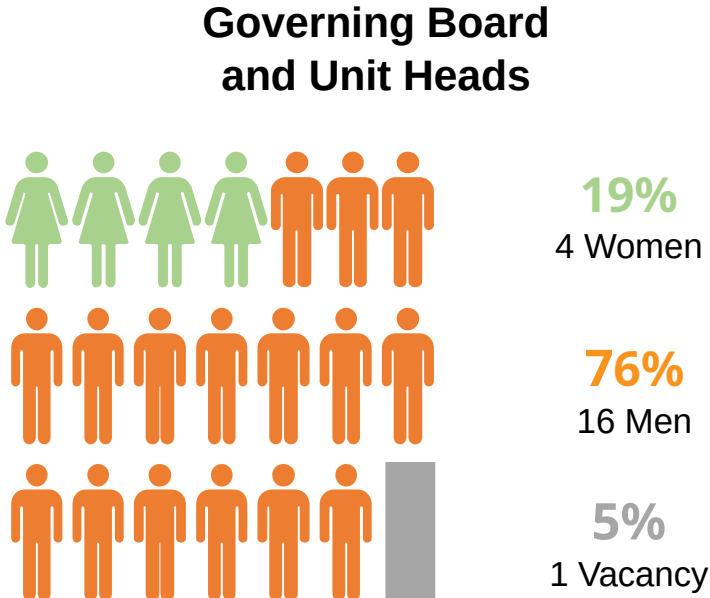
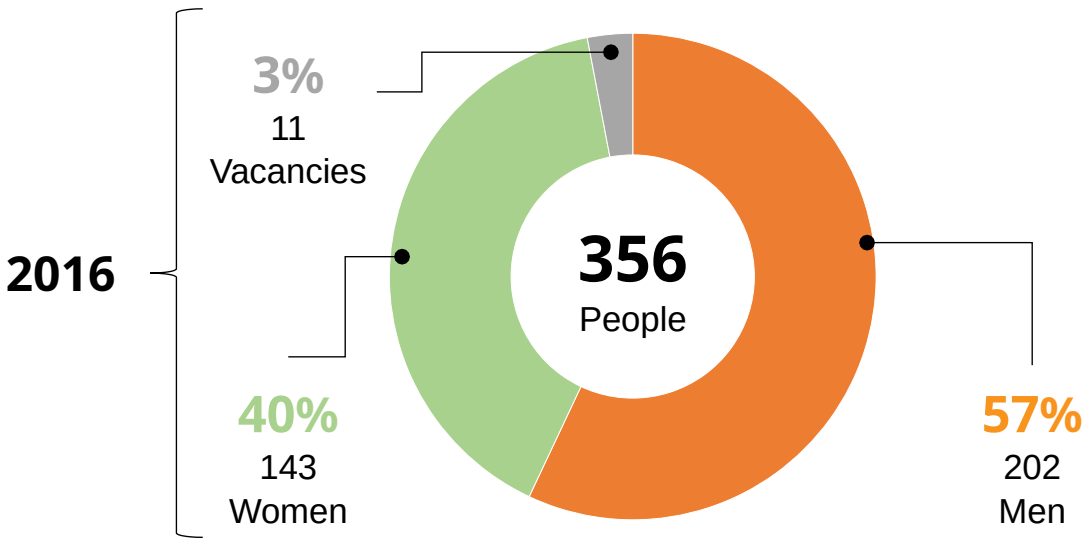
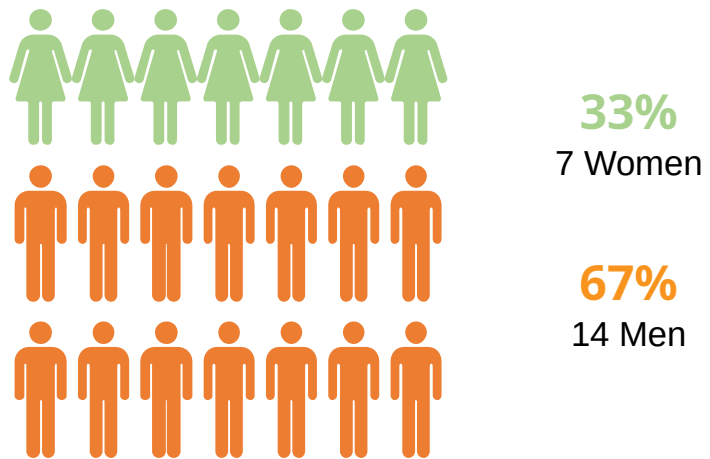


@CRE_Mexico

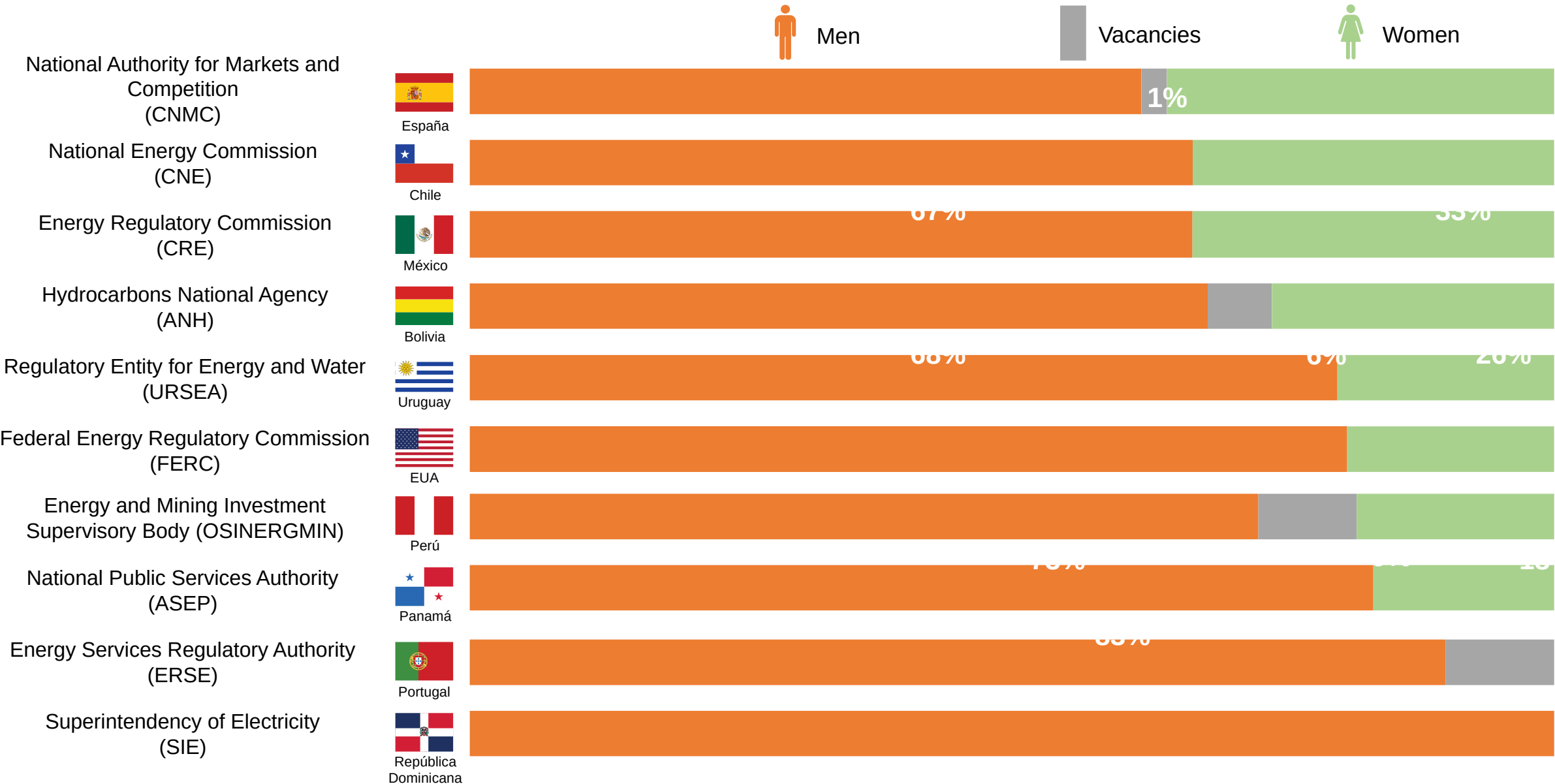


YouTube
cregobmx

For CRE it is essential to include gender perspective in the decision-making process of energy regulation. Therefore, we have increased the number of women in positions of management responsibility.



There is still work to do to empower women in leadership positions on energy regulation around the world.





Mexico's Energy Regulatory Commission: Challenges and Opportunities in Reforming the Energy Industry

Washington, DC
September 23rd, 2016

Guillermo I. García Alcocer
Chairman

www.gob.mx/cre

@CRE_Mexico

