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

Guillermo I. García Alcocer
Chairman

March 27th, 2017
Austin, Texas
“In terms of scope, depth and space of implementation, Mexico’s energy reform ranks as the most ambitious energy system transformation worldwide in a long time”

Paul Simons, International Energy Agency (IEA), Deputy Executive Director (February, 2017)*

The Energy Reform ended the long-decades monopolies in the sector

Interest (trust) shown by international investors

Incorporates lessons learned and best international practices

Will boost oil production, increase the share of renewable energy sources and increase energy efficiency

* Source: IEA, 2017. Active competition key policy to Mexico’s successful energy reform
The International Energy Agency’s special report “Mexico Energy Outlook” compares the estimated benefits of the Energy Reform by 2040, with a No Reform scenario.

<table>
<thead>
<tr>
<th>NO REFORM</th>
<th>REFORM</th>
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<tbody>
<tr>
<td>Oil production would be around 1 mb/d lower than in the Reform scenario</td>
<td>Oil and gas production will increase and petroleum product imports will decrease</td>
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<td>Electricity rates for industrial consumers would be 14% higher in 2040</td>
<td>Lower electricity rates for industrial consumers</td>
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<tr>
<td>The cost of generating and delivering electricity to the residential sector would be 16% higher; the additional accumulated subsidy would be 50 billion dollars</td>
<td>Subsidies will be gradually phased out by 2035</td>
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<td>Mexico would not meet its clean energy targets, nor its GHG emissions reduction goals</td>
<td>Mexico will meet the 35% clean power generation target by 2024 and reduce its GHG emissions</td>
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<td>Mexico’s economy would be 4% smaller</td>
<td>Mexico’s economy will double, it will be more efficient and its energy intensity will improve</td>
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<tr>
<td>Energy efficiency standards will significantly decrease Mexico’s energy consumption</td>
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Mexico’s landmark Energy Reform is now a reality, creating significant investment opportunities throughout the entire value chain.

Estimated Investment: 242 billion dollars

Committed Investment: 70 billion dollars (30 billion more in 2017)

**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: 34.4 billion USD
  - Trion: 11 billion USD

Round 2:
- 1st Tender: 11.3 billion USD
- 2nd Tender: 5.0 billion USD
- 3rd Tender: 1.0 billion USD
- Seismic data: 2.5 billion USD

**Natural Gas and Petroleum Products**

- Gas pipelines: 16 billion USD
- Petroleum Products: 16 billion USD
  - Transportation and Storage: 4.0 billion USD
  - Distribution and Retailing: 12.0 billion USD

**Power Sector**

- First Power Auction: 2.6 billion USD
- Second Power Auction: 4.0 billion USD
- Generation: 98.7 billion USD *
- Transmission: 15.3 billion USD *
- Distribution: 17.7 billion USD *

A total of 82 companies from 18 countries have won contracts for the development of hydrocarbons and electricity projects.

*Total expected investment by PRODESEN throughout 2030. Source: Mexico’s Ministry of Energy
The Energy Regulatory Commission (CRE) has become the regulator of the mid and downstream segments of the oil and gas value chain, as well as the electricity supply chain.
What is the Energy Regulatory Commission (CRE)?

- CRE is a **coordinated energy regulatory agency**, which promotes the efficient development of the energy sector and the reliable supply of hydrocarbons and electricity.

- CRE has its own legal status, technical and operational autonomy as well as budgetary self-sufficiency.

**CRE’s Governing Board** is composed by 7 Commissioners, including its President.

To designate each Commissioner, the President of Mexico submits a list of three candidates to the Senate.

The Senate appoints each Commissioner by a **two-thirds majority** vote.

Commissioners are designated for **staggered periods of seven years**, with the possibility of being re-elected for a single additional period.
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.

**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.

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

**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”

**Definitions:**
- FERC: Federal Energy Regulatory Commission
- NEB: National Energy Board
- NARUC: National Association of Regulatory Utility Commissioners
- CAMPUT: Canada's Energy and Utility Regulators
- NERC: North American Electric Reliability Corporation
Analysts agree that within a potential reconfiguration of NAFTA, Mexico and its North American Partners will share the basis for a close cooperation in the energy sector.

- Technology exchange
- Investment options
- Cooperation in climate change
- Increased trade flows and complementarity
- Encourage infrastructure development
- Capacity building
- Sharing of industrial best practices
- Strengthen the regulatory coordination in North America

The United States, Canada and Mexico must collaborate to develop policies and regulations that make the North American energy opportunity a reality.

Over the next 10 years, North America will:

- Grow its GDP by more than 1%
- Reduce emissions by at least 5%
- Add more than 2 million jobs
- Minimize the region’s exposure to global price shocks
- Increase global energy supply
- Create new strategic relationships
- Promote responsible development of the region’s resources

In doing so, North America will become more energy-self sufficient and:

North America could become a relevant energy hub, considering its natural resource and infrastructure base across energy markets

- There are pipelines with the **capacity to ship approximately 4.84 billion cubic feet per day** of natural gas to Mexico.
- Several new pipelines will soon bring the total **estimated capacity to 9.68 billion cubic feet by 2019**

- The **United States** is poised to become the world’s top oil producer, **Canada** scaled its output to unprecedented levels and **Mexico's** landmark energy reform dramatically increased its production potential.
- This **liberalization of the fuels** market in Mexico has attracted international companies.

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Mexico’s upstream contracting and licensing “Round One” has started and yielded positive results

First Tender: Shallow Offshore Exploration
- Contract: Shared Production
- 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: Shared Production
- 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 March 2017, Italian oil company **Eni** became the **first international company to discover reserves** (light crude oil) since the reform was enacted.

**Source:** Fondo Mexicano del Petróleo; SENER 2016.

**Contracts Signed:** 30

**New companies from 7 countries, 26 are Mexican:** 37

**60% of income to the State:**

**68% awarded (30 of 44 blocks):**

**7 billion USD of investment:**
In the Fourth Tender (1.4) 8 contracts were granted to 6 different bidders

Fourth Tender: Deepwater Exploration
Contract: License
Awarded on December 5th, 2016
Outcome: 8/10 contracts

Total Expected Investment: 34.4 billion dollars

<table>
<thead>
<tr>
<th>Winning Bidders</th>
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<tr>
<td><strong>Perdido Fold Belt</strong></td>
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<tr>
<td>Area 1</td>
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<tr>
<td>China Offshore Oil Corporation E&amp;P Mexico</td>
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<tr>
<td>Area 2</td>
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<tr>
<td>Total E&amp;P México and ExxonMobil Exploración y Producción México</td>
</tr>
<tr>
<td>Area 3</td>
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<tr>
<td>Chevron Energía de México, Pemex and Inpex Corporation</td>
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<tr>
<td>Area 4</td>
</tr>
<tr>
<td>China Offshore Oil Corporation E&amp;P Mexico</td>
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<tr>
<td><strong>Saline Basin</strong></td>
</tr>
<tr>
<td>Area 1</td>
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<tr>
<td>Statoil E&amp;P México, BP Exploration México and Total E&amp;P México</td>
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<tr>
<td>Area 3</td>
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<tr>
<td>Statoil E&amp;P México, BP Exploration México and Total E&amp;P México</td>
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<tr>
<td>Area 4</td>
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<tr>
<td>PC Carigali México Operation (Petronas) and Sierra Offshore Exploration</td>
</tr>
<tr>
<td>Area 5</td>
</tr>
<tr>
<td>Murphy Sur, Ophir México Holdings Limited, PC Carigali México Operations and Sierra Offshore Exploration</td>
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</tbody>
</table>

8 granted contracts for Deepwater exploration and extraction
12 winning companies from 8 countries (public, private, national and international bidders)
Mexico will receive in average between 59.8% and 66.1% of the generated profits
Pemex will partner with BHP Billiton to develop the Trion block.

**Gulf of Mexico**

**Block, Field and Exploration Prospects**

**Winning Bidder**

*Estimate as of December, 2016.*
90% of the 2P Reserves and 95% of the Prospective Resources in Mexico, are still available for bidding

- A revised 5-year exploration and extraction plan was published in February, 2017 by the Ministry of Energy.

MMBOE: million barrels of oil equivalent
Source: CNH and the Ministry of Energy of Mexico
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, gas release program)
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

*Participation of American and Canadian capital in Mexico’s Gas Pipeline Network

CRE is continuously working to provide a regulatory framework that encourages natural gas integration ties between Mexico and the US. 

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

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*/ 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.
The distribution of natural gas has been considered a natural monopoly. However, if the relevant market is defined as the consumption of energy, we observe that it doesn’t have most of the characteristics of a monopoly.

- Single supplier
- No substitutes
- No competition
- Price control: possibility to set the level and discriminate
- Barriers to entry for competitors
- Economies of scale
The Gas Release Program, an asymmetrical regulation instrument to Pemex, seeks to promote the participation of new stakeholders in the industry.

Contracts that represent 30% of the volume and will remain as customers of Pemex.

Contracts that represent 70% of the volume and will be available for release.

Public Act (random selection of contracts)

Release portfolio: approximately 2.5 bcf

- Phase I
  - 20% of the volume (0.7 bcf)
  - February 1st, 2017

- Phase II
  - 20% of the volume (0.7 bcf)
  - Date to be defined

- Phase III
  - 30% of the volume (1.1 bcf)
  - Date to be defined

✔ Process duration: at least one year

✔ CRE will be able to merge Phase II and Phase III and reduce the time-lapse between them.

Total commercialization portfolio: approximately 3.6 bcf

Deadline for the reception of applications: March 10th, 2017

OUTCOMES OF PHASE 1:

- Contracts subject to release: 111 contracts (758 Mcf)
- Contracts that remain with Pemex: 133 contracts (1,104 Mcf)
On February 17th of 2017, CENAGAS executed the first annual auction of import pipelines’ capacity. A total capacity of 733 Mcf/D was offered, of which, 29.2% (214 Mcf/D) was allocated.

Results

**Fábrica de Envases de Vidrio de Potosí**
Requested injection point: NET ETP – Delmita Los Ramones
Granted capacity: 4.04 Mcf/D

**Industria de Alcalí (Grupo Vitro)**
Requested injection point: NET ETP – Delmita Los Ramones
Granted Capacity: 16.13 Mcf/D

**BP Energía de México**
Requested injection point: NET DCP-Gulf Plais Los Ramones
Granted Capacity: 9.72 Mcf/D

**BP Energía de México**
Requested injection point: NET EFM – Nueces – Los Ramones
Granted Capacity: 184.82 Mcf/D

The awarded contracts will be valid from July 1st, 2017 to June 30th, 2018

As a result of this process, BP, the largest natural gas trader in North America, begins its participation in the national market. Also, Mexican industries have begun to diversify their portfolio options to satisfy their supply needs.

*Mcfd: one million cubic feet per day*
Prior to the Reform, Mexico’s fuel retail model generated significant inefficiencies:

- National single price (prevented adequate cost recognition on a regional basis)
- Fluctuations of international prices were reflected with a delay
- Lack of efficient price signals resulted in underinvestment throughout the value chain
- The excessive subsidy benefited the population with the highest income (200 billion pesos per year)

**Fixed Price Regime**

- Pemex lost resources for unacknowledged logistical costs in the overall gas price

**Pemex did not recover logistical costs**

- Limited infrastructure: low capacity and vulnerability (extreme weather events)
- Lack of incentives to improve service quality in gas stations
- 40% of municipalities do not have gas stations

**Underinvestment in the industry**
Fuel price flexibility will trigger significant investments and create new jobs at the retail level. Also, it will enhance fuel availability and supply security for consumers.

- **USA**: 2,677 People/Station
- **Brazil**: 5,158 People/Station
- **Mexico**: 10,560 People/Station
- **Argentina**: 11,242 People/Station

Represents 1,000 people

Source: US Department of Transportation, Country Meters, "Global Health Observatory Data Repository" by World Health Organization (ONU); “Anuario estadístico de 2016” published by Agencia Nacional del petróleo, gas natural y biocombustibles
Logistical routes for imports and supply of gasoline in Mexico

Cost of transporting one barrel of gasoline:

- Pipeline
- Vessel (2 times pipeline cost)
- Train (6 times pipeline cost)
- Tank truck (14 times pipeline cost)
Price components of regular gasoline (pesos per liter)

- **Excise Tax Law**: $4.16
  - Fiscal incentive: $-0.50
  - Fee: $-0.15

- **IEPS entities and VAT**
  - **Excise Tax**: 17.0%
  - **Reference Price**: 43.7%

- **Average 2016**
  - **Excise Tax**: $13.52
  - **IEPS entities and VAT**: 2.29
  - **Excise Tax**: 3.52
  - **Profit margin, Logistics and Quality Adjustment**: 1.81
  - **Reference Price**: 5.91

- **January 2017**
  - **Excise Tax Law**: $4.30
    - Fiscal incentive: $1.120 (26.05%)
  - **Reference Price**: 8.28 av.
  - **Excise Tax**: 3.18
  - **Profit margin, Logistics and Quality Adjustment**: 1.20 av.
  - **IEPS entities and VAT**: 2.61 av.

- **March 25th-27th, 2017**
  - **Excise Tax Law**: $4.30
    - Fiscal incentive: $1.773 (41.23%)
  - **Reference Price**: 8.93 av.
  - **Excise Tax**: 2.53
  - **Profit margin, Logistics and Quality Adjustment**: 1.20 av.
  - **IEPS entities and VAT**: 2.61 av.

- **February 18th, 2017**
  - Daily update
  - Max price 2016: Ref. price + margin + Excise Tax + Excise Tax entities and VAT
  - Max price 2017: Profit + logistics + margin ES + Adjustment + Excise Tax + Excise Tax entities and VAT

- **Source**: COFECE (January 2017)

*Excise Tax= effective component of Excise Tax | Margin=logistics + Margin ES
*Max price 2016= Ref. price + margin + Excise Tax + Excise Tax entities and VAT
*Max price 2017= Profit + logistics + margin ES + Adjustment + Excise Tax + Excise Tax entities and VAT
*Source: COFECE (January 2017)
Fuel price liberalization strategy in Mexico

**Open Season final ruling**

**Price Liberalization**

- **MAR-2017**
  - MAR-30th-2017
    - Baja California
    - Sonora

- **JUL-26th-2017**
  - OCT-30th-2017
    - Baja California Sur
    - Durango
    - Sinaloa

- **OCT-16th-2017**
  - NOV-30th-2017
    - Aguascalientes
    - Ciudad de México
    - Colima
    - Chiapas
    - Estado de México
    - Guanajuato
    - Guerrero
    - Hidalgo
    - Jalisco
    - Michoacán
    - Morelos
    - Nayarit
    - Puebla
    - Querétaro
    - San Luis Potosí
    - Oaxaca
    - Tabasco
    - Tlaxcala
    - Veracruz
    - Zacatecas

- **MAY-25th-2017**
  - JUN-15th-2017
    - Chihuahua
    - Coahuila
    - Nuevo León
    - Tamaulipas
    - Municipio de Gómez Palacio, Durango

- **NOV-30th-2017**
  - DEC-30th-2017
    - Campeche
    - Quintana Roo
    - Yucatán
The opening of refined product logistics (gasoline, diesel and jet fuel) has triggered the interest of new investors in the energy sector.

**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

**Polyduct IN14**
- **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

**Frontera-Norte 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

In September 2016, Novum Energy completed México’s first private import of diesel fuel. Transportation of the diesel into Mexico was by road for a mining company.
CRE also grants permits for transportation of petroleum products by means other than pipeline, such as railways.

Ferrocarril Mexicano, S. A. de C. V.
Permit: PL/12953/TRA/OM/2015
Destinations: Guadalajara, Jalisco; Chihuahua, Chihuahua; Piedras Negras, Coahuila de Zaragoza; Nogales, Sonora, Mexicali, Baja California and Manzanillo, Colima.

Kansas City Southern de México, S.A. de C.V.
Permit: PL/12952/TRA/OM/2015
Destinations: Puebla, Puebla; Distrito Federal; Cadereyta Jiménez, Nuevo León; Tampico and Ciudad Madero, Tamaulipas; Lázaro Cárdenas, Michoacán; Durango, Durango; Minatitlán and Coatzacoalcos, Veracruz; Salina Cruz, Oaxaca; Ciudad Valles, San Luis Potosí, Tula de Allende, Hidalgo, as well as Salamanca and Irapuato, Guanajuato.

Ferrocarril del Istmo de Tehuantepec, S. A. de C. V.
Permit: PL/13551/TRA/OM/2016
Destinations: Valladolid and Mérida, Yucatán

In January 2017, for the first time, Pemex started importing diesel by train
- Volume: 75 thousand barrels once a week
- Destination: San José Iturbide, Guanajuato
- Terminal: Gas Natural del Noroeste S.A. de C.V. operated by Grupo SIMSA
- Permit holder: Kansas City Southern de México, S.A. de C.V.

Investment: 1.5 billion dollars
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: 7,296 bls.
   - Investment: 24.6 million pesos
   - Location: La Paz, Baja California Sur

2. Combustibles de Oriente, S.A. de C.V.
   - Capacity: 5,606 bls.
   - Investment: 143.3 million pesos
   - Location: Acolman, Estado de México

3. Hydrocarbon Storage Terminal, S.A.P.I. de C.V.
   - Capacity: 280,500 bls.
   - Investment: 1,073.4 million pesos
   - Location: Acolman, Estado de México

4. Interport FTZ S.A. de C.V.
   - Capacity: 280,500 bls.
   - Investment: 1,073.4 million pesos
   - Location: Acolman, Estado de México

5. Gas Natural del Noroeste S.A. de C.V.
   - Capacity: 48,000 bls.
   - Investment: 380.3 million pesos
   - Location: San José de Iturbide, Guanajuato

6. Orizaba Energía, S. de R.L. de C.V.
   - Capacity: 2,310,000 bls.
   - Investment: 2,308.8 million pesos
   - Location: Tuxpan, Veracruz

7. VOPAK México, S.A. de C.V
   - Capacity: 415,190 bls.
   - Investment: 787.1 million pesos
   - Location: Veracruz, Veracruz

8. Hidrocarburos del Sureste, S.A. de C.V. (Distribución)
   - Capacity: 450,000 bls.
   - Investment: 766.1 million pesos
   - Location: Progreso, Yucatán

9. Comercializadora Larpod, S.A. de C.V. (Distribución)
   - Capacity: 11,007 bls.
   - Investment: 19.2 million pesos
   - Location: Puerto Madero, Chiapas

10. Bulkmatic de México (Distribución)
    - Investment: 1 billion pesos
    - Location: Salinas Victoria, Nuevo León

11. Bulkmatic de México (Distribución)
    - Investment: 1 billion pesos
    - Location: Tula, Hidalgo

New storage projects in development

Storage permits granted

Pipelines
Furthermore, the new business environment allows greater competition and differentiation in product supply, services and retail prices at gas stations in Mexico.

**Investment:** 1 million dollars per new gas station (in case the current situation doubles, the investment would be 12 billion dollars).

- **New storage projects in development**
- **Storage permits granted**
- **Pipelines**

**Announcement of competitors**

- **Tijuana**
- **Nuevo Laredo, Tamaulipas**
- **Monterrey, Nuevo Leon**
- **Corpus Christi, Texas**
- **Tampico, Tamps**
- **Tuxpan, Veracruz**
- **San Luis Potosi, SLP**
- **Merida**
- **Campeche**
- **bp CDMX**
- **Gulf**
- **Chevron**
- **TESORO**
- **GLENCORE**
- **TEXACO**
- **WALMART**
- **Costco Mexico**
- **EV's Charging Station**

**EV’s Charging Station**

**Declaration of new business environment**

- **Greater competition**
- **Differentiation in product supply, services and retail prices at gas stations in Mexico**
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.

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.

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*
CRE is currently working with CAISO and CENACE to develop shared grid reliability protocols to strengthen energy security on both sides of the border.

Due to the close bilateral relationship between both countries, **Mexico supported the U.S.** during the power outage in California in 2011. In return, **the U.S. supported Mexico** in 2016, when there was also a power outage in Baja California.

**11 interconnection points with the US**

### Voltage

- 40 kV
- 230 kV
- 115 kV
- 161 kV, 138 kV and <34.5 kV

Source: CENACE (2016)
As a result of the two Long-Term Auctions, 15 states will benefit from the development of new clean energy projects in Mexico.

- **34 companies** from more than 10 countries, including Mexico.
- **6.6 billion** of investment in the coming years.

Maximum Price VS Average Price:

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<thead>
<tr>
<th></th>
<th>First Auction</th>
<th>Second Auction</th>
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<tbody>
<tr>
<td>Maximum Price</td>
<td>70 (dolars/MWh)</td>
<td>90,016 (dolars/MWh)</td>
</tr>
<tr>
<td>Average Price</td>
<td>48 (dolars/MWh)</td>
<td>32,258 (dolars/MWh)</td>
</tr>
<tr>
<td>Saving (%)</td>
<td>31.4%</td>
<td>64.1%</td>
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**FIRST AUCTION**
- Clean Energy Package (Cumulative Energy + CEL)
- Increase of 5,000 MW to the current generation capacity in Mexico.

**SECOND AUCTION**
- Clean Energy Package (Cumulative Energy + CEL)
- TX

33 companies from more than 10 countries, including Mexico.
Awarded companies of the two Long-Term Auctions

1st Auction= 11 companies

2nd Auction= 24 companies
Evolution of average solar prices in auctions, January 2010- September 2016

Source: IRENA, 2017
Energy-related opportunities for businessmen and households: Clean Energies

Mexico has a significant, constant and highly predictable renewable potential: a **medium annual irradiation** of approximately 5.5 kWh/m² per day

**Leaders of solar capture in Europe***:
- **Sevilla** with 4.7 kWh/m²
- **Leipzig** with 2.7 kWh/m²

Source: SIGER, Instituto Nacional de Electricidad y Energías Limpias.
*Sistema Geográfico de Información Fotovoltaica de la Comisión Europea*
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.

In December 2016, CRE issued a new set of regulations to foster the sustainable integration of distributed generation nationwide.

Distributed generation installed capacity: **247.6 MW which represent 0.35%** of total capacity.

Additional investment of nearly **220 million dollars** in 2016*

Projection for 2017: **202%** growth in installed capacity for distributed generation.

Note: Elaborated with information provided by CFE. Preliminary data up to December 31st, 2016.

*Considering an average investment of 1.7 million dollars per MW of installed capacity, according to Bloomberg.
There are applications available to optimize the roll-out of distributed solar energy and calculate the benefits and savings for consumers.
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.
CRE has published online tutorials and launched a workshop program to explain the application process and issuance of permits. Obtaining a permit is easy, fast and transparent.
Mexico’s Energy Regulatory Commission: Challenges and Opportunities in Reforming the Energy Industry

Guillermo I. García Alcocer
Chairman

March 27th, 2017
Austin, Texas