



POWER SYSTEMS OF THE FUTURE
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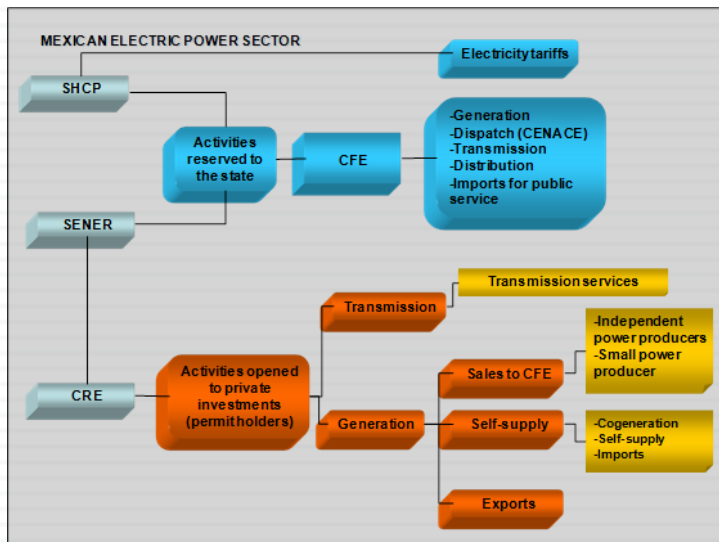


COMISIÓN FEDERAL
DE ELECTRICIDAD



Why an Energy Reform was urgent and necessary in Mexico?

What was Mexico's electric power sector situation prior to the Energy Reform?

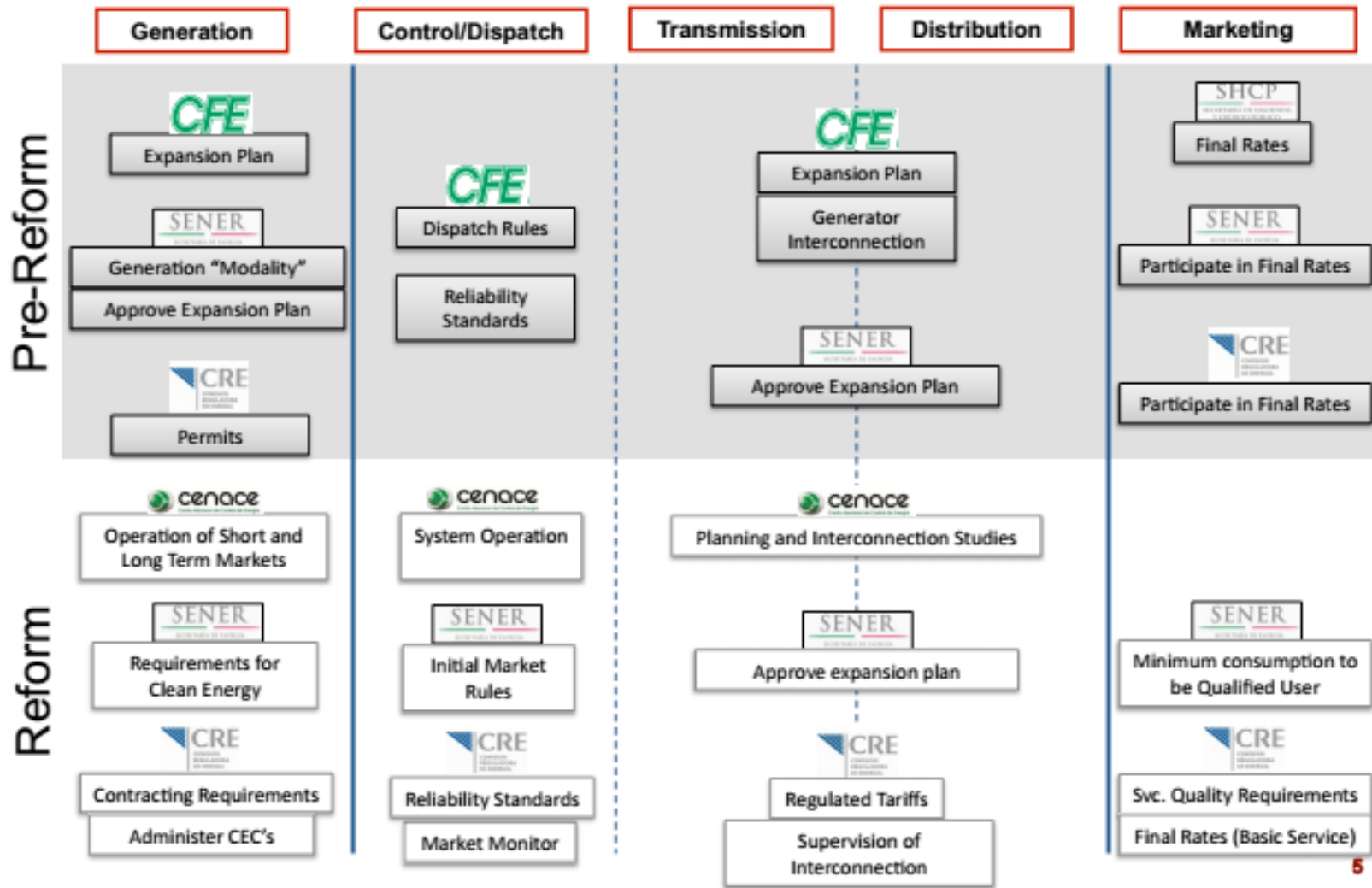




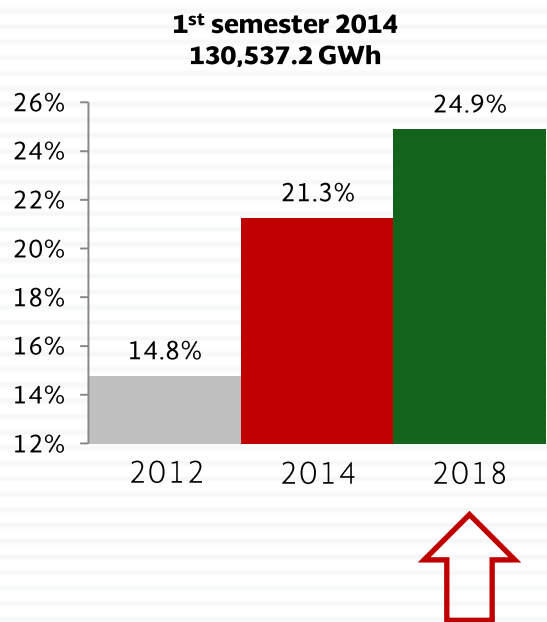
- December 20th 2013, Constitutional Amendment supported by the main political forces at the National Congress.
- August 11th 2014, 9 initiatives that create or reform 21 Laws were enacted and published. Among them, two new Laws are directly connected with renewable energies: the Electricity Industrial Law and the Geothermal Energy Law.
- October 31th 2014, were published the regulations and guidelines of the secondary legislation.
- October 31st 2014, were published the guidelines of Clean Energy Certificates.
- December 19th 2014, a Transition Strategy to Promote the Use of Cleaner Fuels and Technologies was published, with the objective to enhance the opportunities that energy efficiency and renewable energies offers to sustainable development.



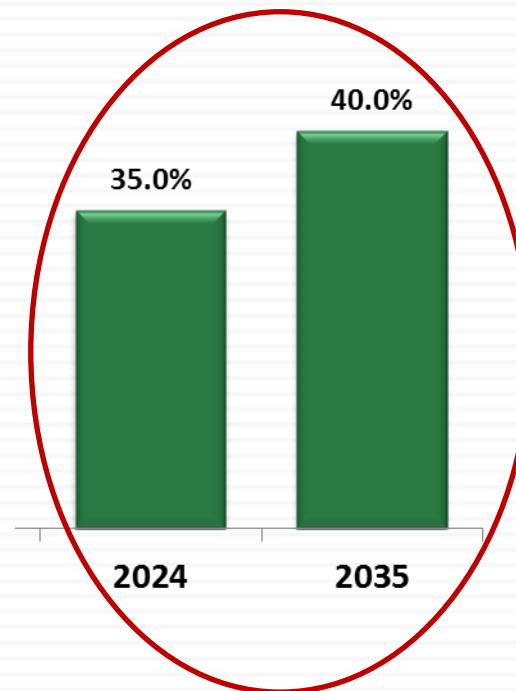
- February 24th 2015, initial draft of proposed Market Guidelines for Mexico's planned wholesale electricity market .
- March 6th 2015, initial draft for 2018 Clean Energy Quota (8.2% of total electricity use).



(SHARE OF RENEWABLES)



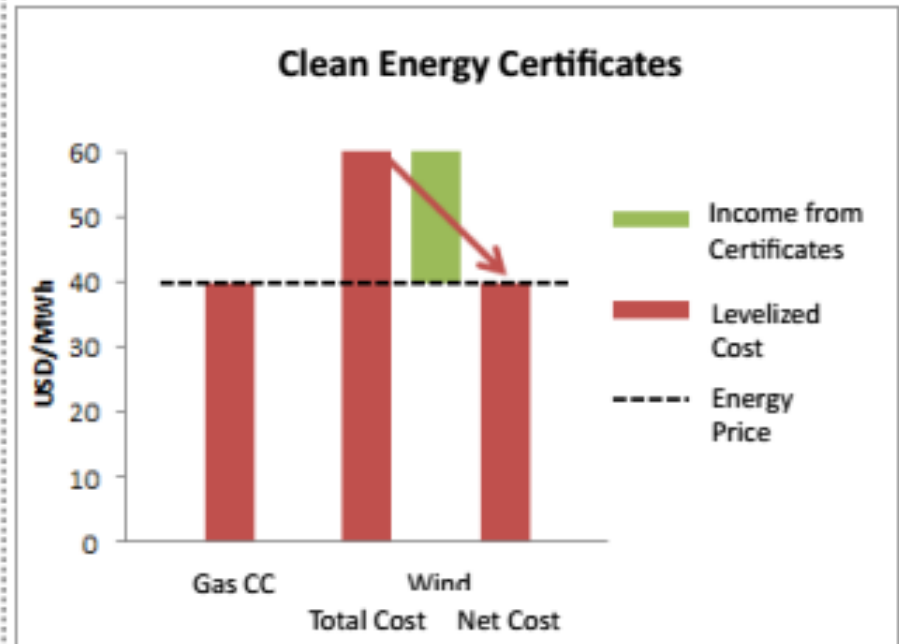
(SHARE OF NON-FOSSIL FUEL BASED POWER GENERATION)



Fuente: Informe sobre la Participación de Energías Renovables al 30 de junio de 2014 y Ley para el Aprovechamiento de las Energías Renovables y el Financiamiento de la Transición Energética

Clean Energy Certificates

- SENER establishes requirements to use a percentage of clean energy.
- Suppliers fulfill their requirements by buying Certificates.
- Income from certificate sales allow clean generators to cover their costs.





The new **Geothermal Energy Law** regulates the stages of surveying, exploration, development and production of geothermal resources according to **international best practices**.

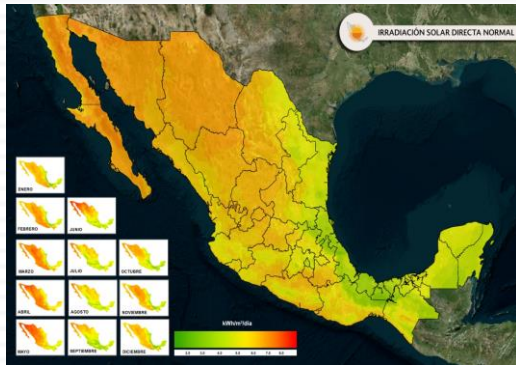
Stages of geothermal projects		
Surveying	Exploration and Development	Production
Registration for 8 months without invasive activities.	Permission for 3 years, with option to renew.	Concession for up to 30 years with option to renew.

- The law defines **geothermal fields** to differentiate them from conventional aquifers, and permit a specialized regulation.



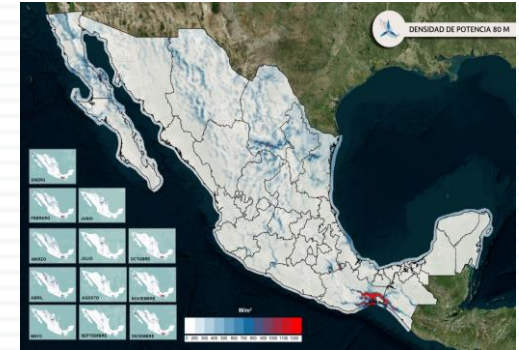
- ✓ CFE will have a geothermal **Round Zero**, giving it 120 days to determine which areas to develop.
- ✓ CFE can establish **public-private partnerships**.
- ✓ Other projects can be tendered by SENER.

NATIONAL INVENTORY OF RENEWABLE ENERGIES



Navigation icons: Home, Search, Location, Power, Actual, Potential, Location, Search, Home.

- Generación eléctrica actual
- Potencial de generación eléctrica
- Ubicación geográfica de centrales
- Ubicación geográfica de sitios potenciales
- Consultas
- Consultas
- Análisis gráfico
- Análisis gráfico



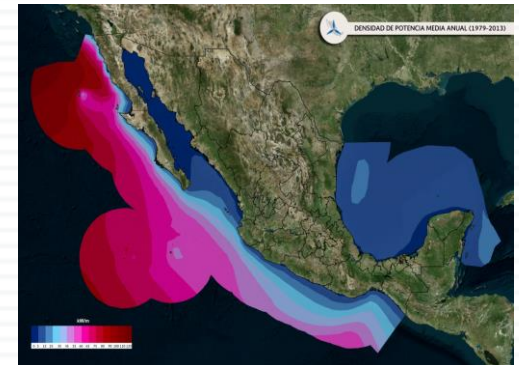
inere.energia.gob.mx



Inventario del Aprovechamiento de Energías Renovables en la Generación de Electricidad

Entidad Estatal: Todos los Estados | Tipo de Energía: Todas las energías re... | Consultar | Consulta Avanzada

ESTADO	MUNICIPIO	NOMBRE	PRODUCTOR	TIPO	UNIDADES	POTENCIA (MW)	GENERACIÓN (GWh/a)
Chihuahua	Delicias	Energía Lactea	Privado	Biogás	1	0.80	0.12
Estado de México	Ecatepec de Morelos	La Costeña y Jugo	Privado	Biogás	1	0.97	5.40
Queretaro	Santiago de Querétaro	Atlatic	Privado	Biogás	1	1.05	1.99
Guanajuato	León	Acosysa III	Privado	Biogás	2	1.75	2.02
Tabasco	Tenosique	Azuremex	Privado	Combustión direct	2	2.50	1.50
Jalisco	Tijomulco De Zuh	Attatec, Planta El A	Privado	Biogás	2	2.85	6.48
Aguascalientes	Aguascalientes	Energía Verde de J	Privado	Biogás	2	3.20	12.02
Veracruz	Mahuixtlan	Ingenio Mahuixtlan	Privado	Combustión direct	4	3.26	4.72
Morelos	Cuautla	Ingenio Casasano	Privado	Combustión direct	3	3.40	4.99
Veracruz	Motzorongo	Ingenio El Refugio	Privado	Combustión direct	2	4.00	8.12
Veracruz	Jiotepec	Azucarera La Conc	Privado	Combustión direct	1	4.20	1.06
Jalisco	Ameca	Ingenio San Franci	Privado	Combustión direct	2	4.50	12.23
Veracruz	Córdoba	Ingenio San Migue	Privado	Combustión direct	3	5.20	7.13
Veracruz	Lerdo de Tejada	Compañía Industri	Privado	Combustión direct	4	5.50	14.25
Michoacán	Taretan	Ingenio Lázaro Cár	Privado	Combustión direct	2	5.50	9.30
Colima	Cuautemoc	Ingenio Queseria	Privado	Combustión direct	3	5.50	25.82
Tamaulipas	Ciudad Mante	Ingenio El Mante	Privado	Combustión direct	4	5.75	7.95
Jalisco	Autlán de Navarro	Ingenio Melchor O	Privado	Combustión direct	3	6.10	15.47
Chihuahua	Juárez	Energía Eléctrica d	Privado	Biogás	4	6.40	23.58
San Luis Potosí	Tamasopo	Ingenio Alianza Po	Privado	Combustión direct	4	6.40	17.48
Veracruz	Lerdo de Tejada	Ingenio Buena San	Privado	Combustión direct	4	6.50	5.81

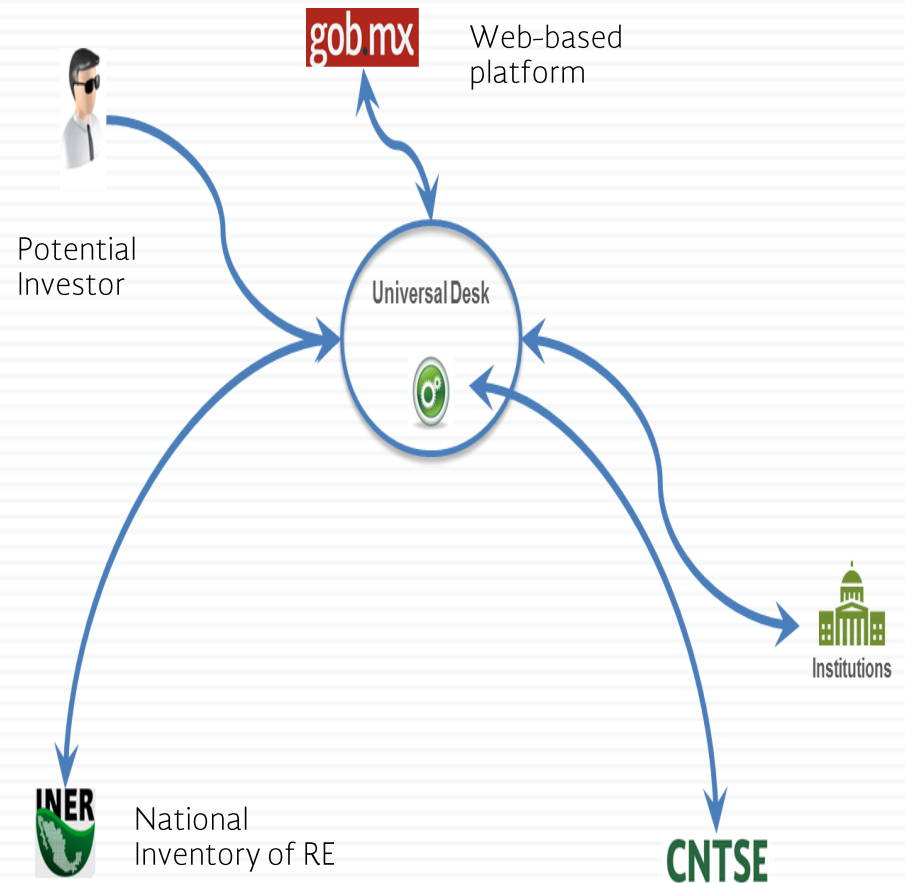


Before Reform: 47 Steps



Source: POBALIN de interconexión, CFE, 2012

UNIVERSAL DESK FOR RENEWABLE ENERGY PROJECTS



DISTRIBUTED GENERATION AND SMART GRIDS

Before Reform

- Generation in small installations could not sell surplus.
- Credit was awarded toward consumption, but avoided rates were often lower than market values.



Only users on the highest rates had incentives to install distributed generation.

After Reform

- Regulated suppliers will pay a regulated price for surplus energy.
- Unregulated suppliers can buy from all users at market prices.
- Minimal regulation of on-site sales.



Distributed generation will earn a fair payment.

Specialized companies can market distributed generation.



- Renewable Electricity Grid Integration Road Map for Mexico (Completed).SENER.
- Report on Regulatory Mechanisms for Enhancing the Adoption of Distributed Generation (In process of ellaboration). SENER/CRE.
- Workshop on the implementation of the Smart Grid Road Map (February 2015). CRE.
- NREL/ National University of Mexico. Training course on the Grid Integration of PV generation (March 18 – 19, 2015, Mexico City). CENACE/CFE/CRE.
- Electric Power System Transformation Road Map for Baja Sur (In process of ellaboration). SENER/ CENACE/ CFE.
- Implementation of Market Monitoring (In process of ellaboration). SENER/ CRE/ CENACE.



THANKS FOR YOUR ATTENTION