

CENACE

CENTRO NACIONAL DE
CONTROL DE ENERGÍA

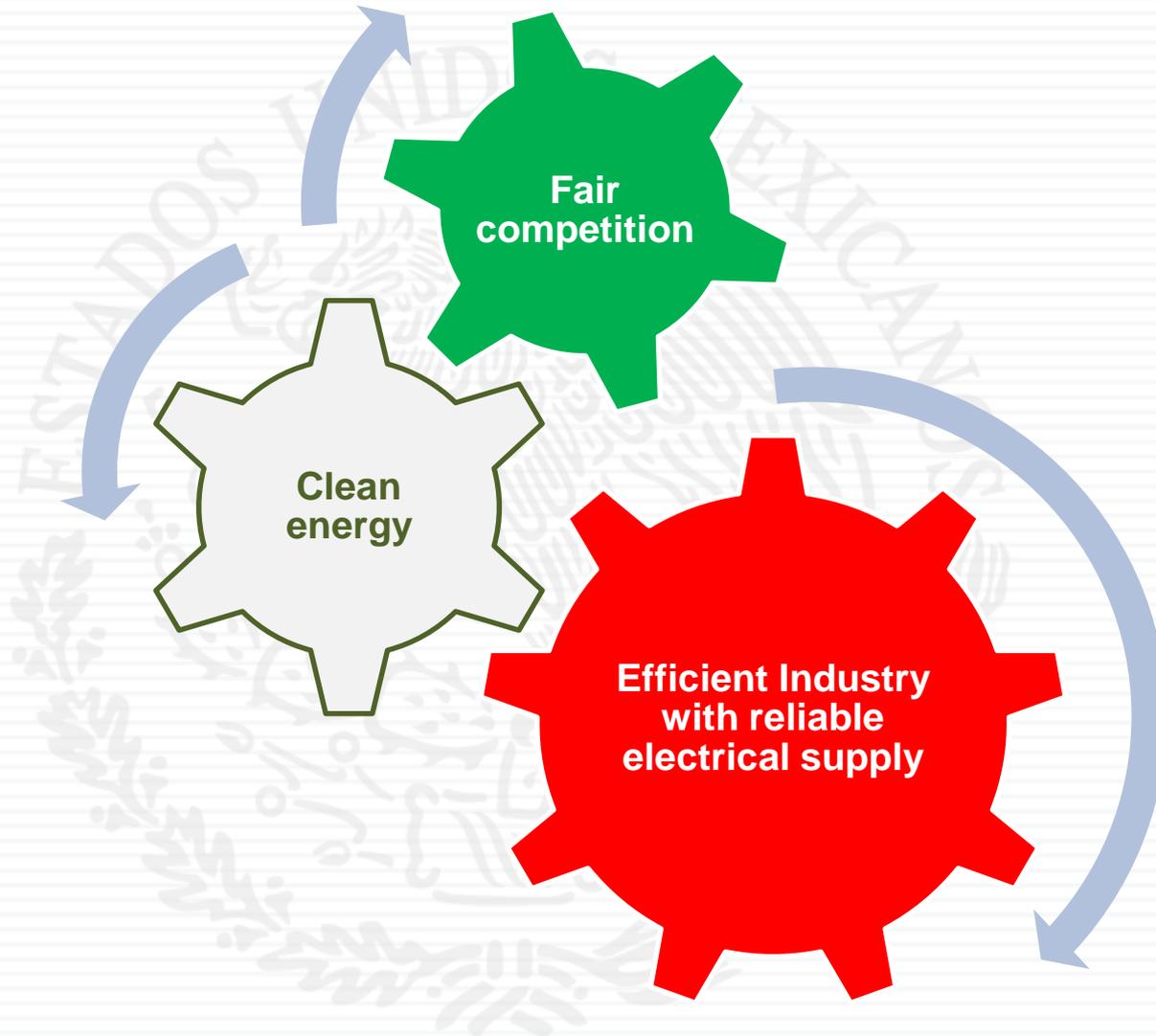


The Electricity Market Reform in México





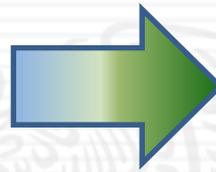
Goals of the Reform





Change of the Electrical Industry Model

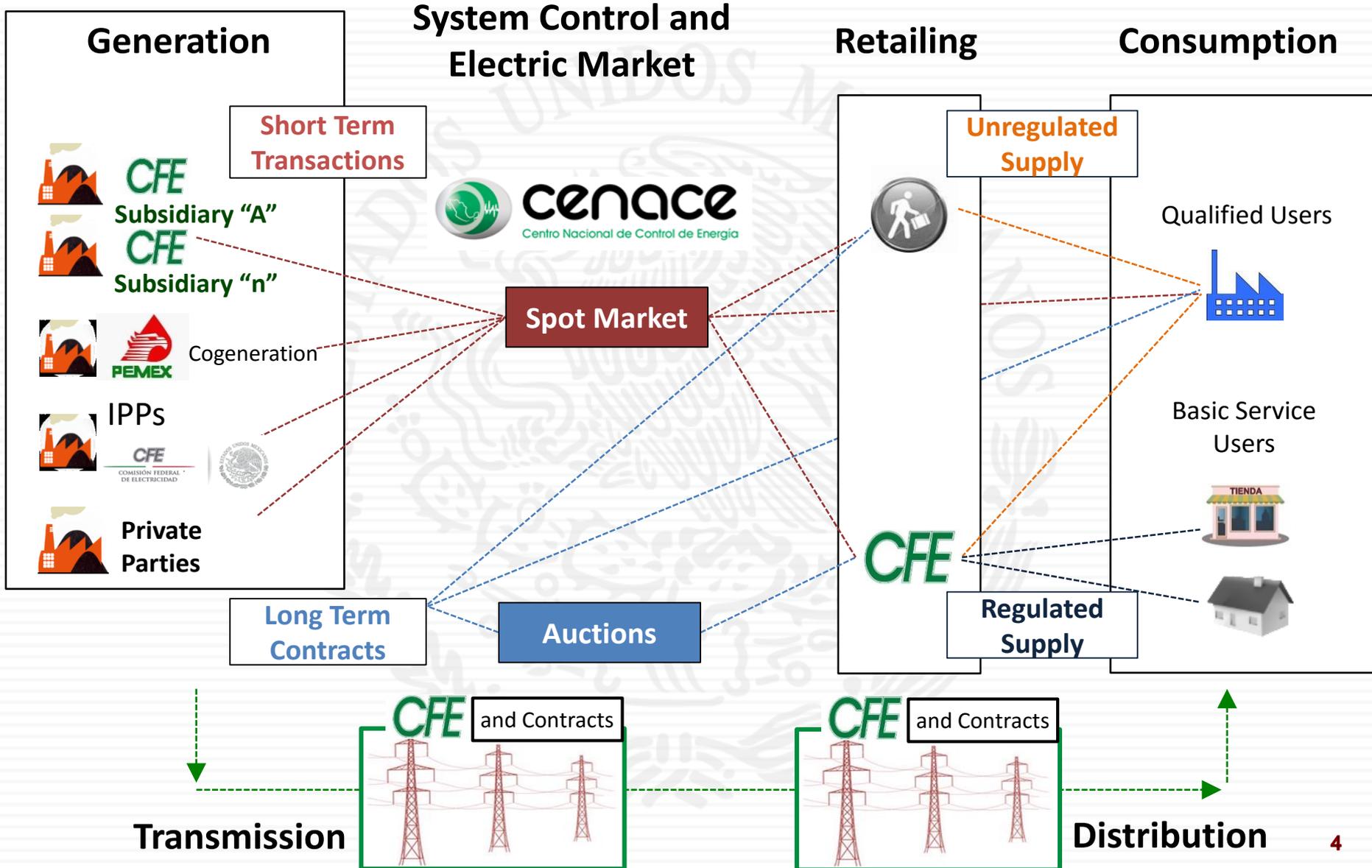
Only state-owned company responsible for all the processes of the electricity supply chain **



The generation and commercialization processes open for competition

Process	Previous structure	New structure
Electric generation	CFE/Private with sales to CFE	CFE, PEMEX, Private
Transmission/Distribution	CFE	CFE/private association w/ CFE
Commercialization/Supply	CFE	CFE, Private
Dispatch and Operational Control	CFE	CENACE

** In 1992, the private generation of electricity for its sale to CFE was allowed and the self-supply using the electrical grid of the public service of electrical energy was broadened.



Electrical Market



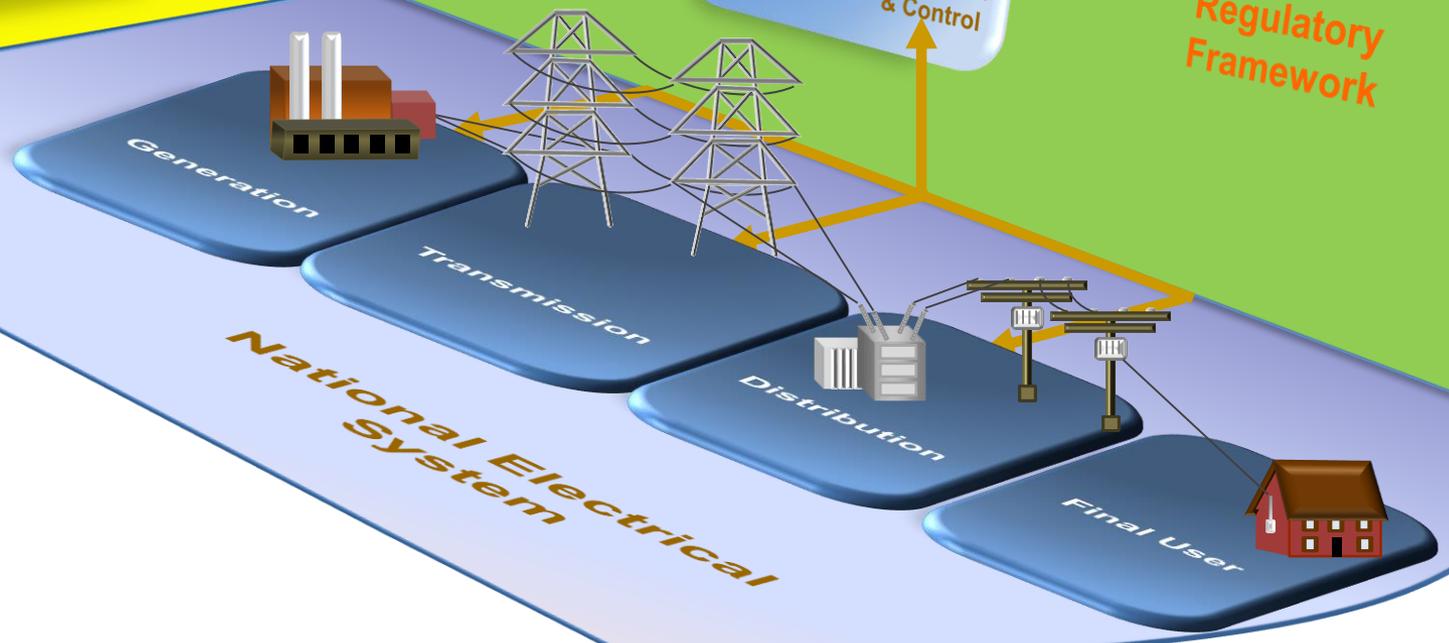
Energy Policy

Coordination

Energy Regulation



Regulatory Framework





- **Operation & Control.** Control the operation of all the elements of the national electrical system with quality and reliability.
- **Wholesale Electricity Market.** Obligatory energy nodal spot-market, with bilateral contracts and auctions for the basic service and clean energy certificates. Transmission financial rights.
- **Planning.** Planning the expansion of the National Transmission Grid and the General Distribution Grid.
- **Open Access.** Non-discriminatory open access to the grid for the interconnection of generators and load center connection, establishing the infrastructure requirements.



- CENACE analyzes the interconnections of new generators and new load centers and determines the new infrastructure that is required.
- Each year CENACE presents the schedule of the new electrical infrastructure in the transmission system which must be approved by the Ministry of Energy, who then instructs the transmission company to build it.
- The planning of the grid takes the forecasts of the load, fuel prices and the new generation of the indicative program into account.
- The planning of the grid is proactive due to the new generators ensuring their new entry into the market through a financial guarantee and then the new transmission that is required is analyzed with the generators stacked.

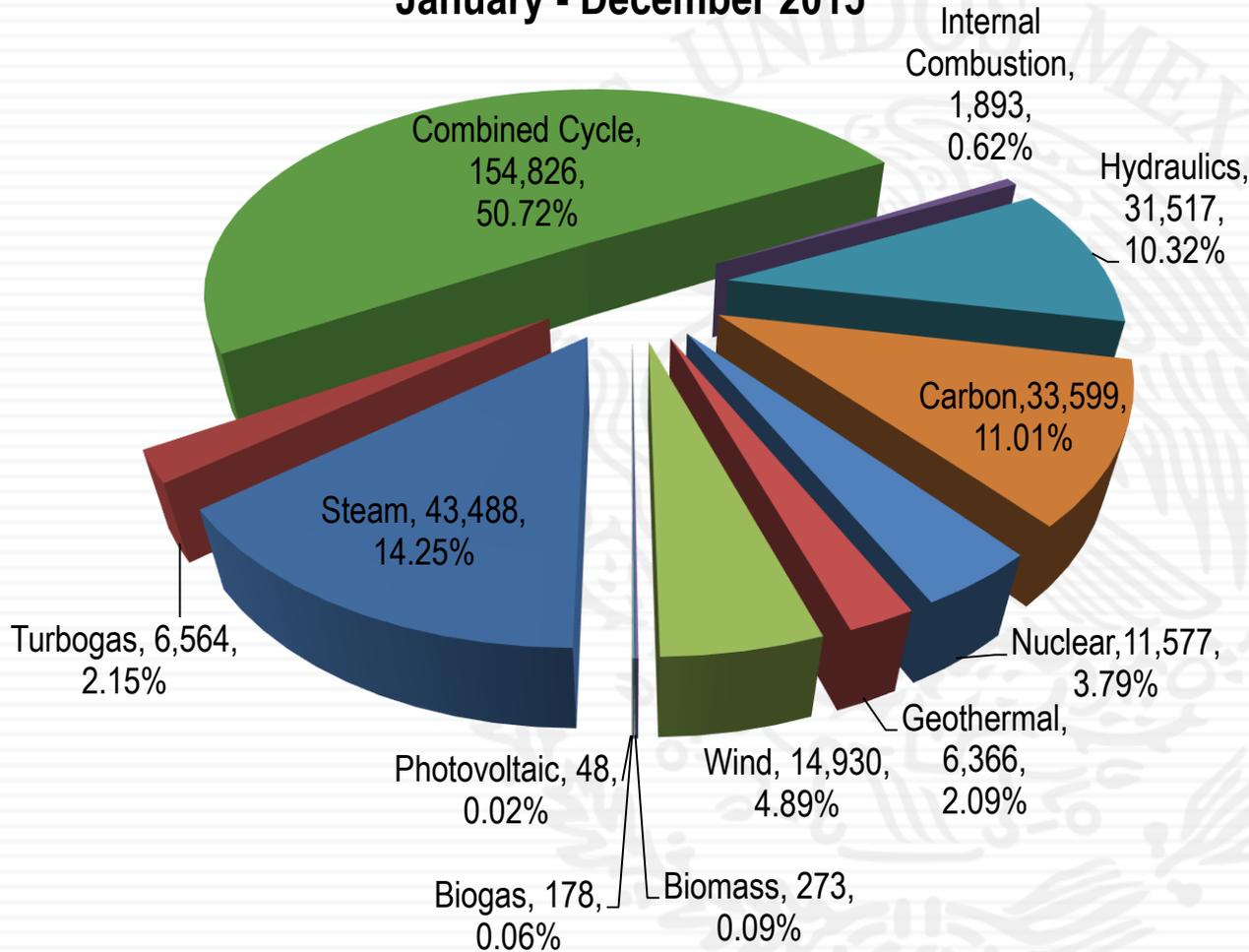


CENACE Control Centers





Total Generation Technology type January - December 2015

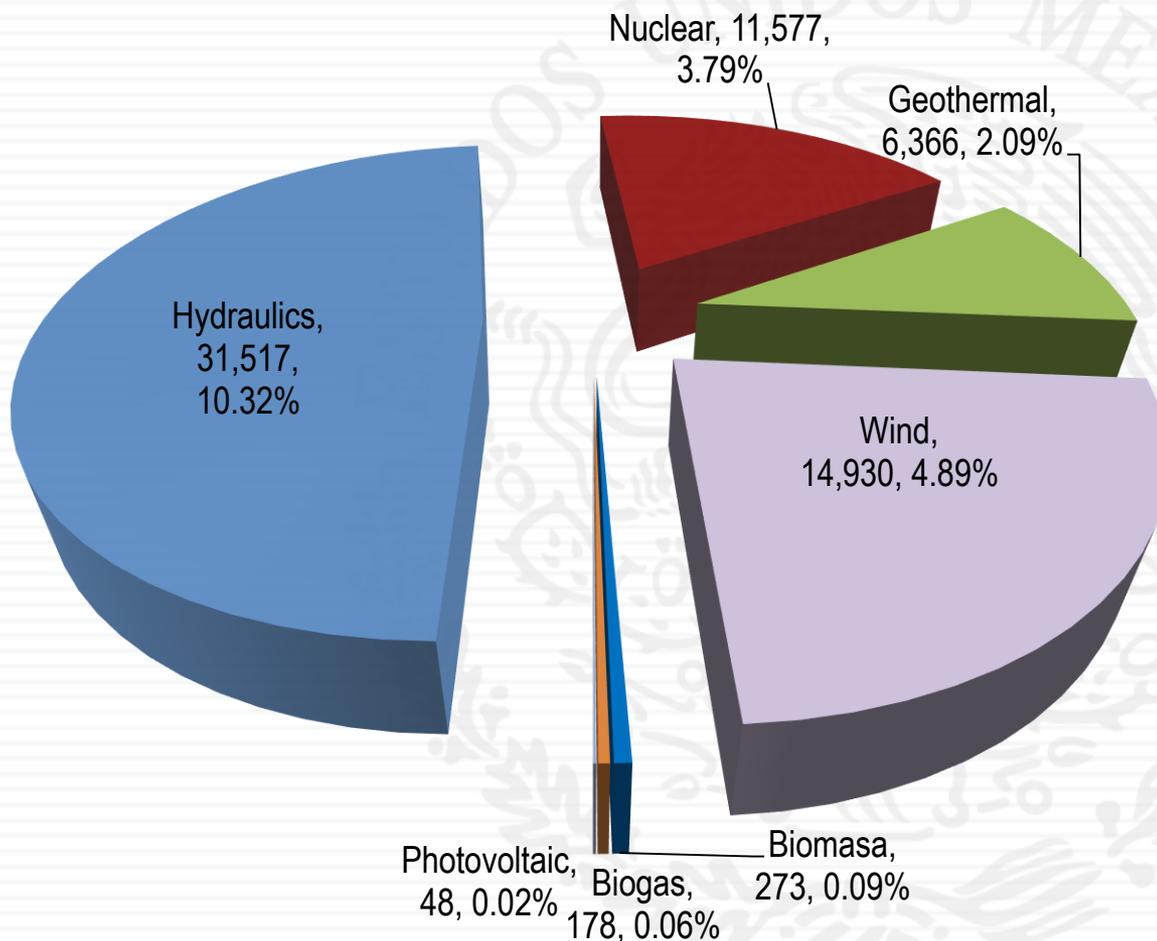


Energy Technology Type		
Tipo	GWh	% Vs Total Generation
Combined Cycle	154,826	50.72
Hydraulics	31,517	10.32
Carbon	33,599	11.01
Steam	43,488	14.25
Nuclear	11,577	3.79
Wind	14,930	4.89
Turbogas	6,564	2.15
Geothermal	6,366	2.09
Internal Combustion	1,893	0.62
Biomass	273	0.09
Biogas	178	0.06
Photovoltaic	48	0.02
Total Generation	305,258	100.00

It Includes: CFE + PIE's + Licensees



Clean Energy by type of SEN (Jan - Dec 2015)



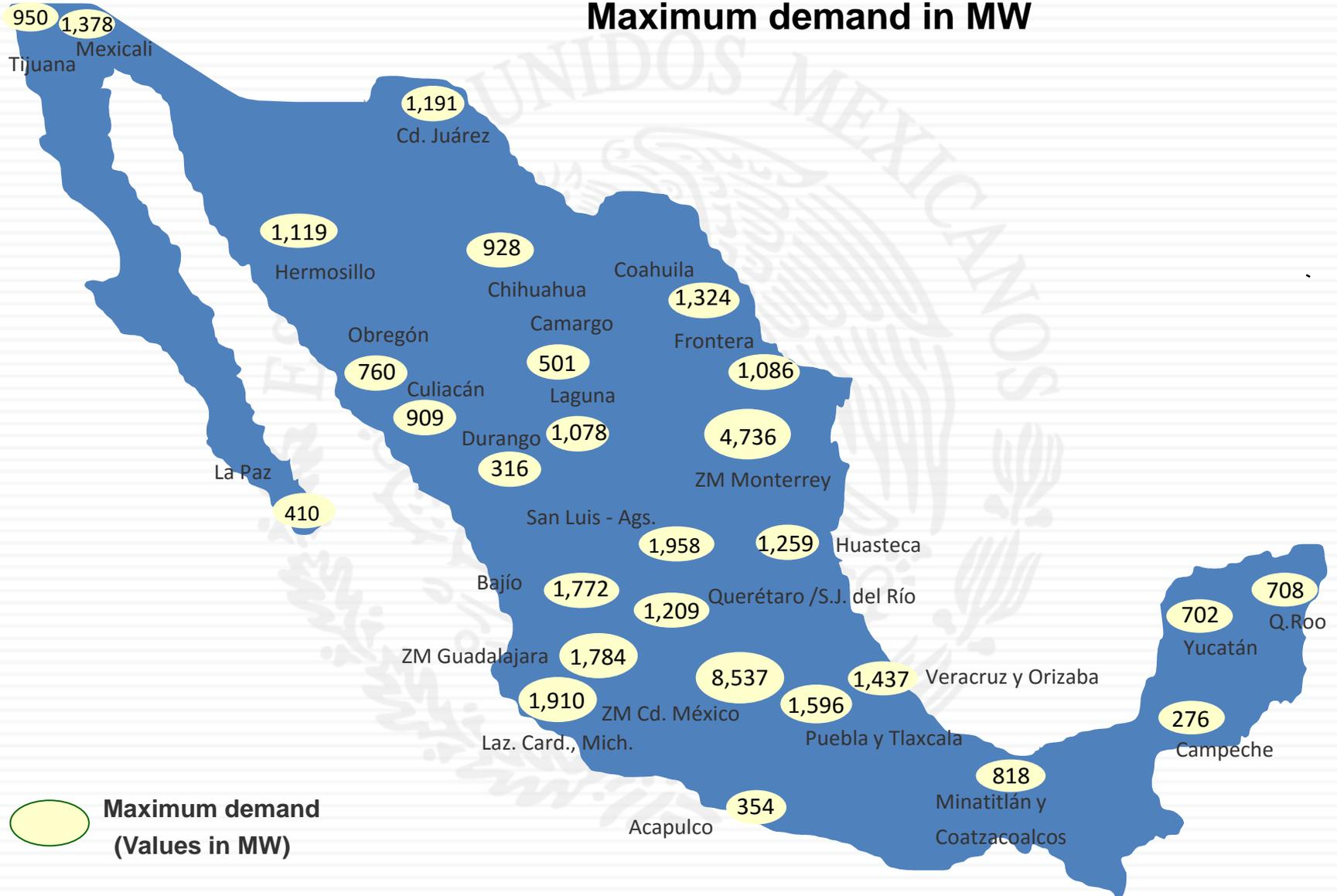
Clean Energy		
Type	GWh	% Vs Total Generation
Hydraulics	31,517	10.32
Nuclear	11,577	3.79
Wind	14,930	4.89
Geothermal	6,366	2.09
Biomass	273	0.09
Biogas	178	0.06
Photovoltaic	48	0.02
Total	64,888	21.26
Total Generation	305,258	
Generation 2014		
Clean	68,686	24.49
Total	280,366	

It Includes: CFE + PIES + Licencees



Demand of the main regions

Maximum demand in MW

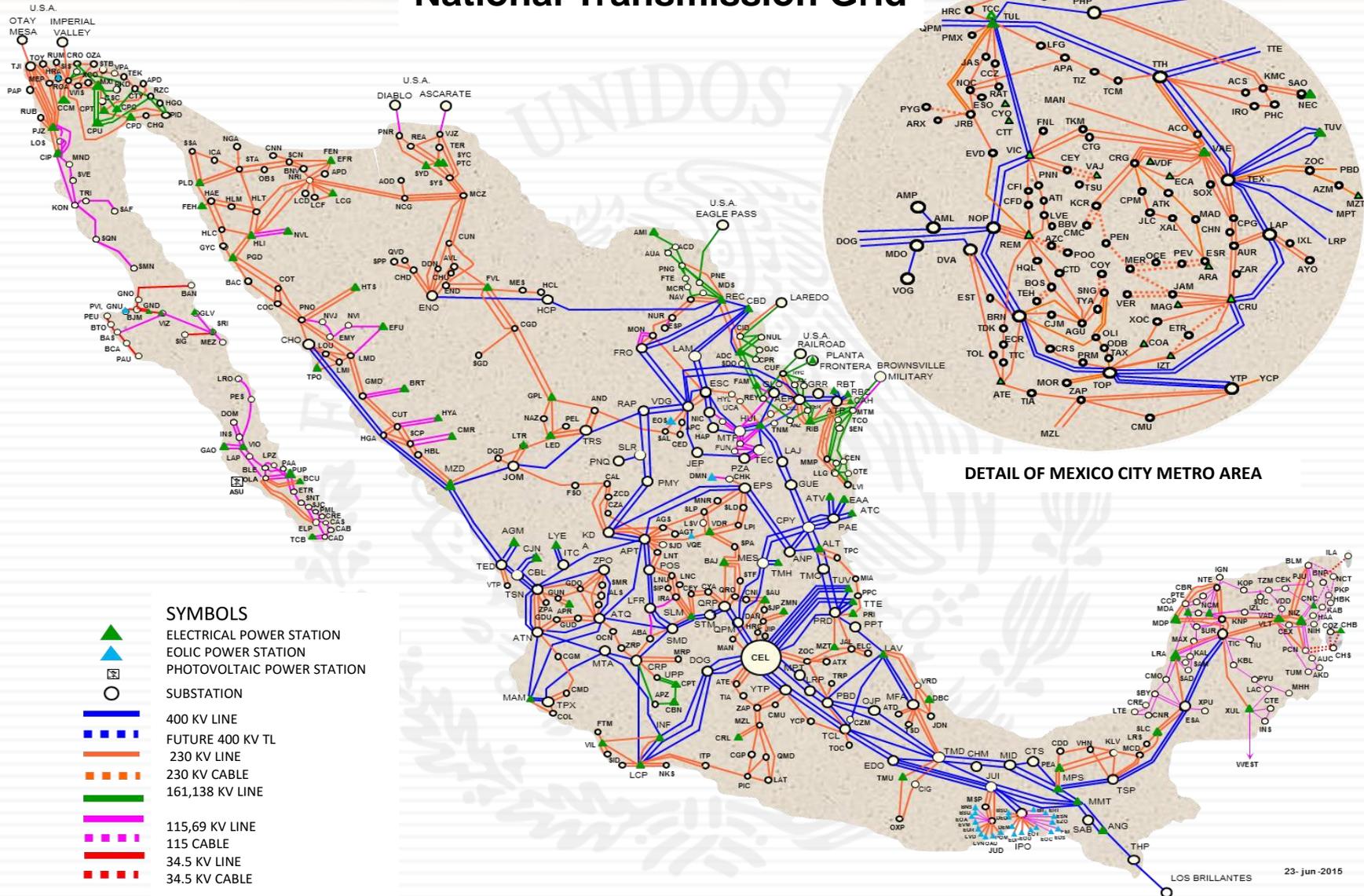


 **Maximum demand**
(Values in MW)



National Electricity Transmission Grid

National Transmission Grid



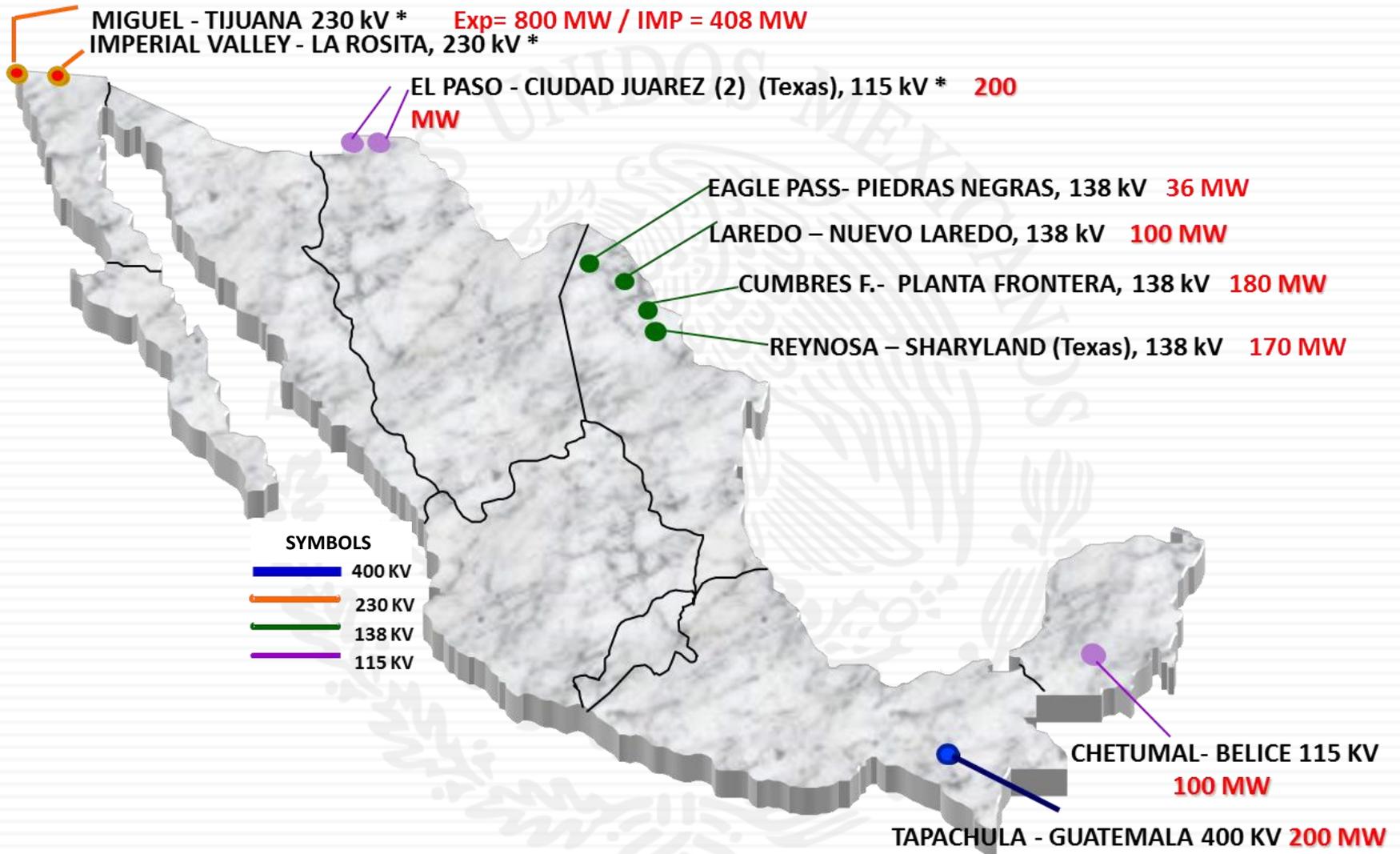
SYMBOLS

- ELECTRICAL POWER STATION
- EOLIC POWER STATION
- PHOTOVOLTAIC POWER STATION
- SUBSTATION
- 400 KV LINE
- FUTURE 400 KV TL
- 230 KV LINE
- 230 KV CABLE
- 161,138 KV LINE
- 115,69 KV LINE
- 115 CABLE
- 34.5 KV LINE
- 34.5 KV CABLE

DETAIL OF MEXICO CITY METRO AREA



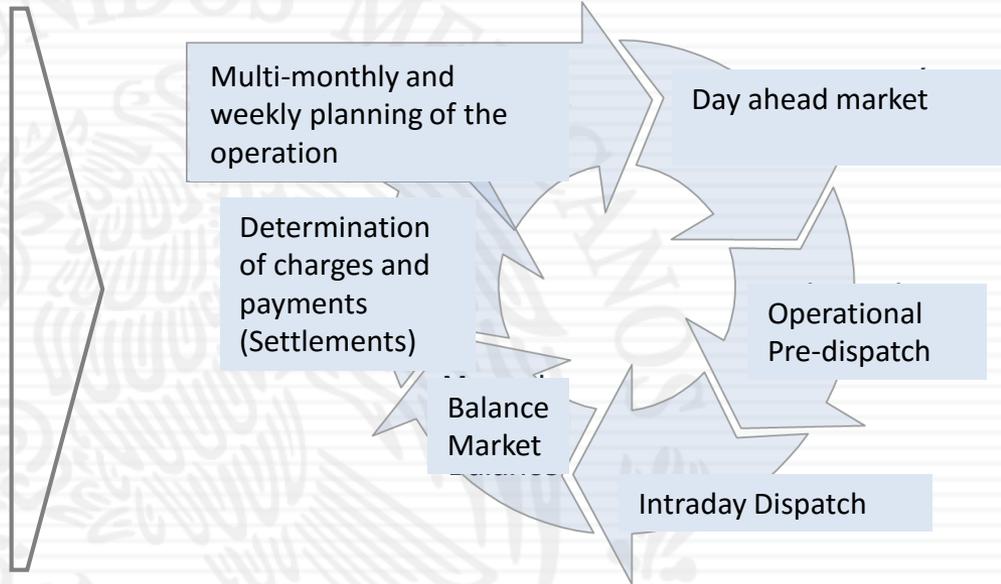
International tie-lines





Processes of the Wholesale Electricity Market Operation

- Cyclical execution processes, typical in the wholesale electricity market
- The activities of these processes are executed daily, except for those related to multi-monthly and weekly planning of the operation



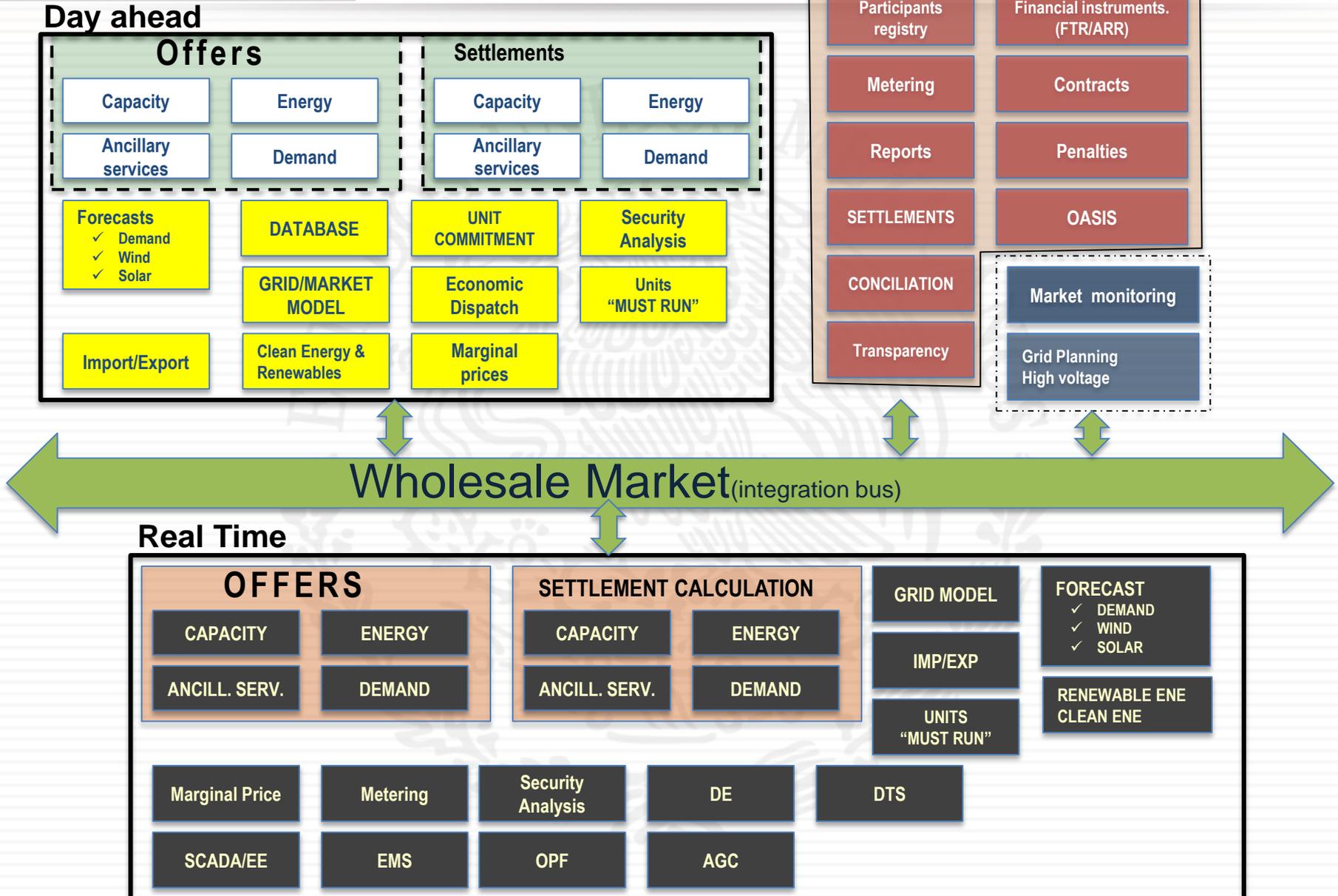
- Processes derived from the coverage and power contracts auctions

Administration of Financial Instruments and Contracts

- Transmission financial rights
- Power contracts (reliability and emergencies)
- Electric coverage contracts
- Clean energy certificates



Developed Market Modules



Manuals of the Wholesale Electricity Market (Business Process Manuals)

General Scope

- General Provisions (01)
- Description, Structure, Stages and Interpretation Rules (02)
- Registration and Accreditation of Market Participants (03)
- Compliance Guarantees (04)

Operation of the National Electricity Market

- Access to the Electric Power System- Interconnection and connection (05)
- Reliability of Electric Power System (06)
- Small Electrical Systems (07)

Wholesale Electricity Market

- Models of the Wholesale Electricity Market (08)
- Elements and Short-term Operation of the Market (09 and 10)
- Power Balance Market (11)
- Clean Energies Certificates Market (12)
- Transmission Financial Rights (13)
- Medium and Long Term Auctions (14)
- Settlement, Invoicing, and Payment (17)

Information, Measurements, and Surveillance

- Market Information System (15)
- Measurement System (16)
- Surveillance of the Wholesale Electricity Market (18)
- Non-compliance and Solution of Disputes (19)

Thanks



MERCADO ELÉCTRICO MAYORISTA