

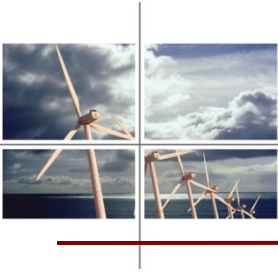


# ***RENEWABLE ENERGIES REGULATION & INCENTIVES THE CASE OF MEXICO***

**KARLA OLGUÍN HERNÁNDEZ**

**GLOBAL WORKSHOP ON LOW  
CARBON POWER SECTOR  
DEVELOPMENT**

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# ***THE REGULATORY FRAMEWORK***



# REGULATORY FRAMEWORK

Enabled more private participation in electric power generation

1992

- Reform to the Electric Power Public Utility Act (LSPEE).

1993

- LSPEE Bylaw Publication.

Establishment of a regulating agent for the electric sector

1995

- Approval of the Energy Regulatory Commission Act (CRE).

Solar, wind and hydroelectric energy

2001

- Interconnection Contract for Renewable Energy Sources (capacity credit).

2007

- Interconnection Contract for Small-scale Solar Energy.

Net metering

2008

- **Use of Renewable Energies and the Financing of Energy Transition Act (LAERFTE).**

2009

- LAERFTE Bylaw Publication.

The CRE has new attributions that allows the profit of renewable energies for power generation

2010

- In April, the CRE published a number of regulatory instruments in order to promote the development of projects with renewable energy sources and efficient cogeneration.



# ***REGULATORY FRAMEWORK***

The CRE has new attributions that allows the profit of renewable energies for power generation

2010

- In April, the CRE published a number of regulatory instruments in order to promote the development of projects with renewable energy sources and efficient cogeneration.

- Interconnection contracts (small & medium scale projects, generation plants)
- Transmission agreements

2011

- During this year, the CRE published various methodologies in order to promote the efficient cogeneration and recognition of plant capacity.

- The CRE is working in a document called "general interconnection rules" to regulate the access of new projects for electricity generation comes from renewable energy and cogeneration systems into the transmission infrastructure of the Grid Operator.



## ***THE POWERS OF REGULATORY ENERGY COMMISSION***

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From the Renewable Energy (RE) Act, CRE got the following powers:

- Issue standard, orders, methodologies, model contracts and all other rules to regulate the generation of electricity with RE and Cogeneration.
- Issue regulatory tools to calculate payments for services.
- To verify and approved technical requirements for the interconnection into the national grid.
- To require the system operator to modified its dispatching rules.



## ***REGULATORY TOOLS & INCENTIVES***



# ***REGULATORY TOOLS***

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## **Interconnection Contract**

- Represents the core of the regulation for projects under the Self-supply scheme.
- Contains legal, economic and technical conditions that CFE and private participants should abide by.
- Contains provisions that recognize the characteristics of RE technologies.
- The contract eliminates the intermittency complication on RE and Cogeneration projects.



# ***ENERGY BANK***

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- Any excess energy be taken by CFE.
- The monetary equivalent be added to the permit holder individual energy bank account.
- Thus, loads always get their demand satisfied.

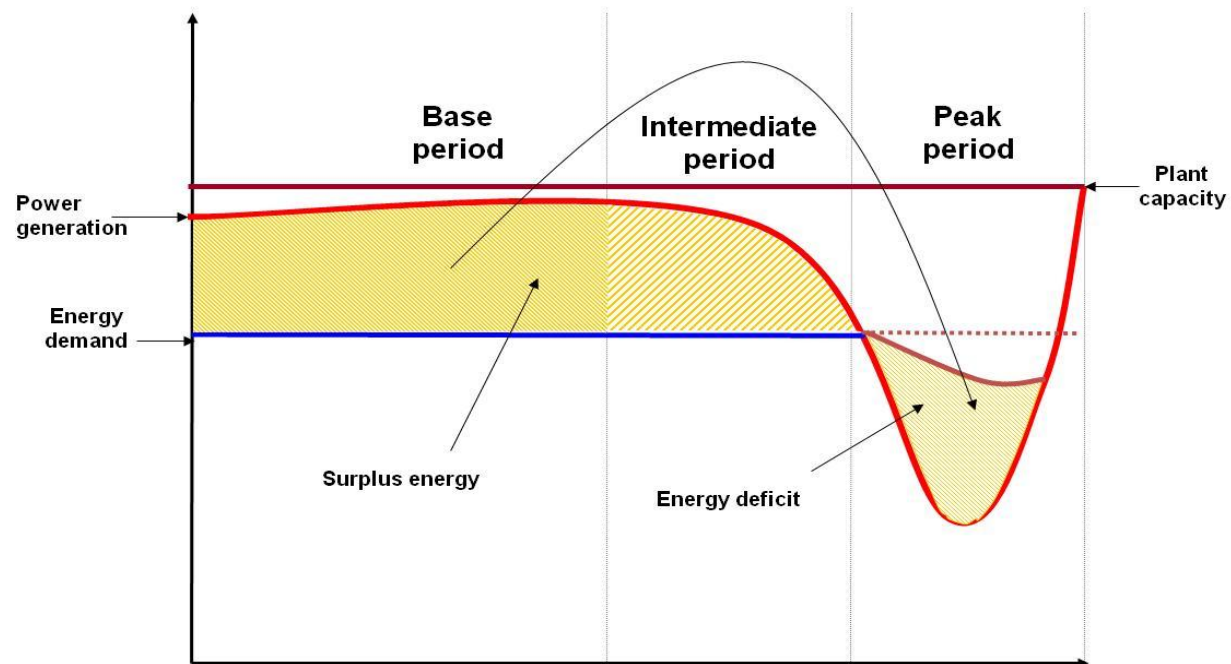




# ***ENERGY BANK***

## ***How the Energy Bank works?***

Energy exchange





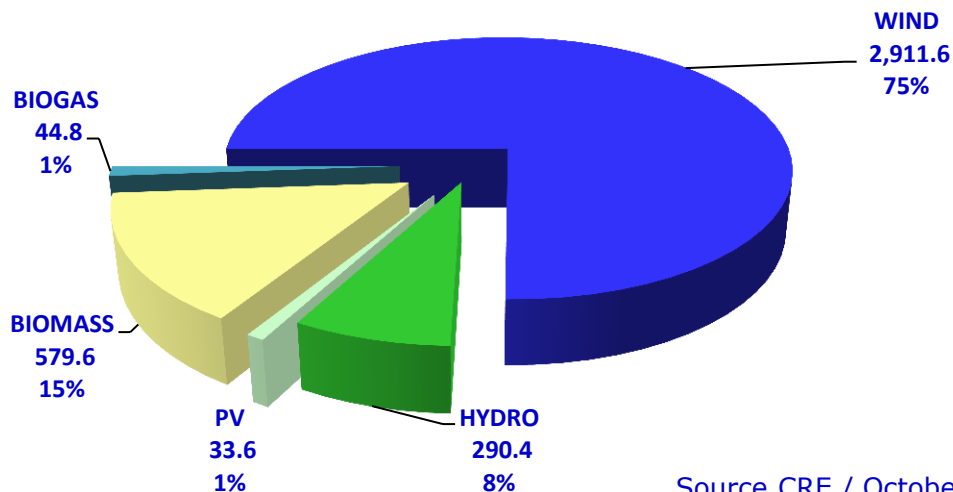
# ***WHEELING FOR RENEWABLE AND COGENERATION PROJECTS***

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- It is dealt with by using a Postage Stamp Methodology.
- The costs of the Power System constitute the price calculation vital variable.
- Postage Stamp Methodology offer, perhaps, the simplest way to calculate wheeling charges under a direct, easy to grasp and manage procedure.



# PRIVATE PARTICIPATION IN RENEWABLE ENERGY PROJECTS



Source CRE / October 30, 2011: MW authorized

	PERMITS	IN OPERATION	UNDER CONSTRUCTION	IDLE	TOTAL
WIND	26	484.1	2,427.6	-	2,911.6
HYDRO	27	132.3	132.6	25.5	290.4
PV	2	-	33.6	-	33.6
BIOMASS	55	511.3	68.4	-	579.6
BIOGAS	10	40.2	4.6	-	44.8
TOTAL	120	1,167.8	2,666.7	25.5	3,860.0



# ***NET METERING***

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- The exchange of electricity between generators and the System is on a 1:1
- Whereas mid tension consumers carry out the exchange with the help of a meter that takes into account the value of energy at any given moment and whose net results are used for monthly billing.
- Consumers may do so without the need of obtaining a permit from CRE.



# ***COGENERATION***

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- The cogeneration projects have the same treatment as in the case of RE projects but it considers a minimum efficiency for them to be subject to the incentives.
- CRE is responsible for setting this minimum.
- The methodology chosen for cogeneration efficiency is based on the concept of “Free fuel electricity”



# COGENERATION

- CRE considers that for a cogeneration project to have access to the benefits of the regulation, it must comply with:

$$\eta \geq \eta_{\min}$$

Capacity of the cogeneration project	$\eta_{\min}$ %
$0.03 < \text{Capacity MW} < 0.5$	5
$0.5 \leq \text{Capacity MW} < 30$	10
$30 \leq \text{Capacity MW} < 100$	15
$\text{Capacity MW} \geq 100$	20

- CRE is working in the development a National Standard and the Certification of companies that may carry out the verification of cogeneration efficiency levels is a forthcoming task for CRE.



# ***DISPATCH RULES***

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## Principles:

- The short term cost of the energy generated is closed to 0.
- The more expensive generation should be displaced in the merit order for the sake of maintaining an economic dispatch.
- Keeping security of the System at the top of priorities.



# ***INTERCONNECTION RULES***

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## **Principles:**

- Maintaining the security, reliability and stability of the Power System.
- Wind turbines to participate in voltage control / reactive power control.
- Wind turbine operators have to fulfill all communication requirements that the System Operator requires for grid control
- Management of abnormal grid operation conditions.





# ***OPEN SEASONS***

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- CRE organized an Open Season procedure for the sake of building transmission capacity that could wheel power generated by wind farms to be install in Oaxaca.
- The stakeholders guaranteed the cost of the request transmission capacity with letters of credit.
- Some projects are all ready connected and operating (484.1 MW)



# OPEN SEASON





## ***SUCCESSFUL EXPERIENCE***



**Wind Farm EURUS, Oaxaca  
250 MW**





## ***ON GOING INSTRUMENTS...***

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### **Tender**

- The deployment of renewable energy resources in small energy projects, up to 20 MW.
- It consider RE technologies: geothermal, mini hydro, biomass, biogas and PV.
- This scheme will give the chance small project developers to participate in energy sector increasing job creation.
- CRE is working on a particular tender scheme for this kind of projects.



# ***SMART GRID REGULATORY ROADMAP***

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- To optimize the integration of renewables by managing demand instead of the managing supply.
- Reduce the cost of electricity for end users.
- Improve the quality of the public service.
- Improve efficiency and reliability.





# ***CONCLUSIONS***

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- Specific actions for the promotion of these projects have been carried out and are outstanding.
- Strong competitive conditions within a region or a country may be the desirable outcome of regulation
- Technological characteristics of all RE developments should be taken into account to level the field of competition in a given electric System.
- Policy makers and regulators must work together in order to achieve maximum results.



***THANKS***

***[kolguin@cre.gob.mx](mailto:kolguin@cre.gob.mx)***

***(+52) 55 - 5283 - 1520***

***[www.cre.gob.mx](http://www.cre.gob.mx)***