



IEMOP

**INTRODUCTION TO**

# **WESM**

**WHOLESALE ELECTRICITY SPOT MARKET**

**30 OCTOBER 2018**

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# OUTLINE

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**WHAT IS  
WESM?**

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**WHO  
OPERATES THE  
WESM?**

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**WHO ARE THE  
WESM  
PARTICIPANTS?**

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**HOW IS  
ELECTRICITY  
DELIVERED TO  
CONSUMERS**

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**HOW IS  
ELECTRICITY  
TRADED IN THE  
WESM?**

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**HOW DO WESM  
RATES AFFECT  
ELECTRICITY  
BILLS?**

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**WHAT ARE  
THE  
BENEFITS OF  
WESM?**

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# WHAT IS WESM?

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**Wholesale Electricity  
Spot Market (WESM)**

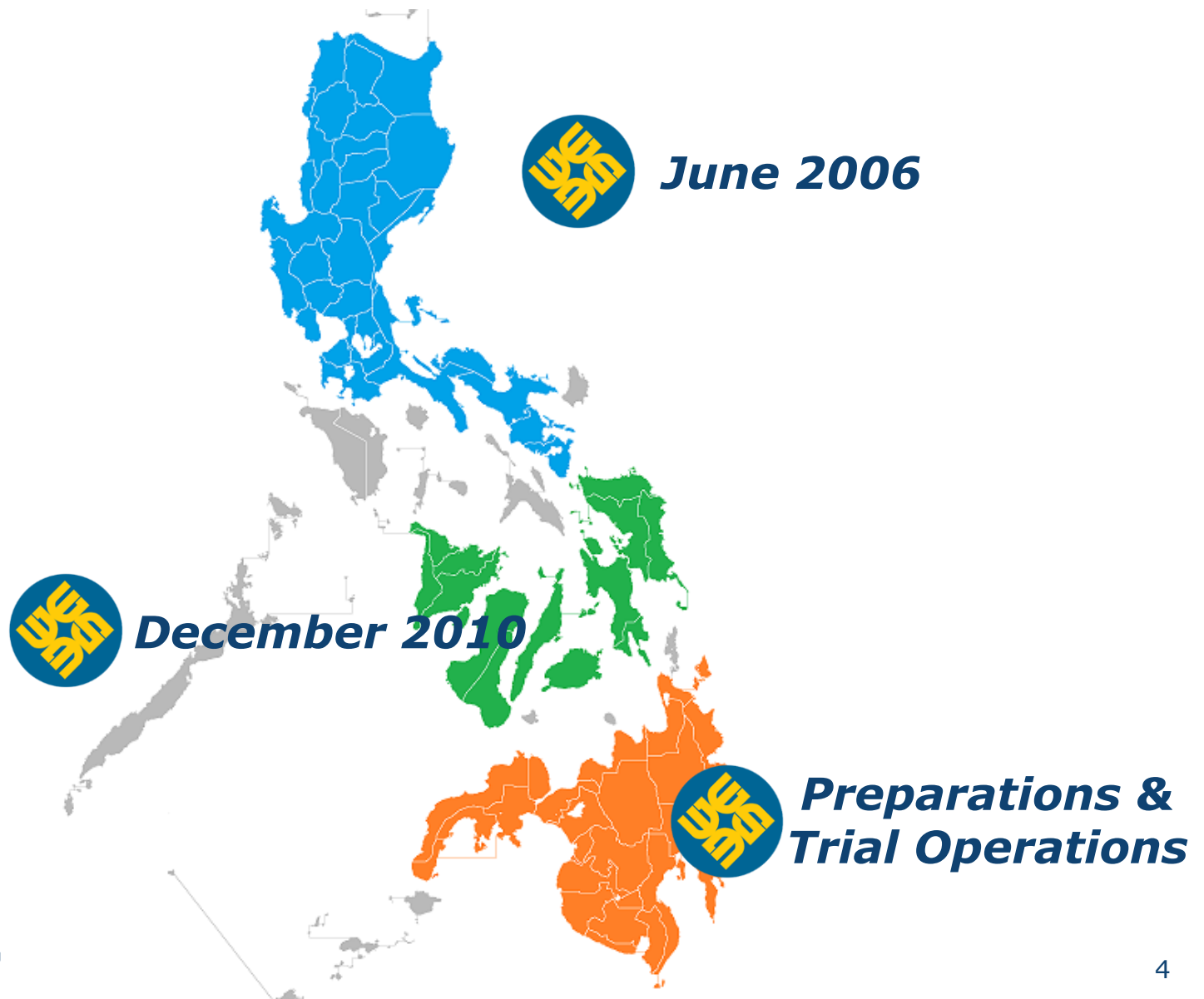
Centralized venue for large-scale buyers and sellers of electricity where price is based on the interaction of demand and supply.



Established pursuant to Republic Act 9136 or the Electric Power Industry Reform Act (EPIRA)

# WHAT IS WESM?

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# WHO OPERATES THE WESM?

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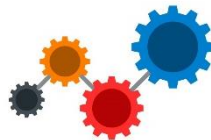


Non-stock, non-profit corporation established in May 2018



IEMOP

INDEPENDENT ELECTRICITY MARKET OPERATOR  
PHILIPPINES



Assumed the market operation functions from the Philippine Electricity Market Corp.\* (PEMC) starting 26 Sep 2018



Serves as the independent market operator, separate from its governing body as envisioned by Electric Power Industry Reform Act of 2001 (EPIRA)

# WHO ARE THE PARTICIPANTS IN THE WESM?

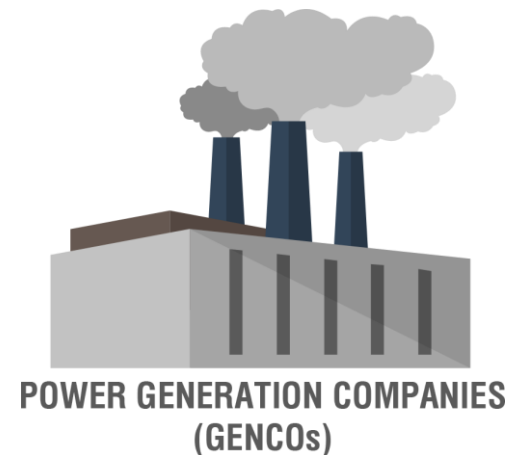
## Generation Companies



Authorized by the ERC to operate facilities used in the generation of electricity.

A Generation Company may have facilities that use the following resources:

- Natural gas
- Geothermal
- Hydro
- Coal
- Diesel / Oil
- Biomass
- Wind
- Solar



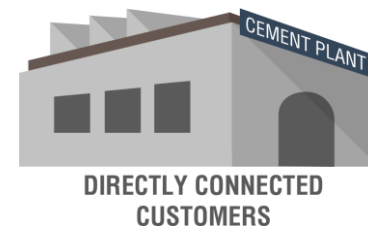
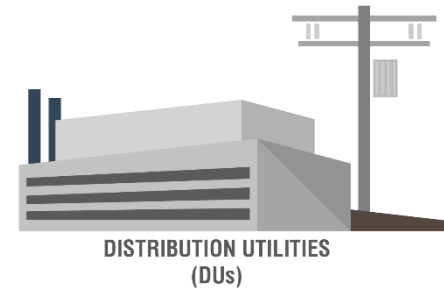
# WHO ARE THE PARTICIPANTS IN THE WESM?

## Customers

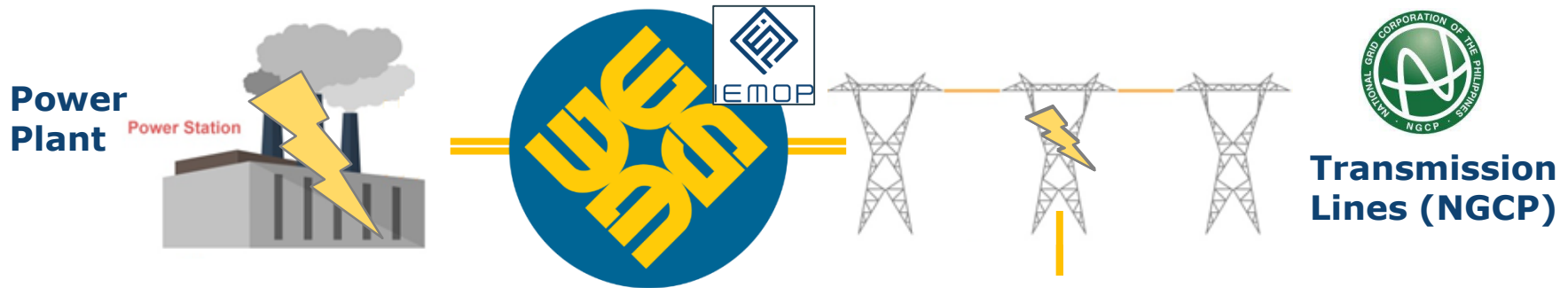


Customers in the WESM may be

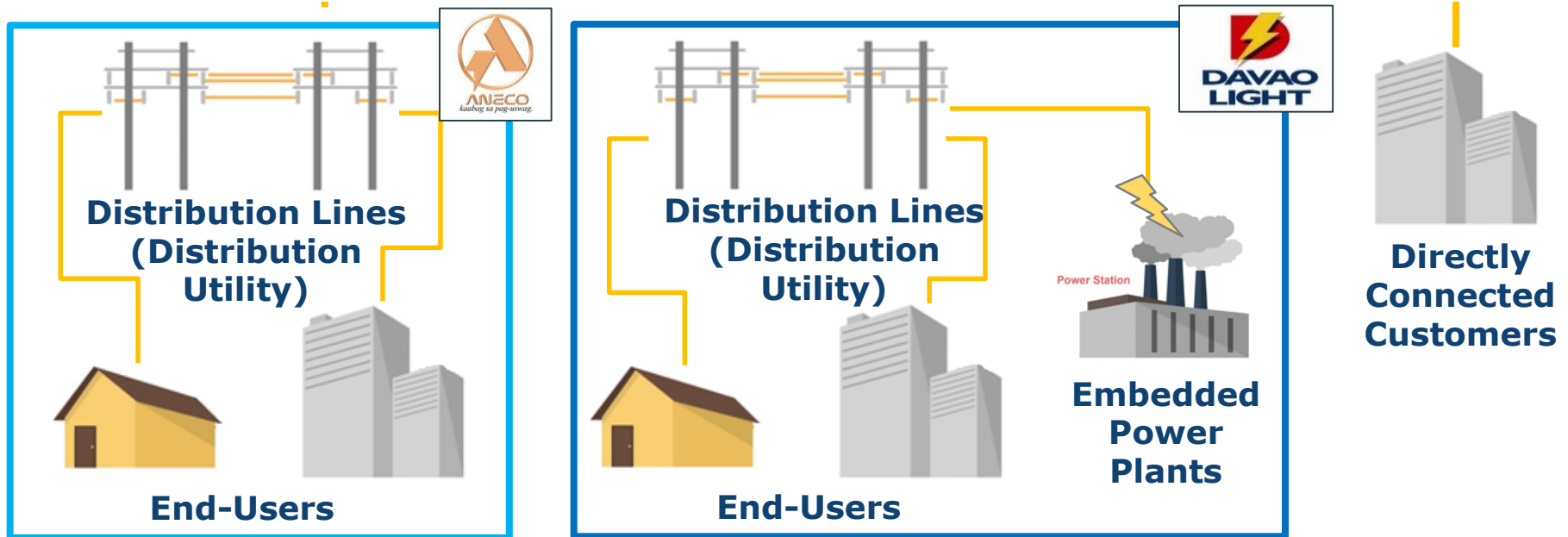
- Distribution Utilities
- Directly-connected customers (Bulk customers)
- Retail Electricity Suppliers
- or Contestable Customers (End-users).



# HOW IS ELECTRICITY DELIVERED FOR CONSUMERS?



*Electricity is traded by sellers (generators) and buyers (DU and other customers) in the WESM prior to production and delivery.*





# HOW IS ELECTRICITY DELIVERED TO CONSUMERS?

## Supply and Demand Balancing



*Supply and demand is matched, every 5 minutes, through market-based scheduling in the WESM.*

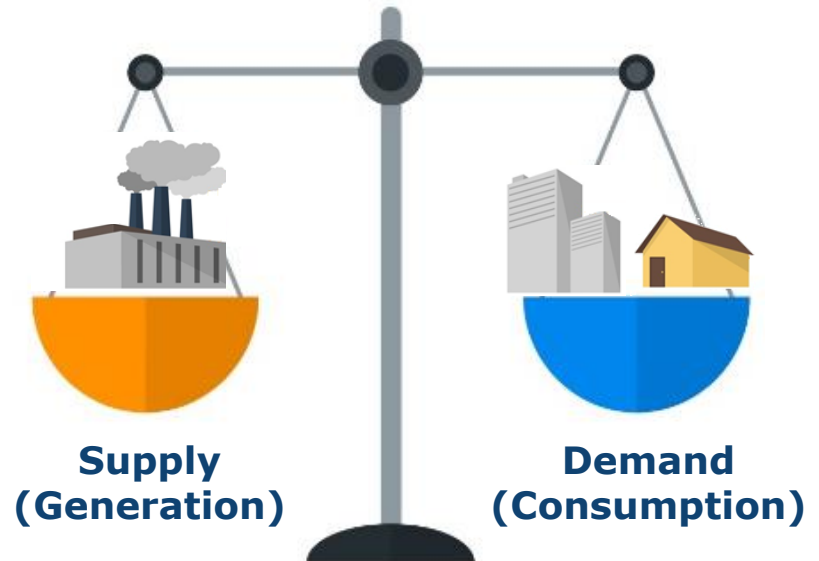
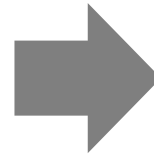
### Electricity is a unique commodity



**Cannot be economically stored in large quantities**

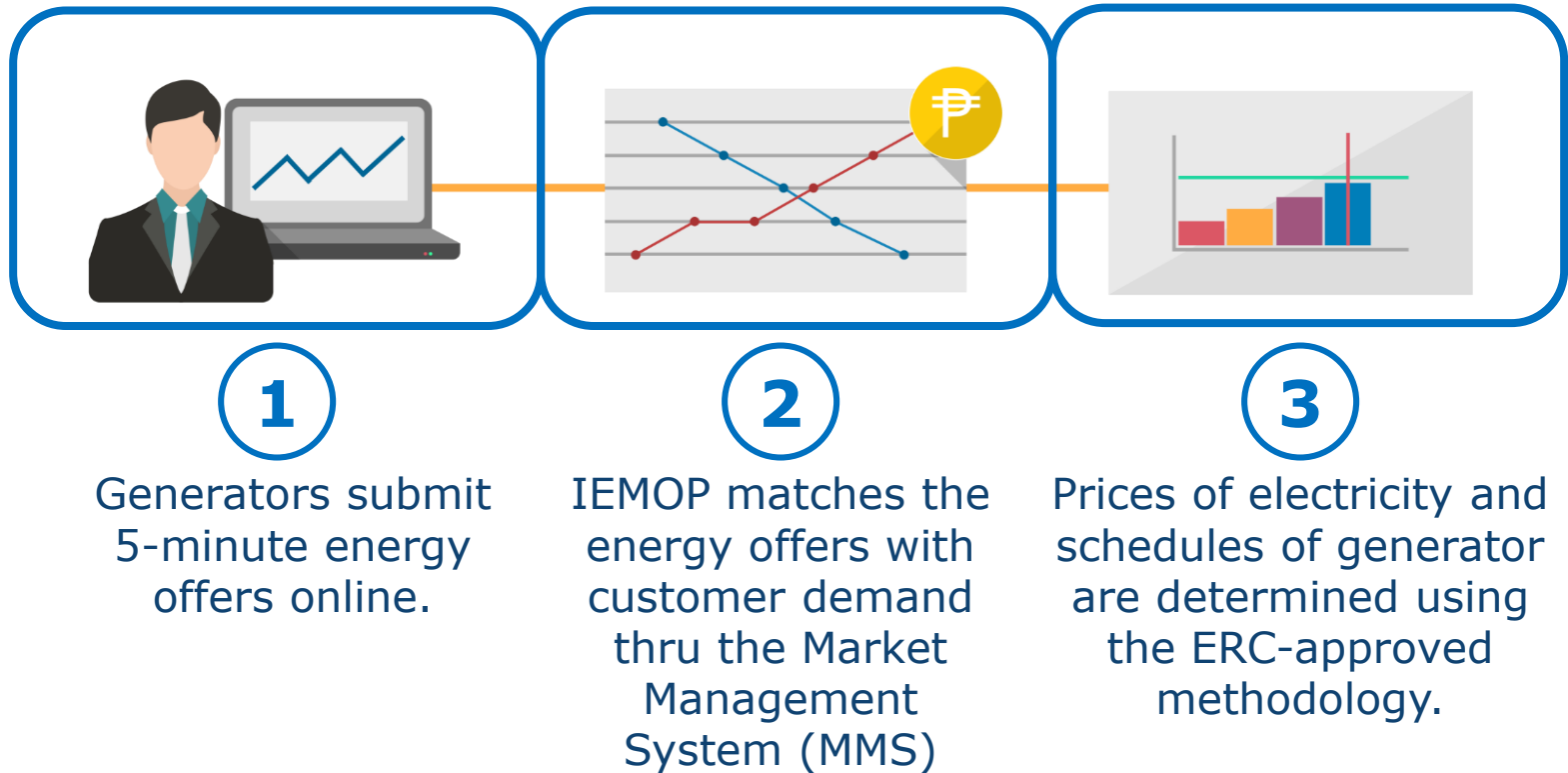


**Must only be produced when needed**



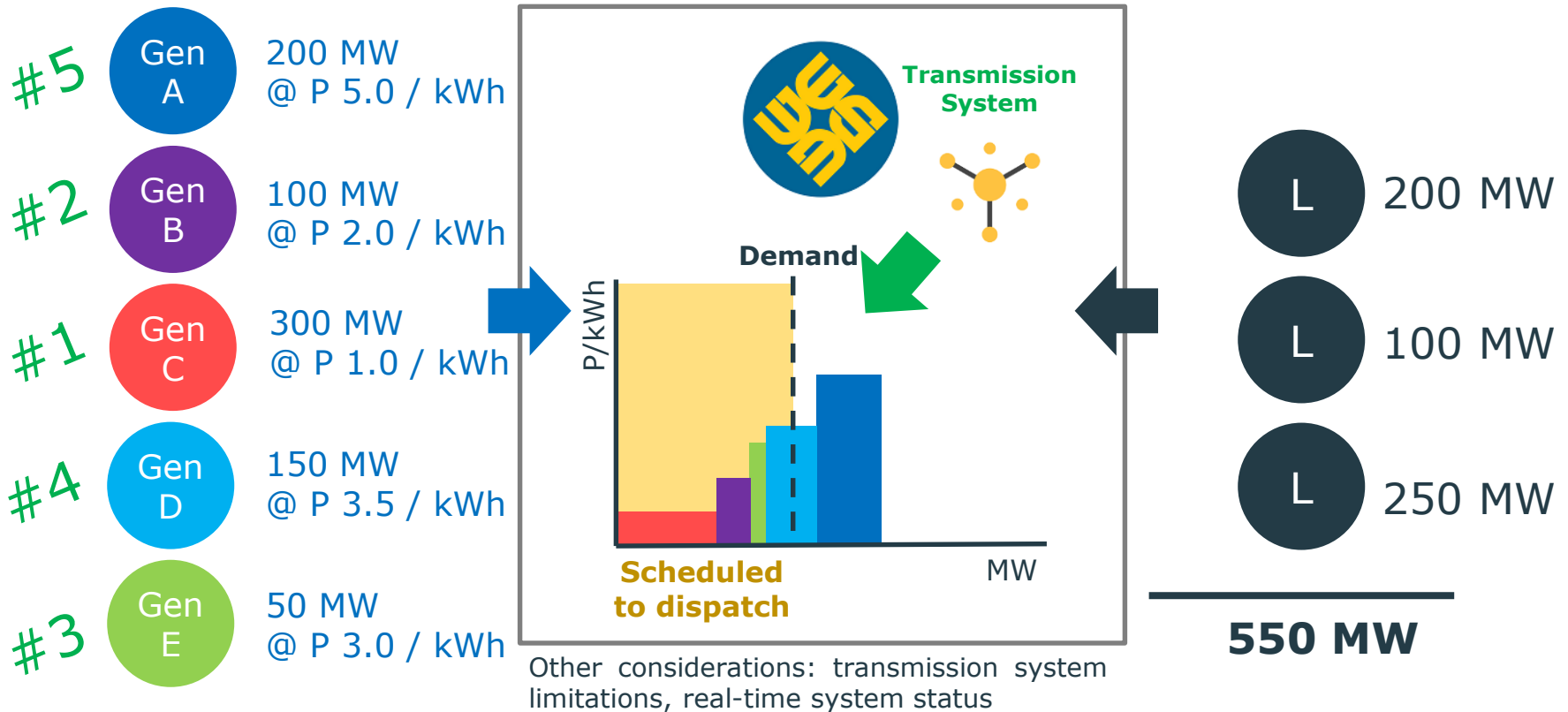
# HOW IS ELECTRICITY TRADED IN THE WESM?

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# HOW IS ELECTRICITY TRADED IN THE WESM?

## Scheduling of Generators

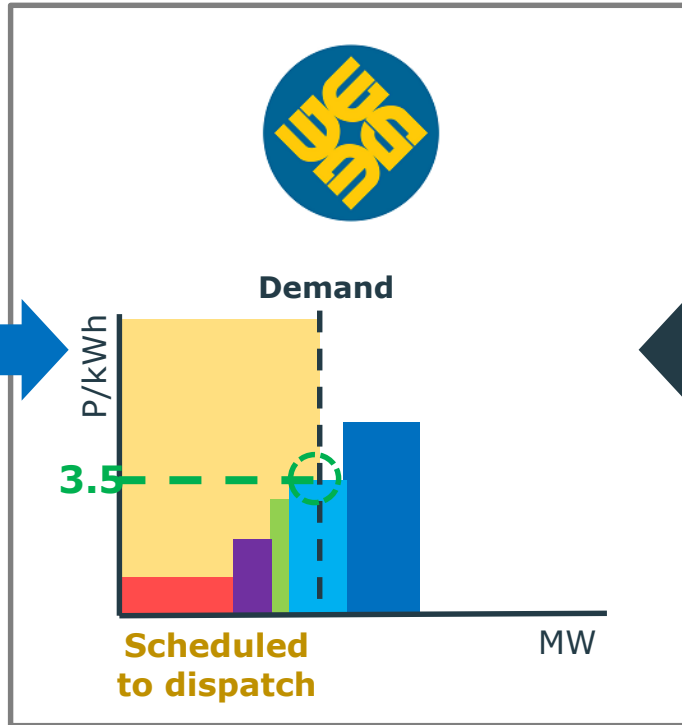


**Generators are dispatched according to their offer price from the cheapest to the most expensive**

# HOW IS ELECTRICITY TRADED IN THE WESM?

## Pricing of Electricity

- #5 Gen A 200 MW @ P 5.0 / kWh
- #2 Gen B 100 MW @ P 2.0 / kWh
- #1 Gen C 300 MW @ P 1.0 / kWh
- #4 Gen D 150 MW @ P 3.5 / kWh
- #3 Gen E 50 MW @ P 3.0 / kWh



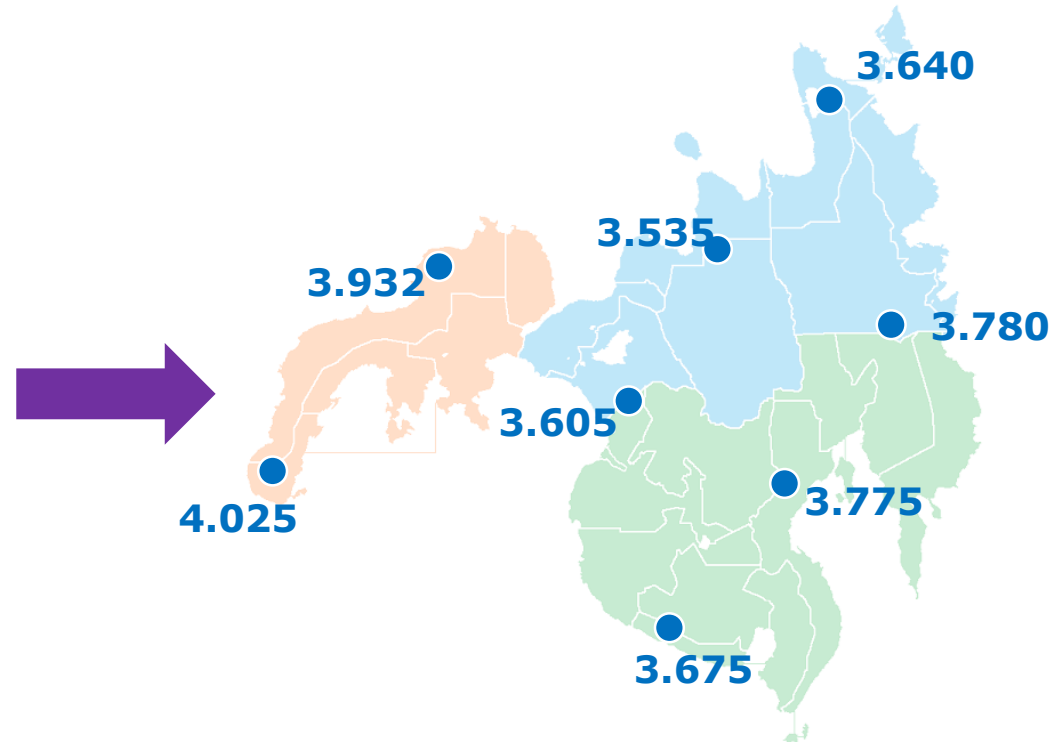
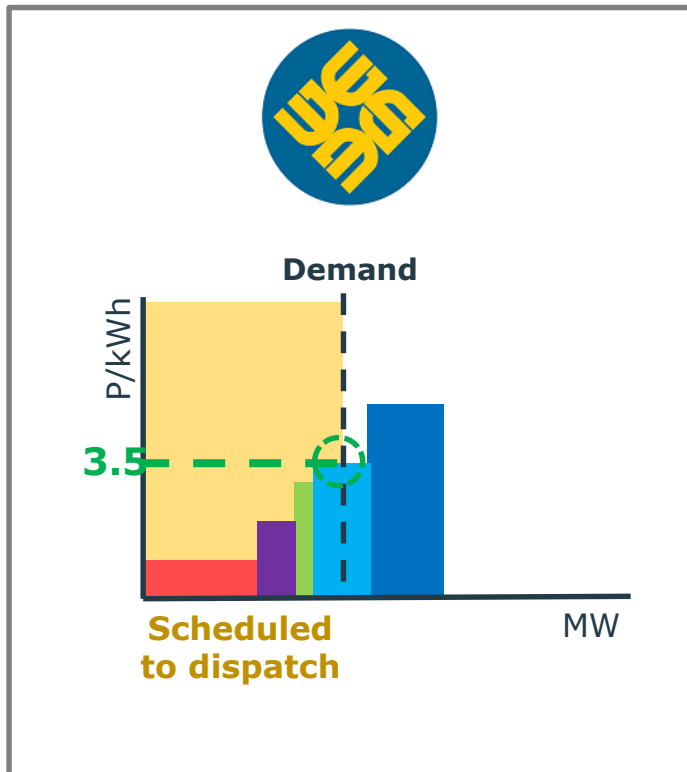
- L 200 MW
  - L 100 MW
  - L 250 MW
- 550 MW**

Other considerations: transmission system limitations, real-time system status

**Market clearing price is set by the offer price of the plant necessary to serve the demand**

# HOW IS ELECTRICITY TRADED IN THE WESM?

## Pricing of Electricity



$$\text{Locational Marginal Price} = \text{Market Clearing Price} + \text{Cost of Loss} + \text{Cost of Congestion}$$

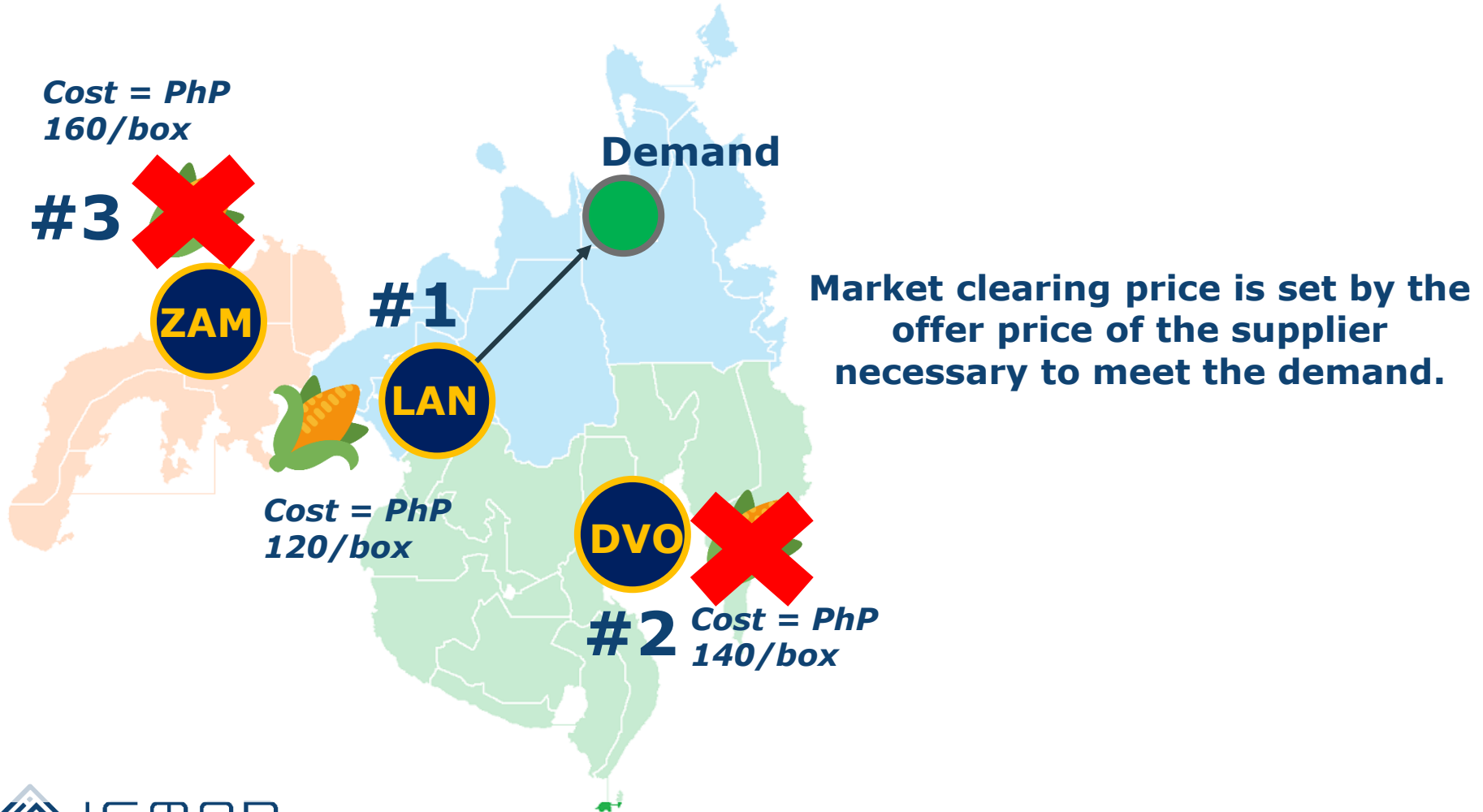
● Market Trading Node

**Locational price is computed to account for losses and congestion in the system.**

# HOW IS ELECTRICITY TRADED IN THE WESM?

## Pricing of Electricity

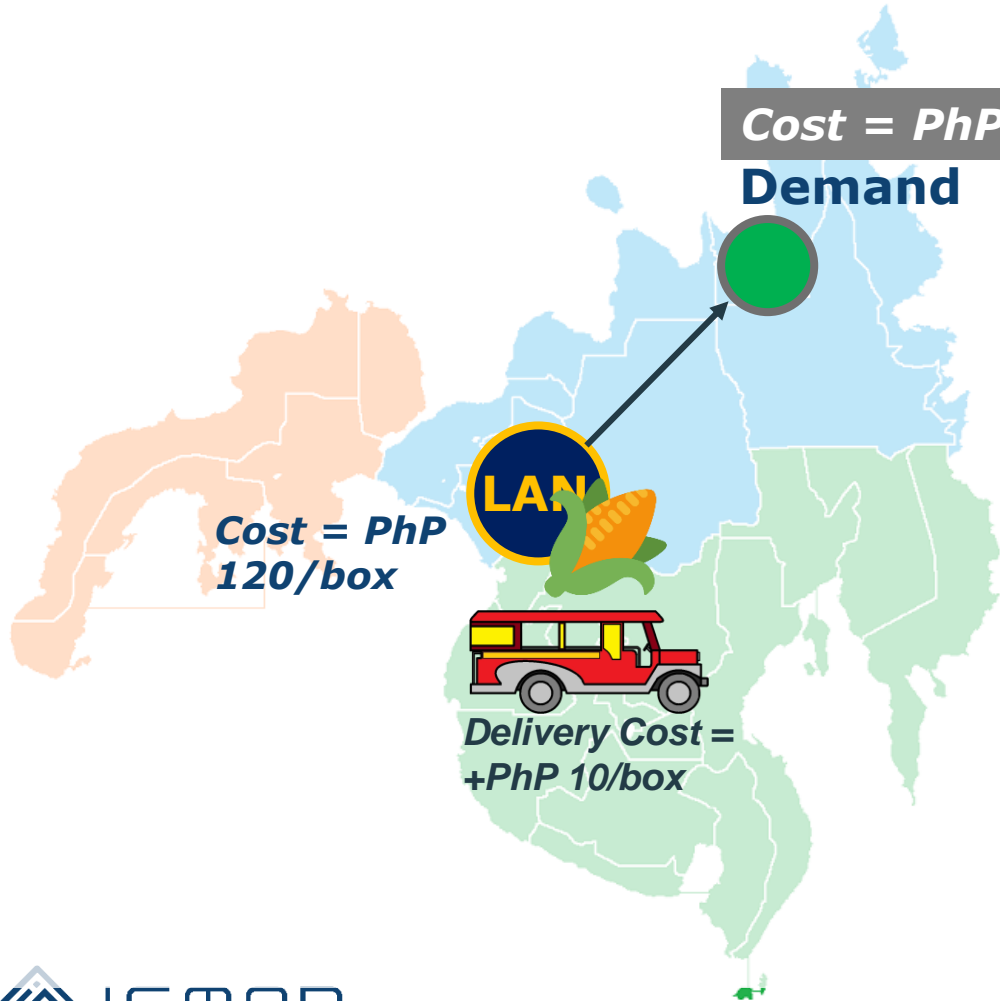
### Market Clearing Price



# HOW IS ELECTRICITY TRADED IN THE WESM?

## Pricing of Electricity

### Cost of Loss



The cost of transporting the commodity (e.g. gas, toll) represents the cost of loss.

# HOW IS ELECTRICITY TRADED IN THE WESM?

## Pricing of Electricity

### Cost of Congestion

*Cost = PhP 140/box*

**Demand**

*Cost = PhP 120/box*

**LAN**

**DVC**

*Cost = PhP 140/box*



*Lanao-Butuan Route was damaged and Lanao cannot serve all of Butuan City's demand*

**The additional cost of sourcing the commodity from more expensive sources due to constraints represents the cost of congestion.**

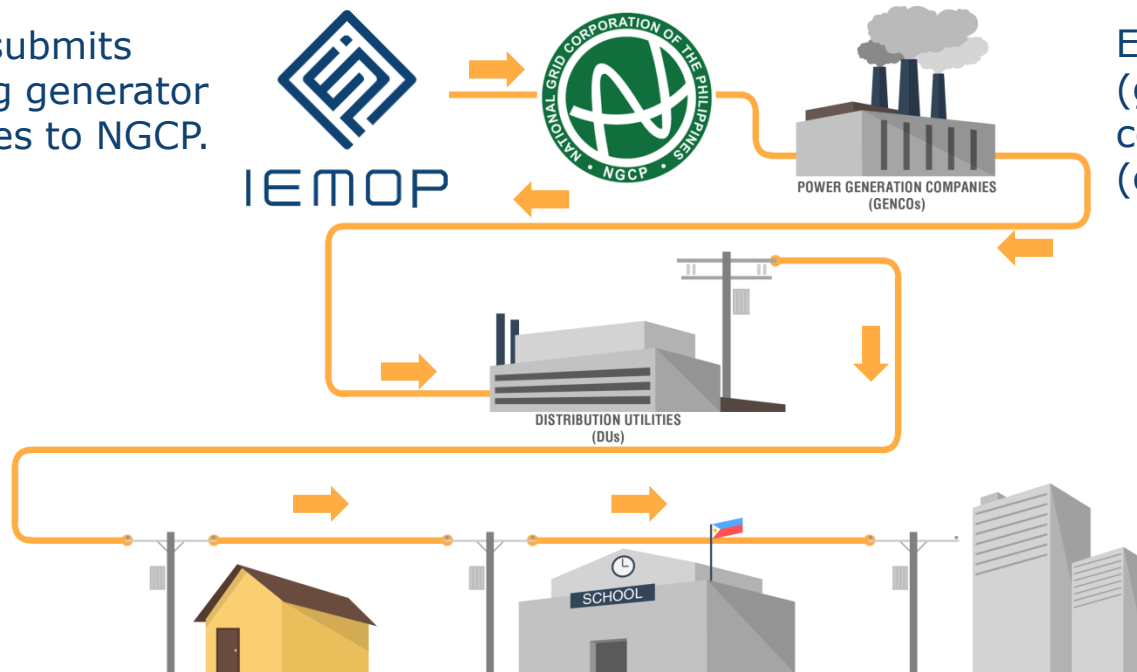


# HOW ARE DISPATCH SCHEDULES IMPLEMENTED?

IEMOP submits resulting generator schedules to NGCP.

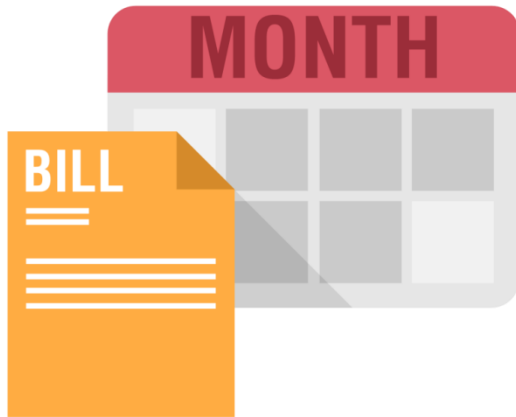
NGCP dispatches the generators based on IEMOP's submission.

Electricity is produced (generators) / consumed (customers).



The DUs, participating in the WESM as wholesale customers, distribute electricity to the end-users.

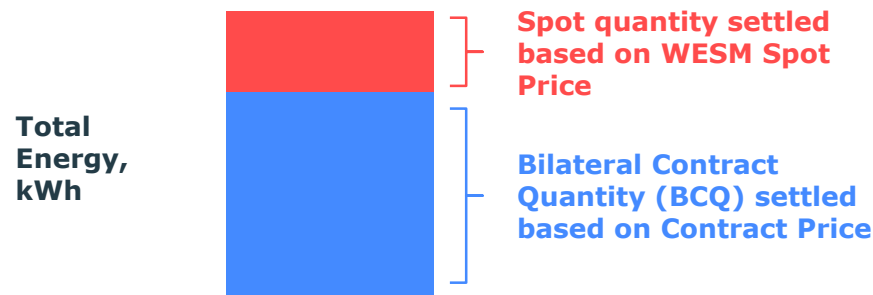
# HOW DO WESM RATES AFFECT ELECTRICITY BILLS?



## EPIRA Section 23:

A **DU shall** have the obligation to **supply** electricity **in the least cost manner** to its captive market, subject to the collection of retail rate duly approved by the ERC.

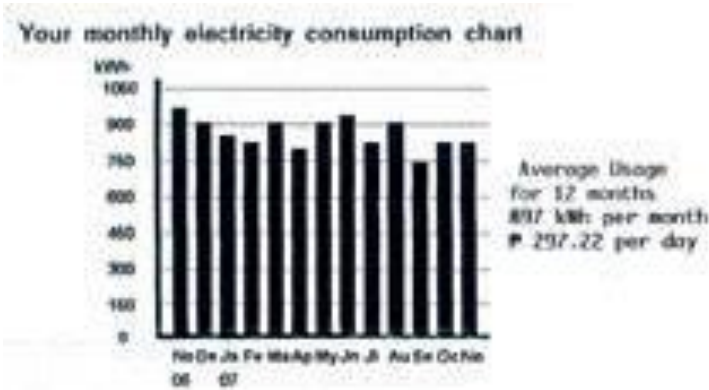
WESM rates are **part of generation charge billed** by distribution utilities to their customers.



# HOW DO WESM RATES AFFECT ELECTRICITY BILLS?

Bill Component	Sub-Total	Percentage
Generation	xxx.xx	xx.x%
Transmission	xx.xx	x.x%
Distribution	xxx.xx	xx.x%
Subsidies	x.xx	x.x%
Government Taxes	xx.xx	xx.x%
Universal Charges	x.xx	x.x%
Other Charges	x.xx	x.x%
<b>Total</b>	<b>xxx.xx</b>	<b>100.0%</b>

**Blended Rate**  
(Power Supply Agreement & WESM)



# WHAT ARE THE BENEFITS OF THE WESM?

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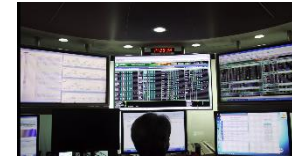


- Encourages **competition** in the generation sector
- Promotes **transparency** and accurate information on electricity costs
- Provides **signals** for investment opportunities
- Fosters **accountability** among power industry players

# SUMMARY



- Centralized venue for large-scale buyers and sellers of electricity

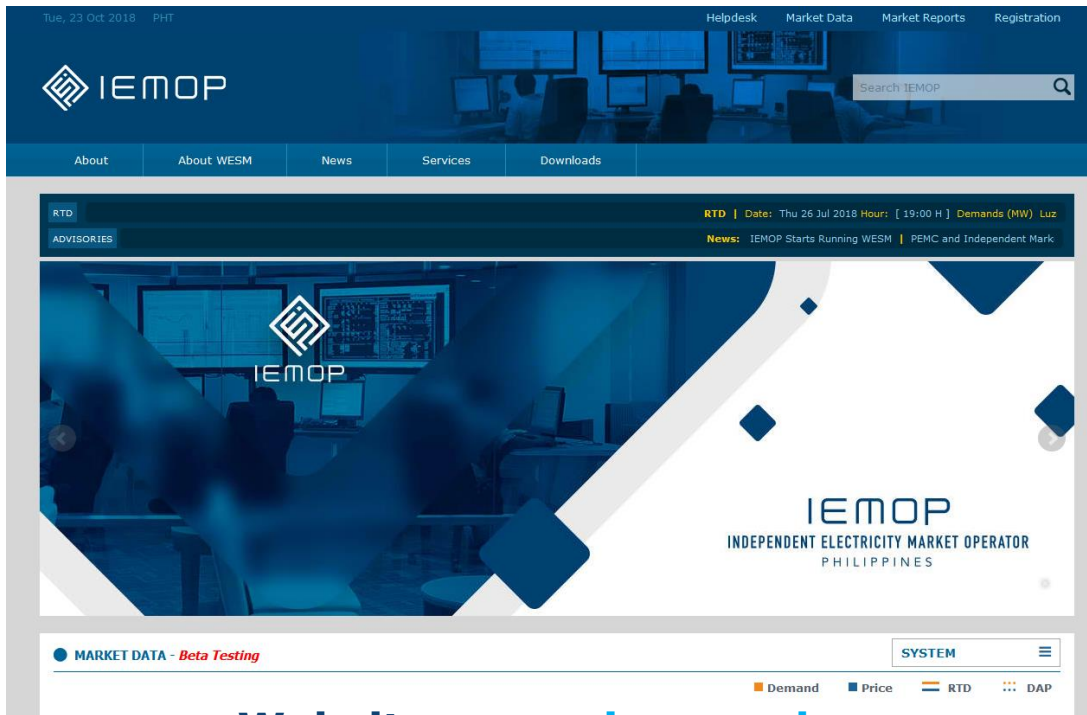


- Real-time scheduling & pricing of electricity



- Another option for supply of electricity for ECs, PDUs, and bulk users

# FOR MORE INFO



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