



Philippine Electricity  
Market Corporation

# **INTRODUCTION TO THE WHOLESALE ELECTRICITY SPOT MARKET (WESM)**



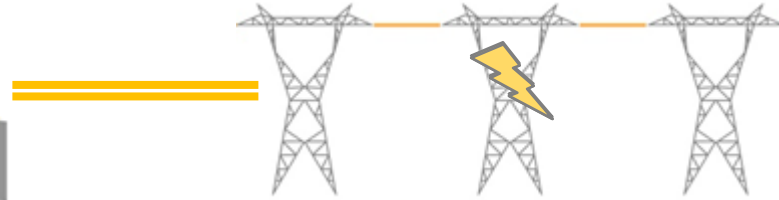
# WHAT IS THE WESM?

# WHOLESALE ELECTRICITY SPOT MARKET

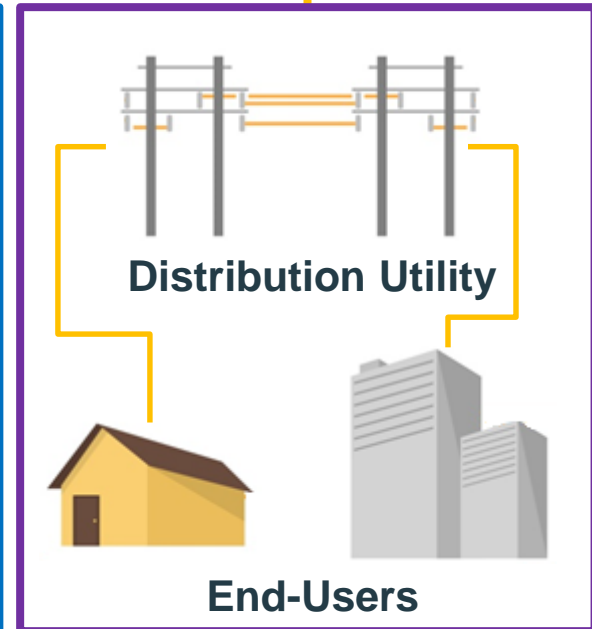
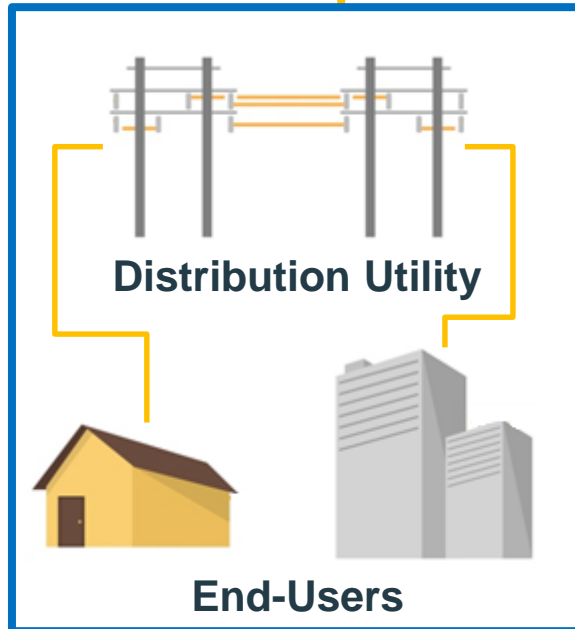
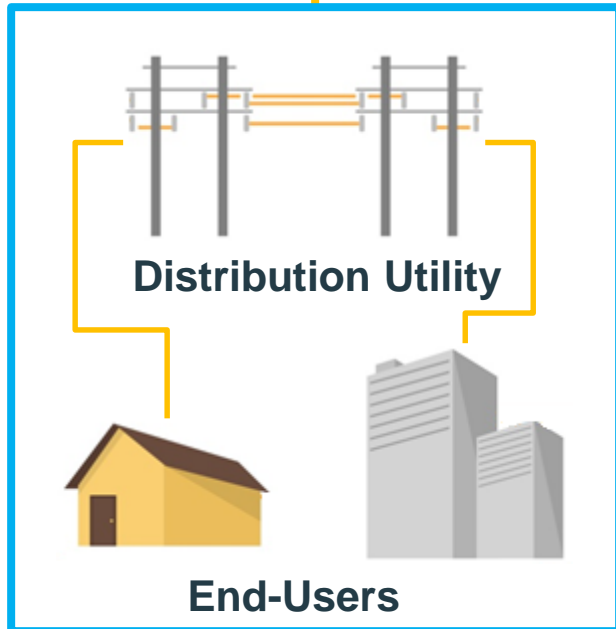
How is power delivered to customers?

Generation Companies

Power Station



Transmission System Operator



# POWER INDUSTRY PARTICIPANTS

Before 2001

## Generation Companies



### Independent Power Producers



## Transmission System Operator



- Scheduling
- Pricing
- Dispatch
- Settlement



## Distribution Utilities / Directly-Connected Customers (DCC)



# ELECTRIC POWER INDUSTRY

## Transition to competitive regime



### Electric Power Industry Reform Act (EPIRA)

- Generation is competitive and open
- Establishment of the Wholesale Electricity Spot Market (WESM)
- Transmission and distribution are regulated services



# POWER INDUSTRY PARTICIPANTS

After 2001

## Generation Companies



## Market Operator



- Scheduling
- Pricing
- Settlement



## Transmission System Operator



- Dispatch



## Distribution Utilities / DCCs

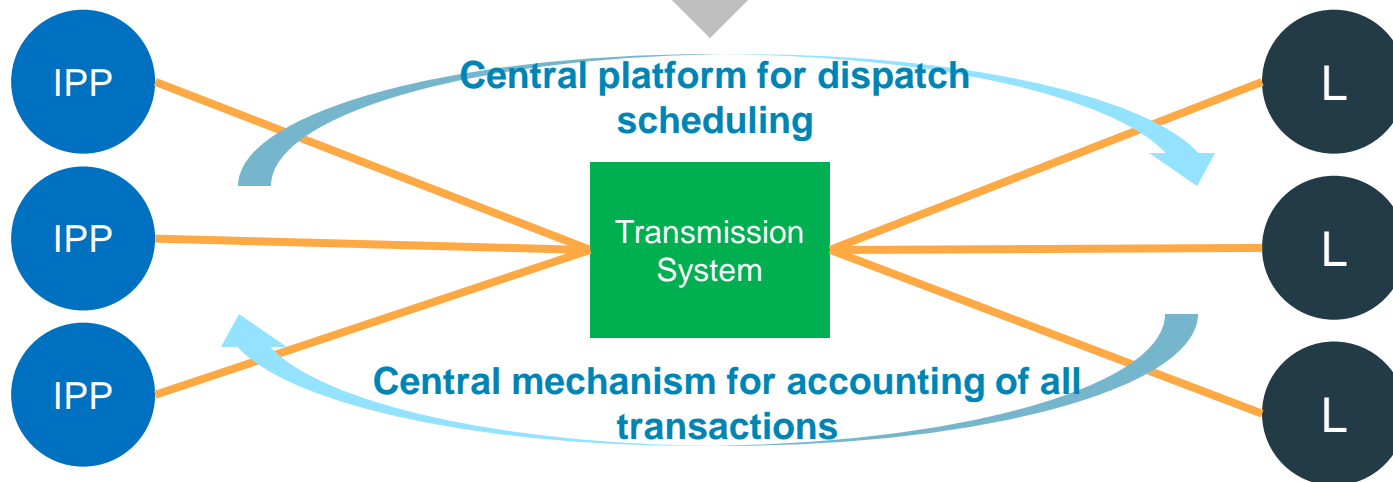
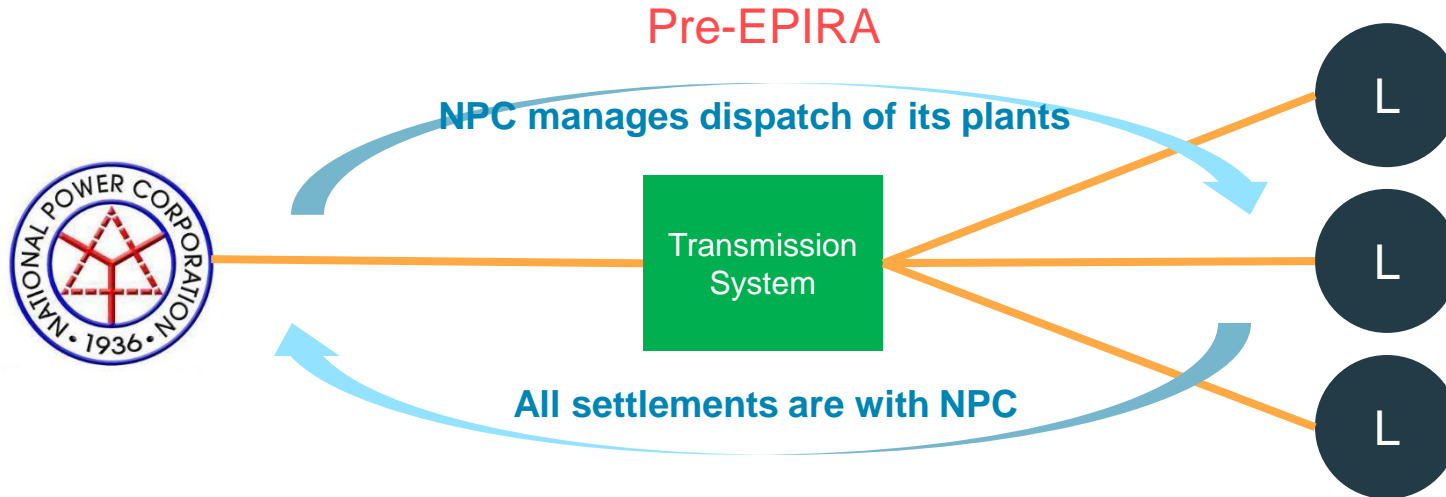


## Retail Electricity Suppliers



# WHOLESALE ELECTRICITY SPOT MARKET

What is the role of the WESM?



EPIRA

# WHOLESALE ELECTRICITY SPOT MARKET

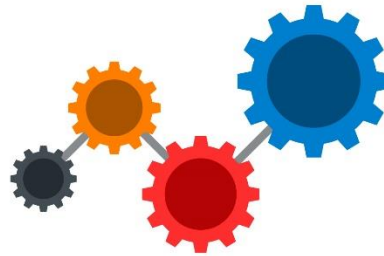
## Advantages of the WESM

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- Settlement of imbalances beyond contracts
- Economic scheduling and dispatch of capacities
- Promotion of cost-effective operations through competition
- Transparency on power system operations
- Accountability of trading participants



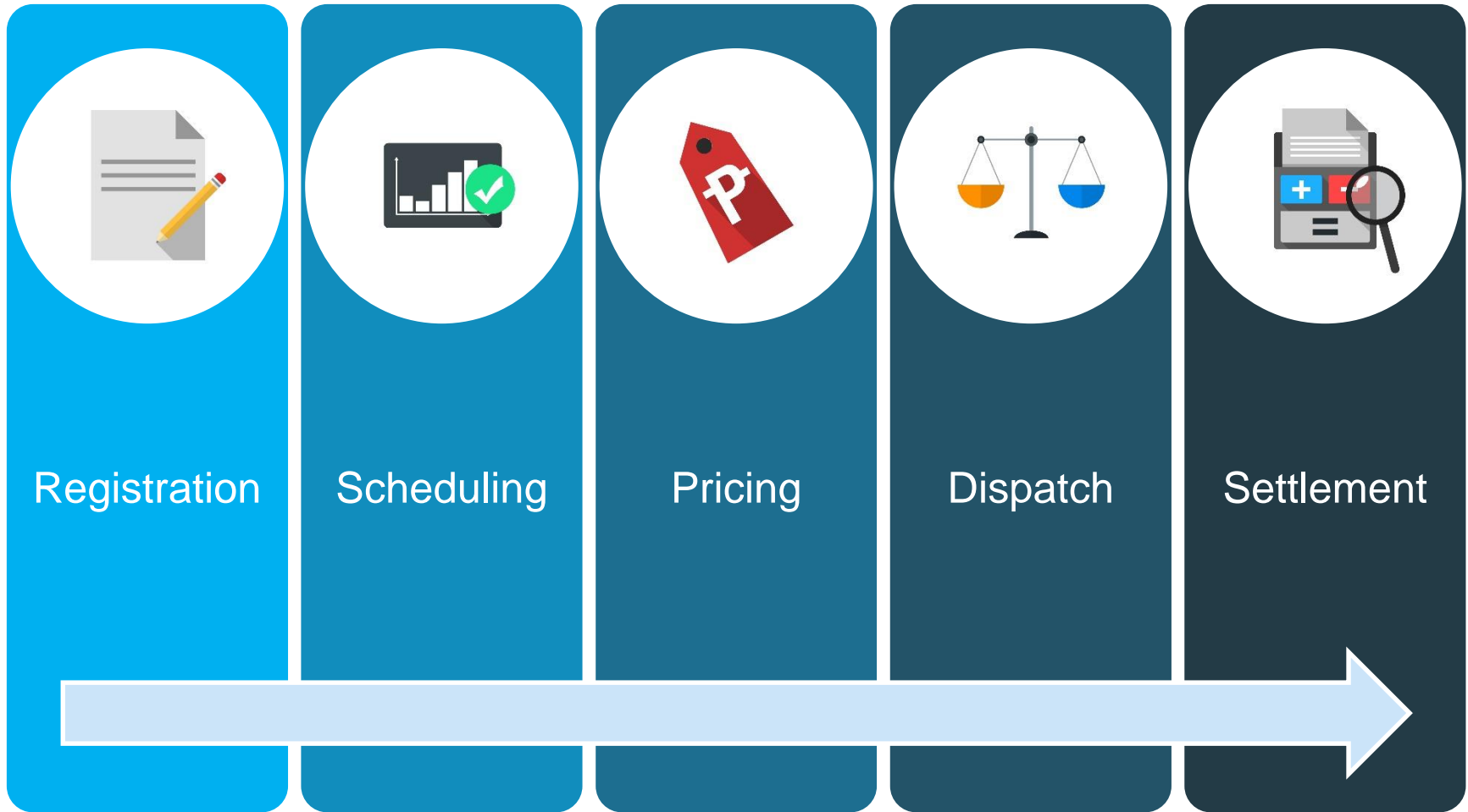




# HOW DOES THE WESM WORK?

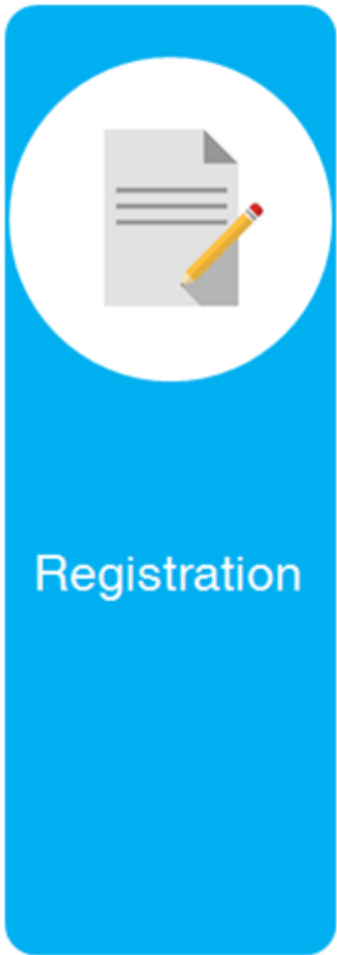
# HOW DOES THE WESM WORK?

## Market Processes



# HOW DOES THE WESM WORK?

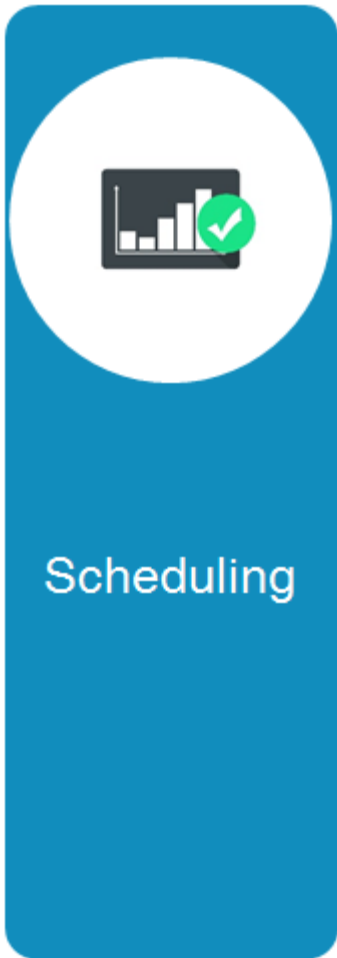
## Market Processes



- Mandatory registration prior to injecting or withdrawing electricity
- Direct or indirect participation

# HOW DOES THE WESM WORK?

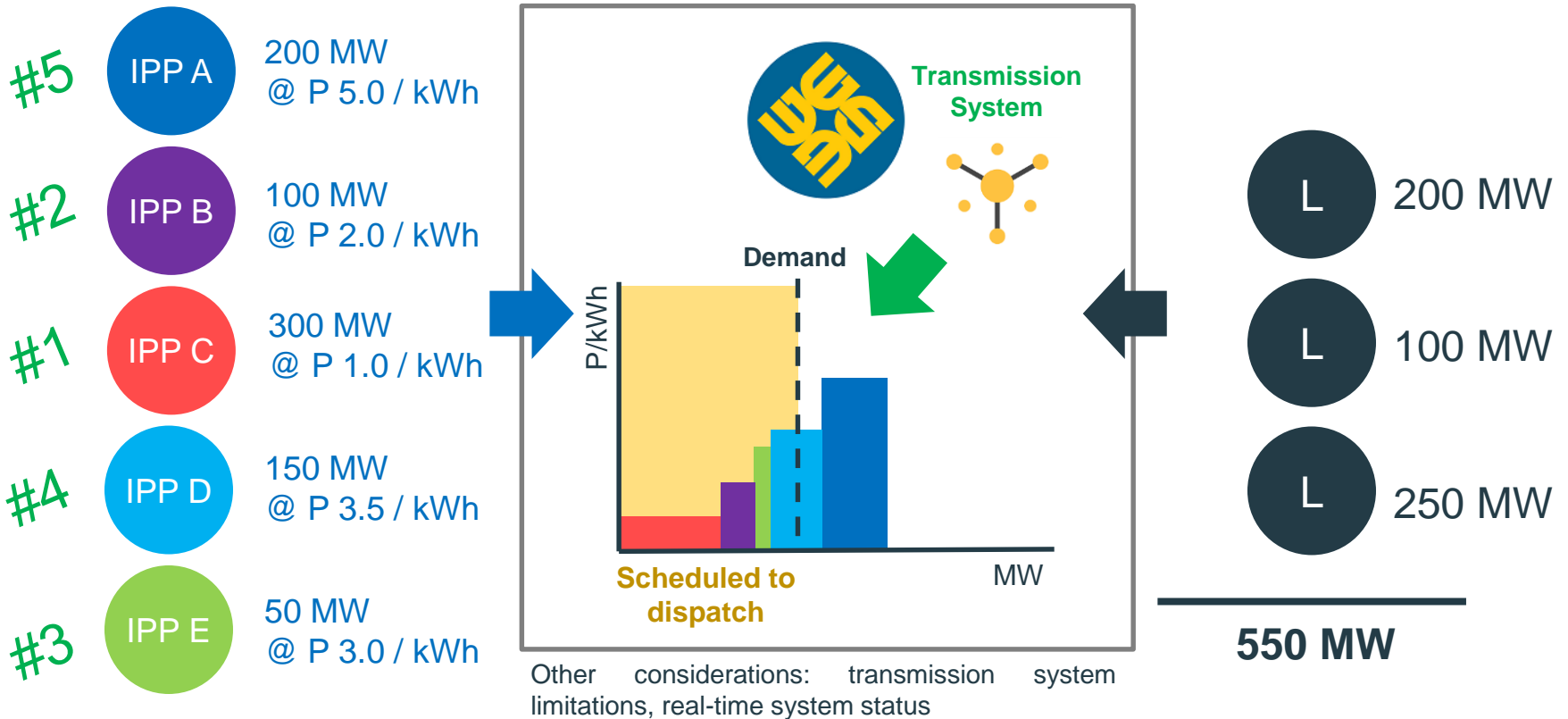
## Market Processes



- Gross pool scheduling based on offers and bids
- 5-min dispatch intervals
- Schedules are published every 5 minutes
- Considers transmission system capacities
- Facilitated through the Market Management System (MMS)

# SCHEDULING

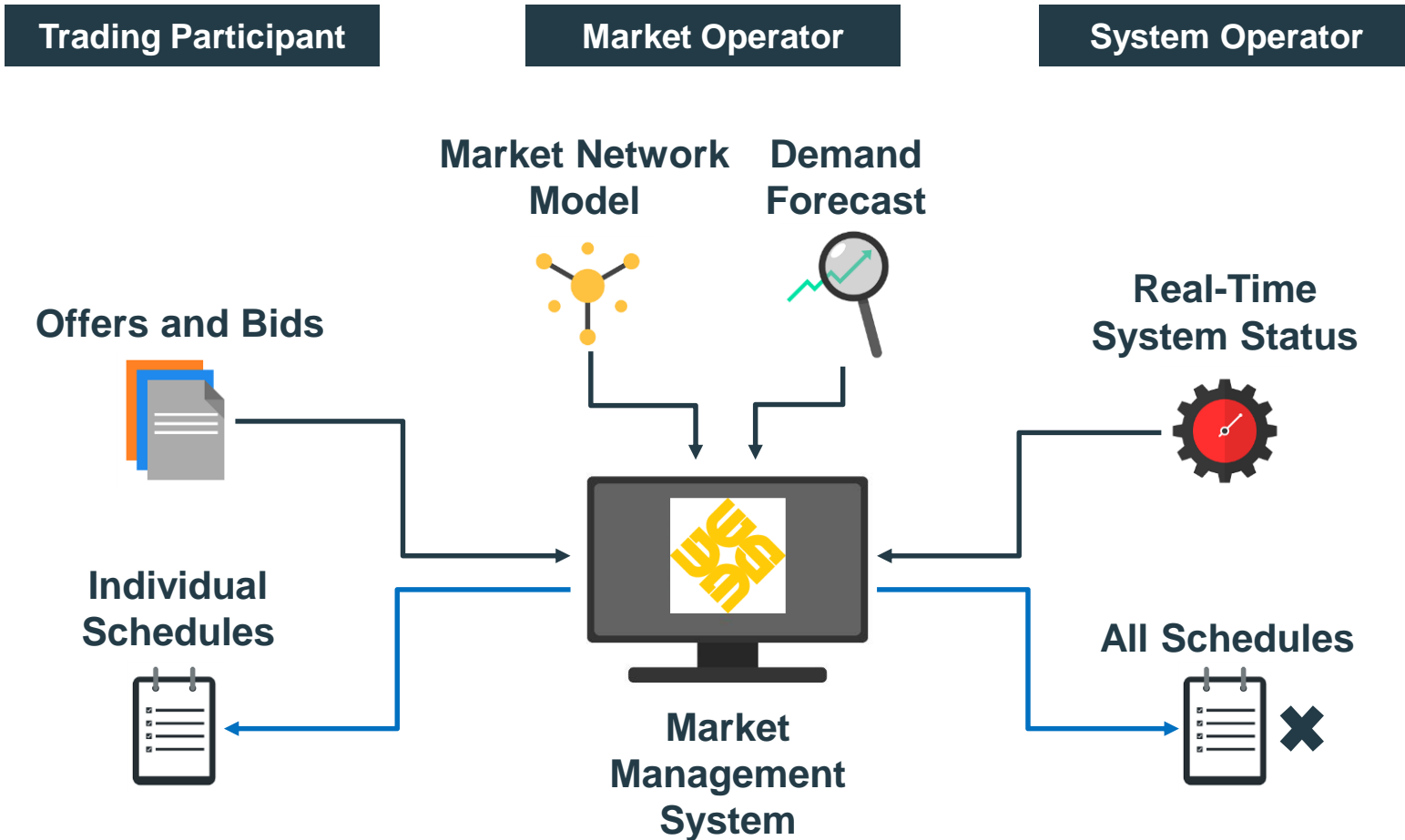
## How are the schedules determined?



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

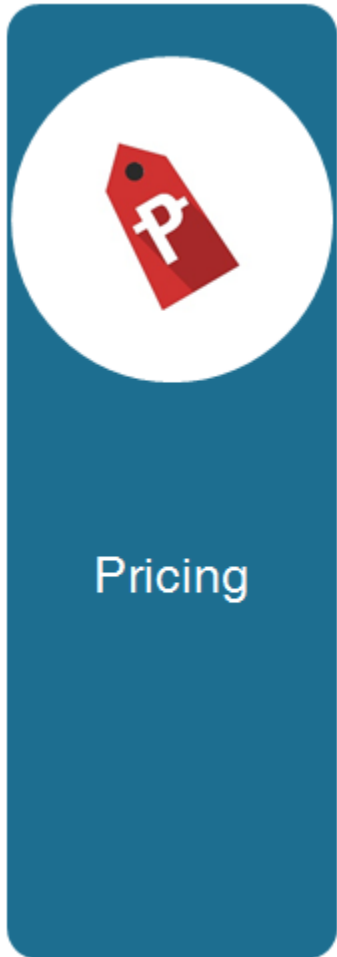
# SCHEDULING

## How is scheduling facilitated in the WESM?



# HOW DOES THE WESM WORK?

## Market Processes



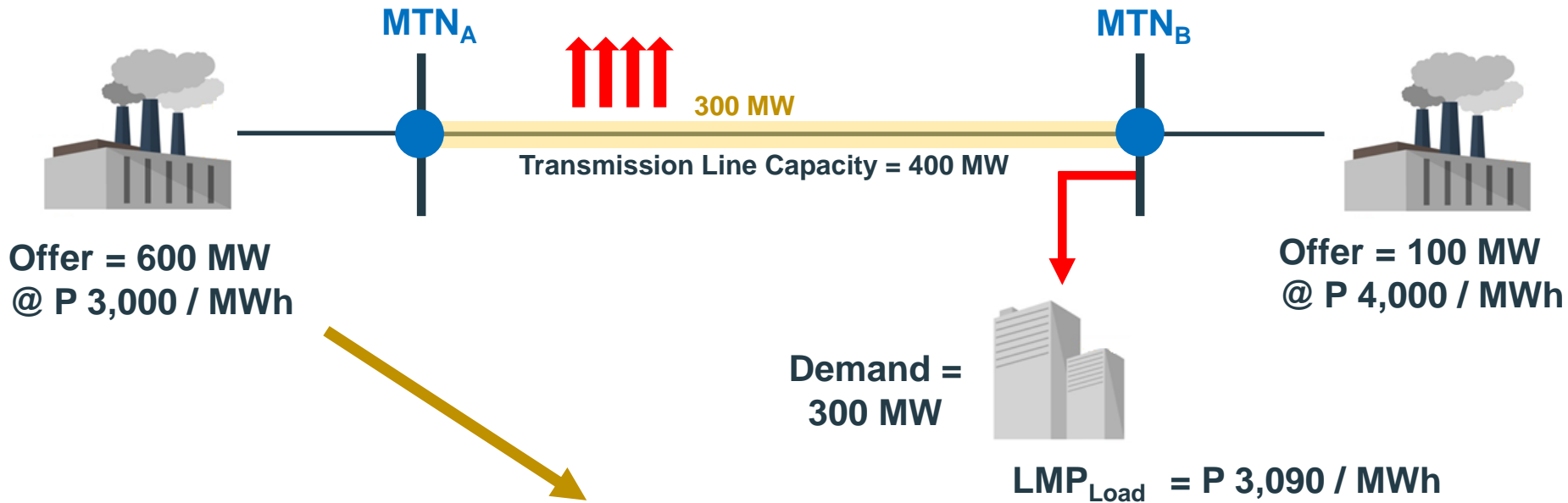
- Set by the offer price of the plant necessary to serve the demand
- Locational Marginal Pricing
- Prices are published every 5 minutes
- Special pricing conditions (e.g., must-run unit, administered pricing, price substitution methodology, secondary cap)

# PRICING

## Locational Marginal Pricing



$$\text{Locational Marginal Price} = \text{System Marginal Price} + \text{Transmission Loss Price} + \text{Congestion Price}$$



$$\text{LMP}_{\text{Load}} = 3,000 + 90 + 0$$

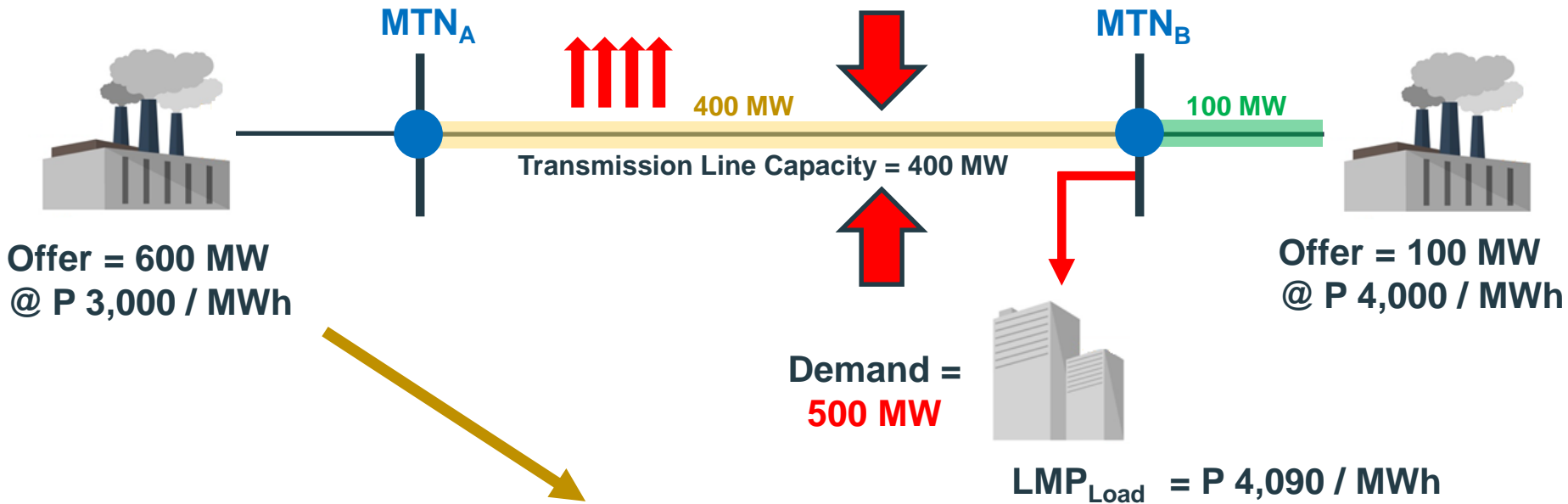


# PRICING

## Locational Marginal Pricing



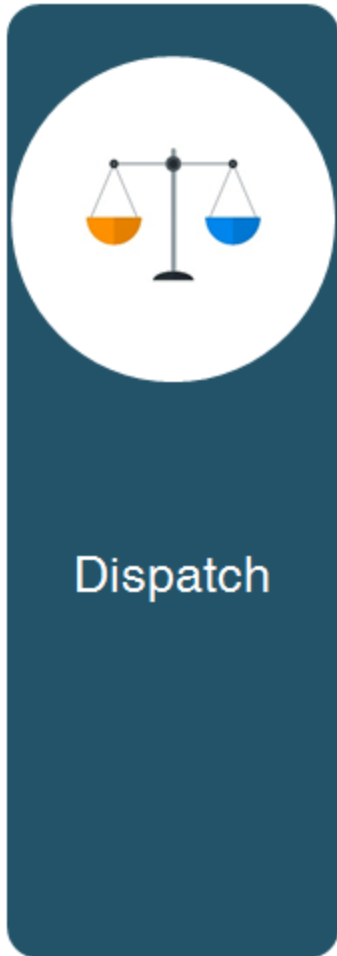
$$\text{Locational Marginal Price} = \text{System Marginal Price} + \text{Transmission Loss Price} + \text{Congestion Price}$$



$$\text{LMP}_{\text{Load}} = 3,000 + 90 + (4,000 - 3,000 = 1,000)$$

# HOW DOES THE WESM WORK?

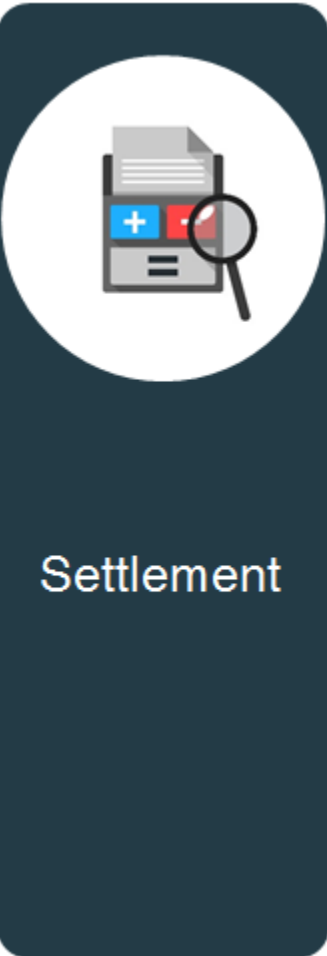
## Market Processes



- 5-min dispatch intervals
- Dispatch schedules are published every 5 minutes
- Self-compliance to schedules
- Week-ahead, day-ahead, and hour-ahead projections
- Market intervention or suspension

# HOW DOES THE WESM WORK?

## Market Processes



- Day-after contract declaration
- Net settlement
- Monthly billing period (26<sup>th</sup> to 25<sup>th</sup>)
- Preliminary and final settlement

# TYPICAL DAY FOR A GENERATION COMPANY

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## WESM Participation



- Submit generation offers
- Comply with 5-min dispatch schedules and SO instructions
- If necessary, submit reports related to dispatch
- Submit contract quantities for transactions the previous day

# TYPICAL DAY FOR A CUSTOMER

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## WESM Participation

- Confirm contract quantities submitted by GenCos
- (Optional) Submit load forecasts
- (Optional) Submit demand bids

## Recommended Practices

- Monitor prices
- Monitor real-time consumption

# WESM GOVERNANCE

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- Oversight Regulation: DOE & ERC
- PEM Board
- Governance Committees:
  - PEM Auditor
  - Rules Change Committee
  - Dispute Resolution Administrator
  - Market Surveillance Committee
  - Technical Committee

# MITIGATING MEASURES



- WESM Offer Price Cap and Floor
  - Generators can only offer up to P 32 / kWh
  - Generators can offer as low as P -10 / kWh
  
- Secondary Cap
  - Sustained high prices (average of P 9 / kWh) for 168 trading intervals
  - Prices will be capped at P 6.245 / kWh until average goes below P 9 / kWh

# WESM MINDANAO

## Target Launch Date



Luzon – 26 June 2006

Visayas – 26 December 2010


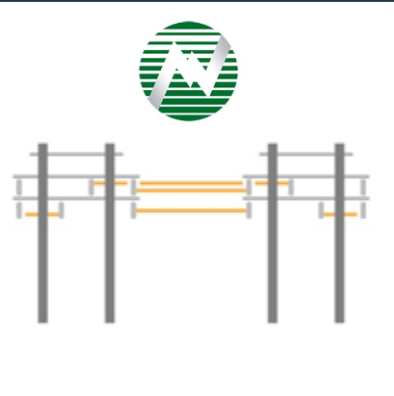
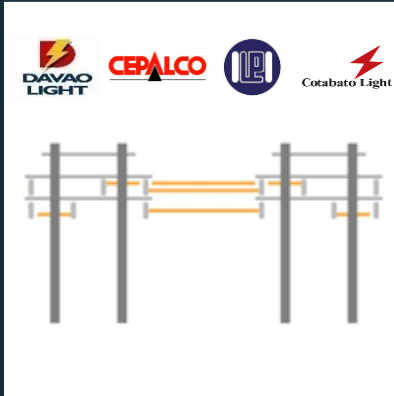
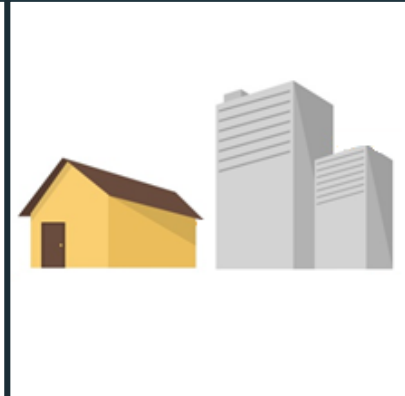
Mindanao – 26 June 2017\*



# WESM MINDANAO

## Expected Trading Participants

### 83 Trading Participants

			
32 Generation Companies	28 Electric Cooperatives	4 Private Distribution Utilities	19 End-Users

51 Customers

# WESM MINDANAO

## Preparatory Activities

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- Capacity Building
  - Trial Operations
  - Information Dissemination
  - Participant Trainings
- WESM Registration
- Readiness Assessment



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# END OF PRESENTATION

***WESM Works.***



WESM Helpdesk Ticketing System  
[www.wesm.ph/wesm-helpdesk](http://www.wesm.ph/wesm-helpdesk)



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