



Philippine Wholesale Electricity Spot Market

WESM OVERVIEW

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SYSTEM	ENERGY GWh	SALES % Share
Luzon	34,787	77 %
Visayas	4,802	11 %
Mindanao	5,693	12 %
TOTAL	45,282	

SYSTEM PEAK	(MW)
Luzon	6,150
Visayas	953
Mindanao	1,015
TOTAL	8,118



Electric Power Industry Reform Act (Republic Act 9136)



Philippine
Wholesale Electricity
Spot Market

Rationale of the EPIRA

- ❖ Limited financial capability of the Government to sustain future capital requirements for electricity
- ❖ Regulated and non-transparent electricity rates fails to signal the true cost of electricity
- ❖ Presence of monopolies in different segments of the industry
- ❖ Need to introduce supply competition and customer choice
- ❖ Spread capital risk sharing of lumpy investments with the private sector



Prior EPIRA Enactment



Rural Electric Cooperatives
119 (2,494 MW)



Private Distribution Utilities
16 (4,930 MW)



Directly Connected Customers
90 (1,273 MW)



Non-NPC/IPP Facilities
22 (1,901 MW)



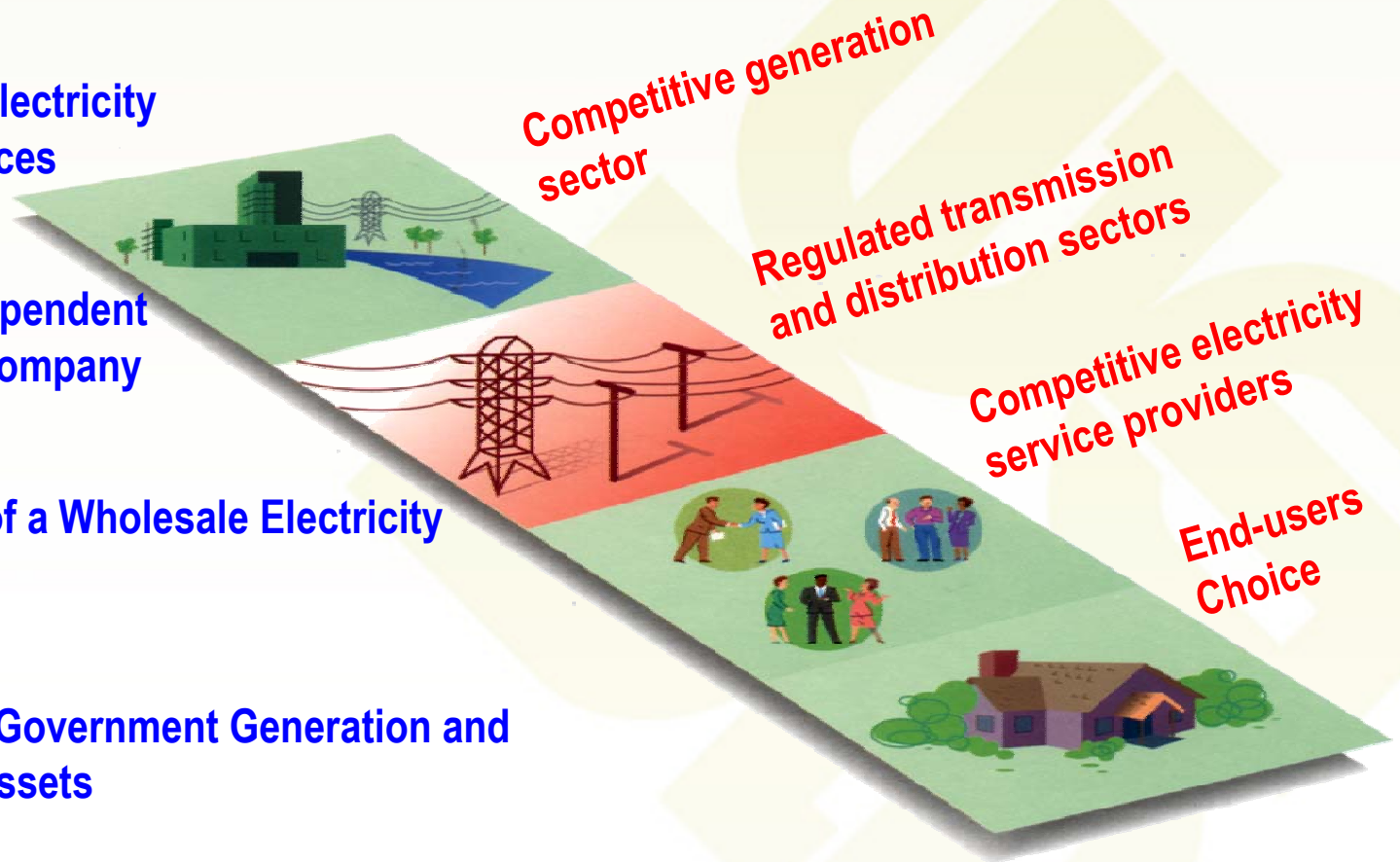
**NPC Owned/Controlled
Generation Facilities**
121 (1,1361 MW)



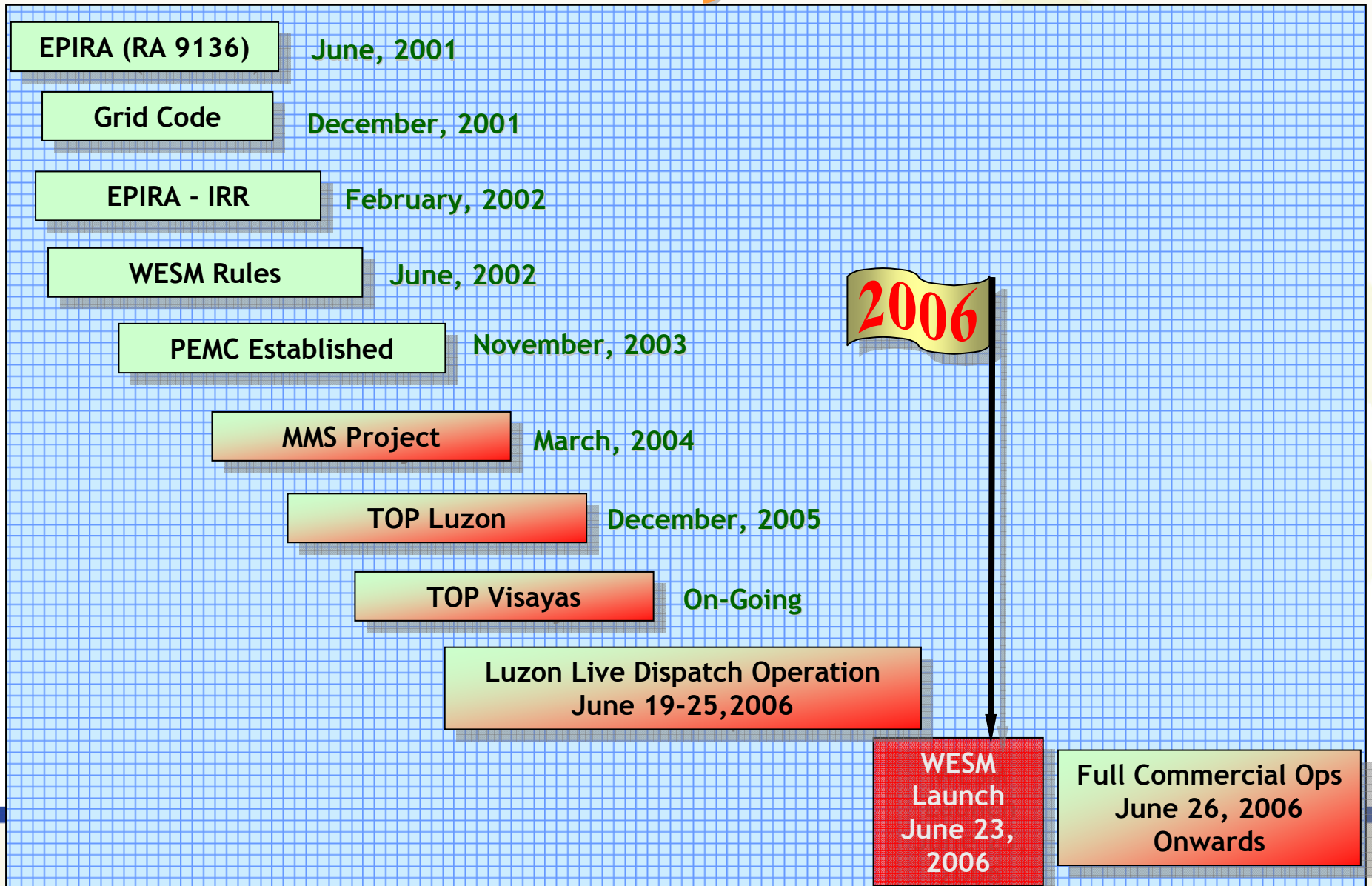
Suppliers/Aggregators
(none)

The New Structure of the Industry

- Unbundling of electricity tariffs and services
- Creation of Independent Transmission Company
- Establishment of a Wholesale Electricity Spot Market
- Privatization of Government Generation and Transmission Assets
- Implementation of Retail Open Access and Competition



Where we are today ...

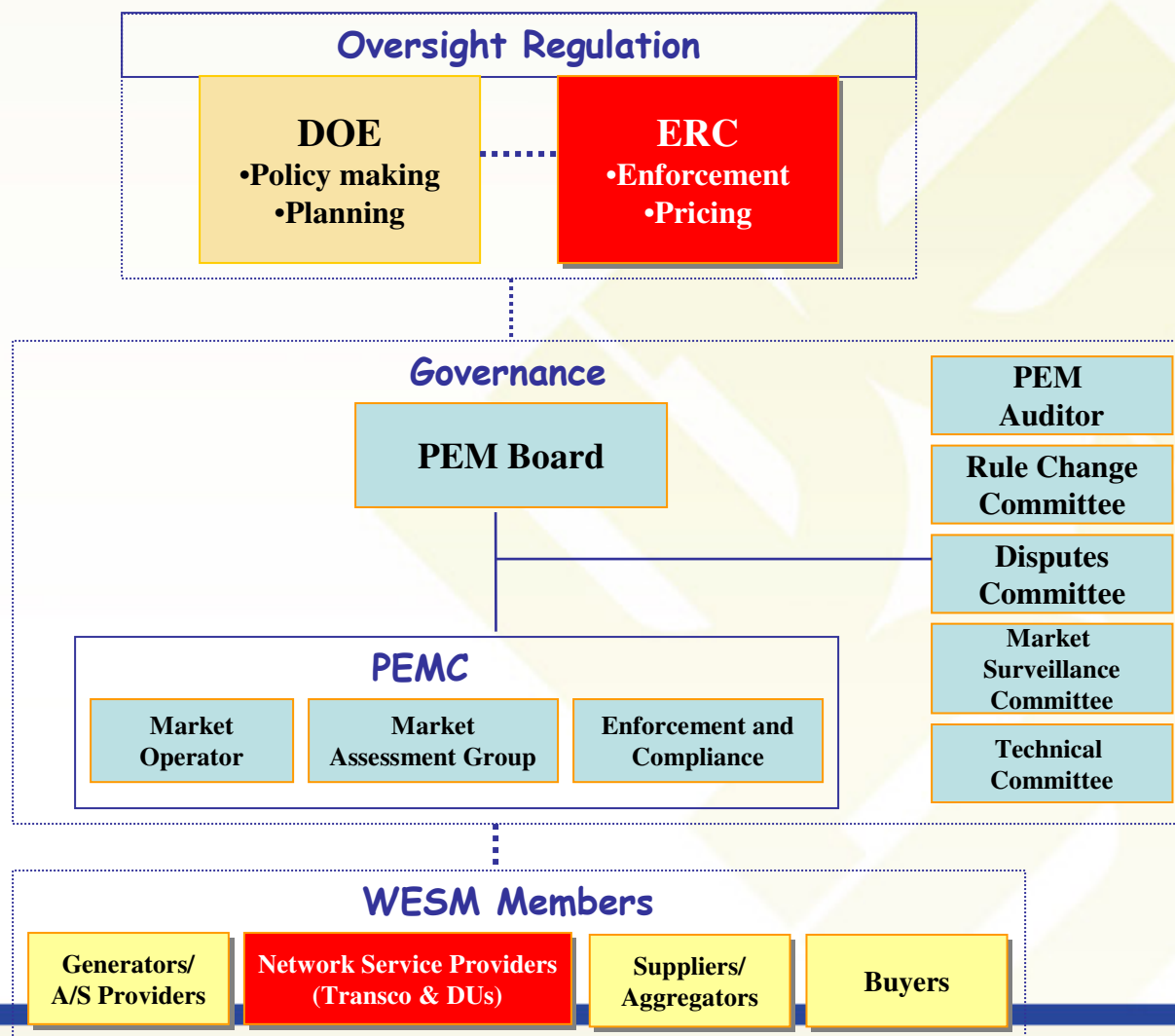


Philippine Electricity Market Corporation

PEMC is a non-stock and non-profit corporation jointly established by DOE and the industry stakeholders to develop and operate the WESM



Governance and Regulatory Structure



Registration Status in Luzon as of WESM Launch

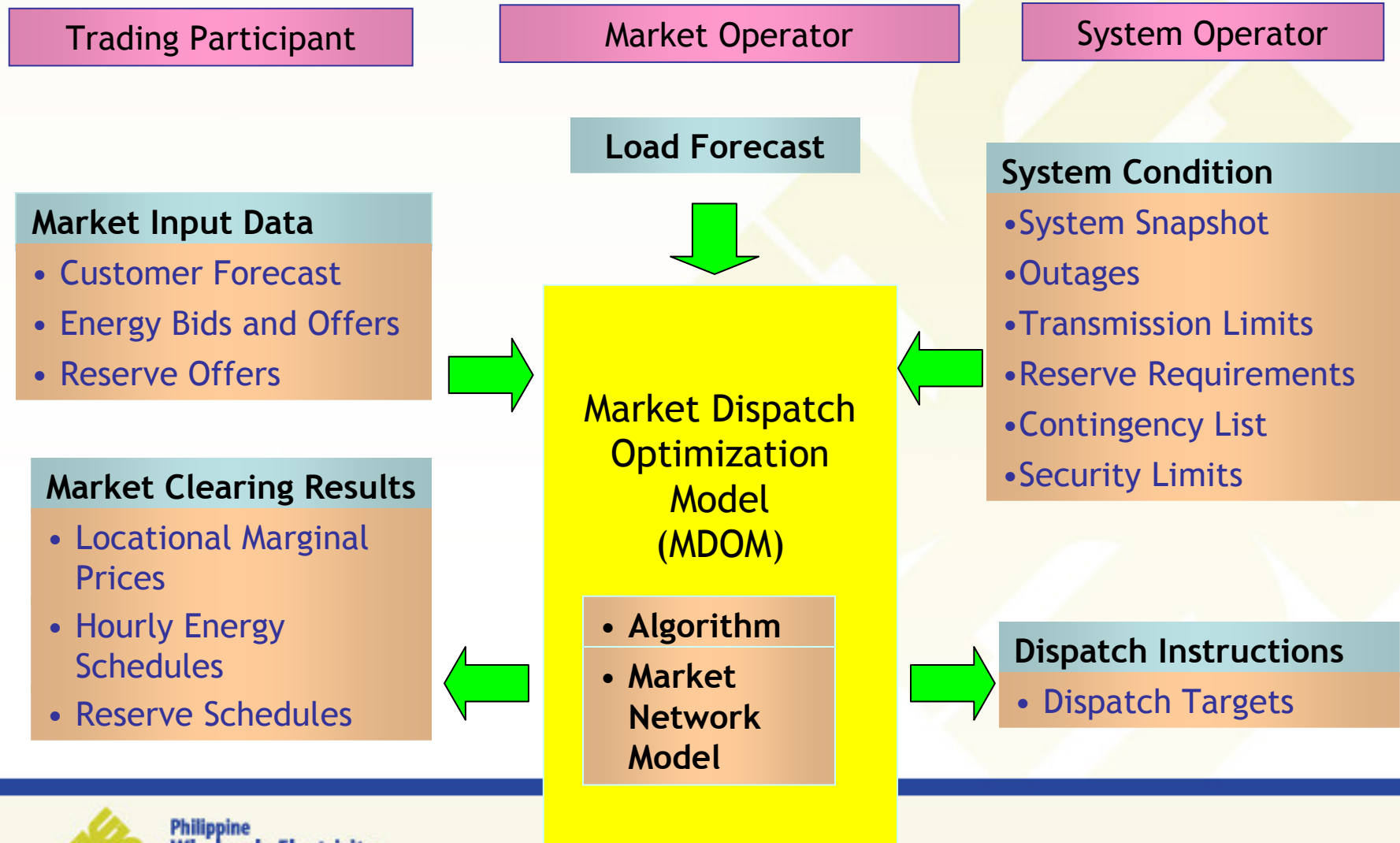
** as of January 26, 2007*

Participant Classification	Number	Registered	MW
Generators	25	20	11,412
1. NPC-Owned (Trading Teams)	8	8	2,661
2. PSALM (NPC-IPPs) (Trading Teams)	4	4	6,159
3. First Gas Power Corp./FGP Corp.	2	2	1,500
4. Quezon Power Philippines Company	1	1	500
5. First Gen Hydro Power Corp.	1	1	112
5. Other IPPs	9	6	480
Customers	157	16	6,642
1. Private Distribution Utilities	11	3	4,875
2. Rural Electric Cooperatives	45	13	1,219
3. Industrial & Commercial Loads	80	0	482
4. Government Offices/Installations	21	0	66

WESM Concepts



Dispatch and Pricing Process



Dispatch Pricing Principles

Scheduling

- **Gross Pool concept**

-All generators connected to the power grid submits offers for both price and quantity for energy for central scheduling and dispatch. (WESM Rules Section 3.5.5)

Pricing

- **Locational Pricing**

-To provide the correct economic signals to market participants when they properly account for the economic impact of losses and constraints that result from the operation of the electricity network. (WESM Rules Sec. 3.6)

Settlement

- **Ex-ante and Ex-post Pricing Settlement**

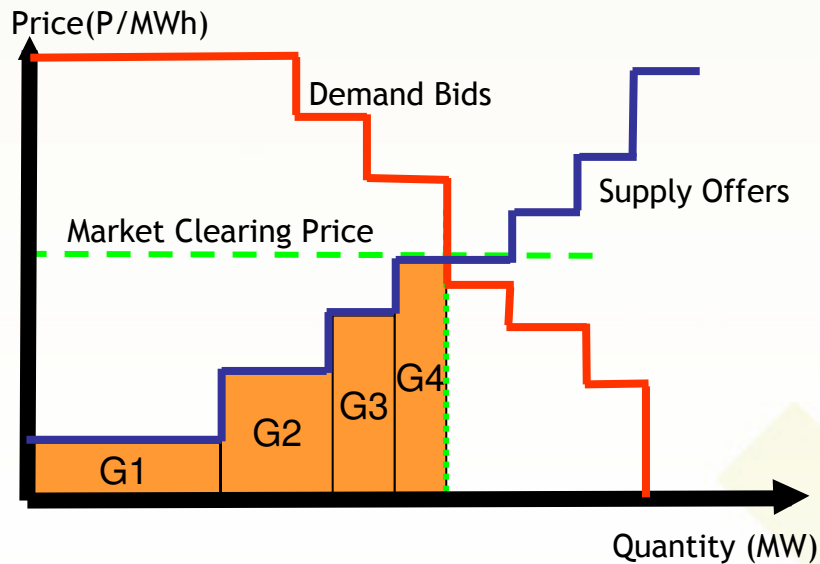
-To account for discrepancies between planned (ex-ante) and actual outcomes (ex-post). (WESM Rules Sec. 3.10.1)



The WESM

Determination of Dispatch Schedule and Market Clearing Price

A. SCHEDULING



- Demand and Supply are stacked in merit order based on price offers.
- Generators are scheduled up to the point where the Supply meets the Demand.
- Market Clearing Price (MCP) is set by the last plant scheduled to meet the demand.
- The MCP is the basis for determining the prices for the other locations (LMP).

B. LOCATIONAL MARGINAL PRICING (LMP)

$$\text{LMP} = \text{MCP} + \text{Cost of Marginal Losses} + \text{Transmission Congestion Cost}$$

- MCP is adjusted to account for the transmission losses.
- If transmission congestion exist, the next generator in the stack is called to generate to avoid transmission overloading.
- The additional cost incurred will be the transmission congestion cost.





**Philippine
Wholesale Electricity
Spot Market**

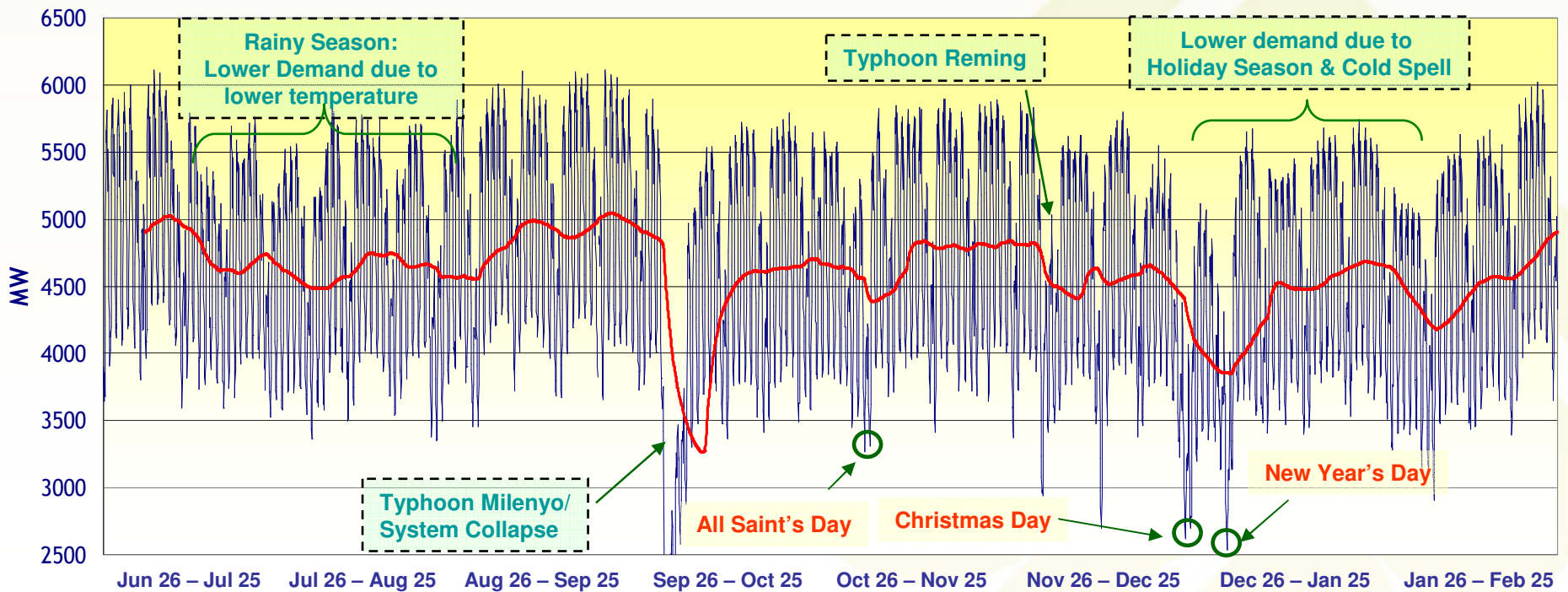
Market Results

26 June 2006 - 25 February 2007

Market Outcomes

Demand Condition

June 26, 2006 – February 25, 2007



Billing Month	1	2	3	4	5	6	7	8
Max Demand (MW)	6,111	5,888	6,113	5,895	5,894	5,869	5,739	6,021
Min Demand (MW)	3,520	3,351	3,451	3,298	3,265	2,617	2,538	2,901
Ave Temp, C	27	26	28	27	27	27	25	26



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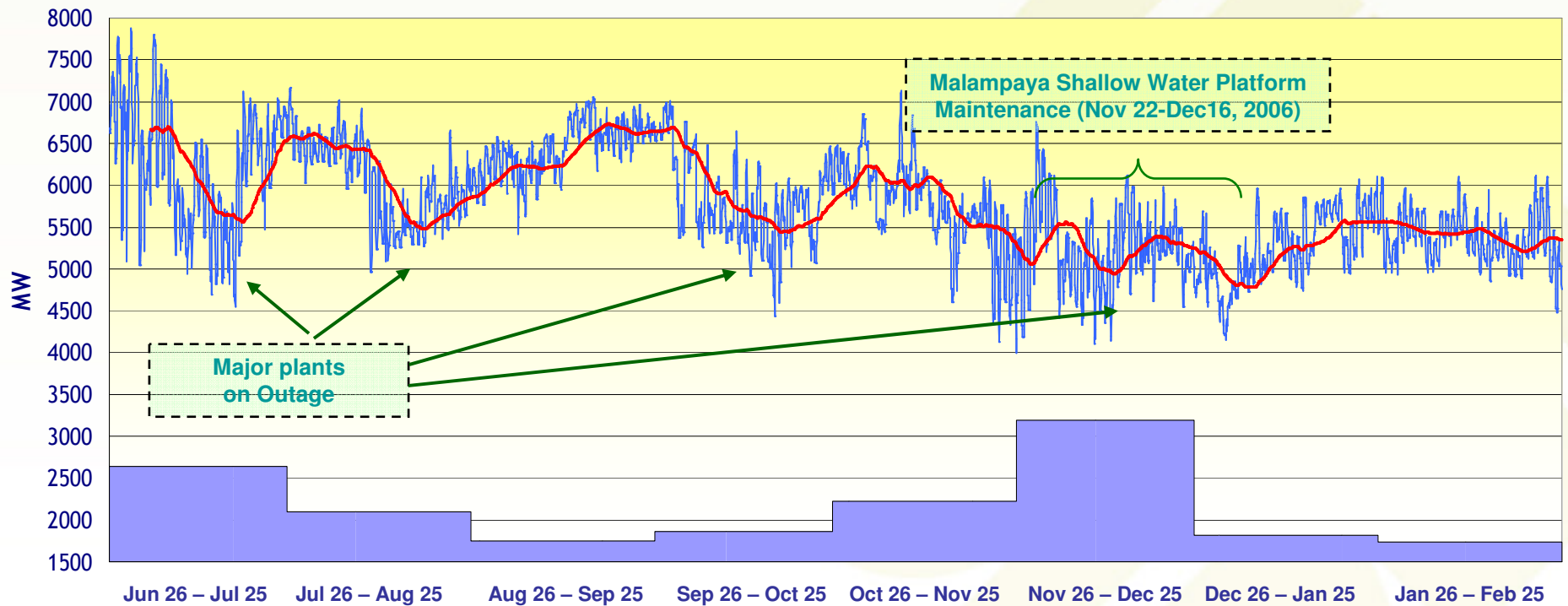
Note: 1. Impact of temperature change: 100 MW per 1 Deg. Centigrade

— Actual Demand
— 7-day Moving Ave.

Market Outcomes

Supply Condition

June 26, 2006 – February 25, 2007



Billing Month	1	2	3	4	5	6	7	8
Max Offer (MW)	7,873	7,161	7,048	7,005	7,131	6,758	6,102	6,118
Min Offer (MW)	4,545	4,963	5,419	4,437	3,994	4,106	4,153	4,478
Average Capacity on Outage (MW)	2,634	2,094	1,743	1,866	2,223	3,188	1,815	1,737



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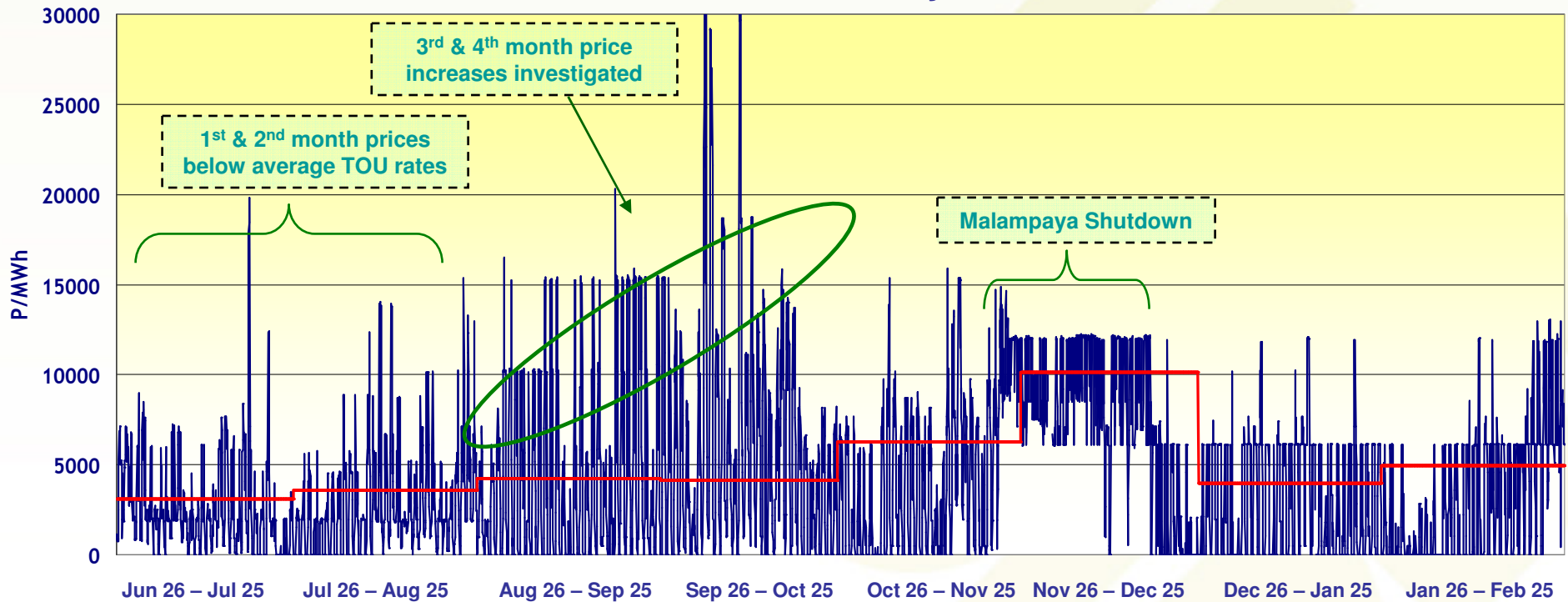
Typical large plants on Outage:
Masinloc, Sual, Calaca, Ilijan, Pagbilao, QPPL, Sta. Rita/San Lorenzo

— Energy Offers
— 7-day Moving Ave.
— Ave outage capacity

Market Outcomes

Hourly Ex-Ante LWAP & Effective Settlement Price

June 26, 2006 – February 25, 2007



Billing Month	1	2	3	4	5	6	7	8
Monthly LWAP (P/MWh)	2,788	3,079	4,853	6,770	5,030	7,816	3,372	3,678
Effective Settlement Price (P/MWh)	3,094	3,578	4,226	4,137	6,247	10,150	3,982	4,929*
			(6,062)**	(8,086)**				



Philippine
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Spot Market

— Ex-Ante LWAP

— Effective Rate

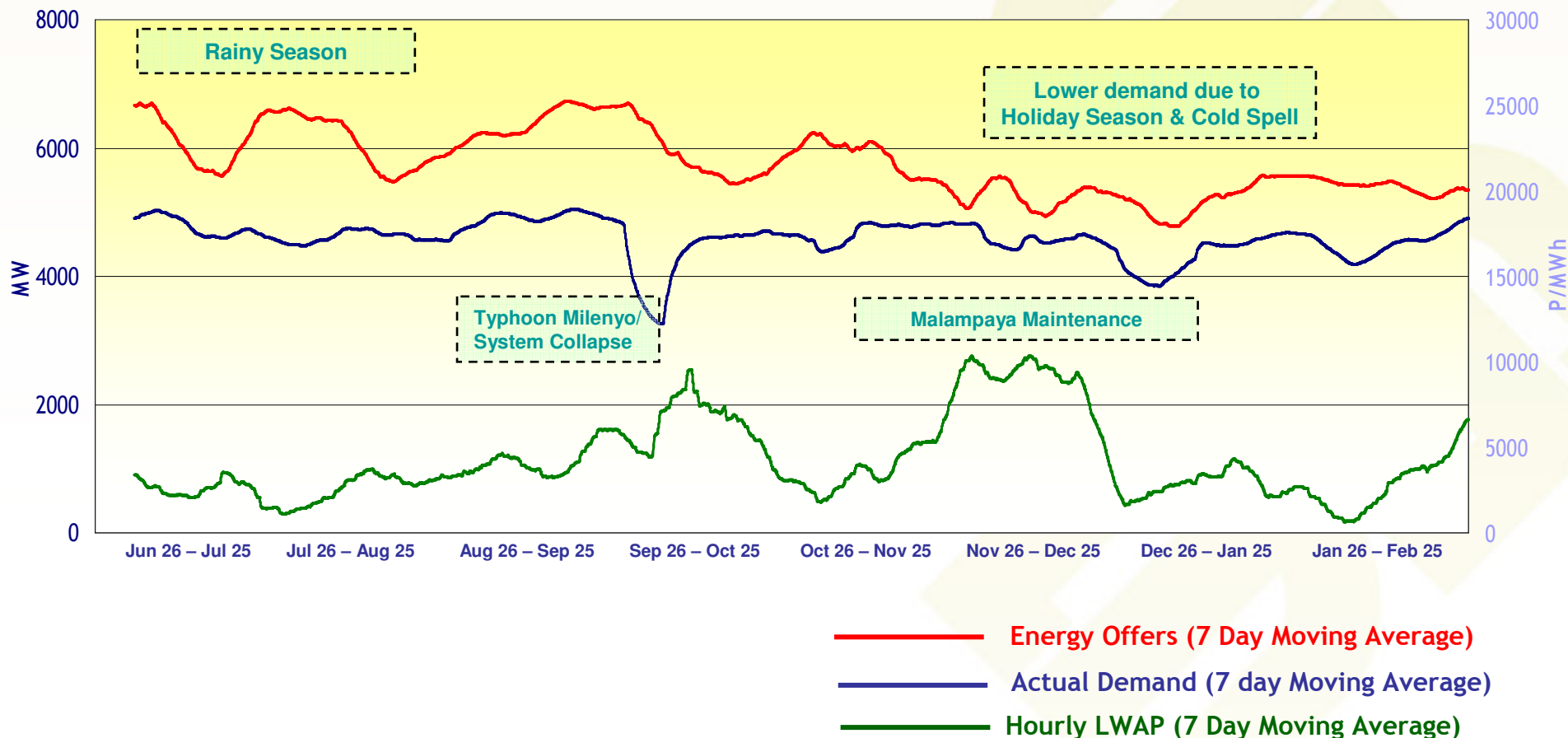
*Preliminary value

** Unadjusted Effective Settlement Price

Market Outcomes - Summary

Offers, Demand, Hourly LWAP

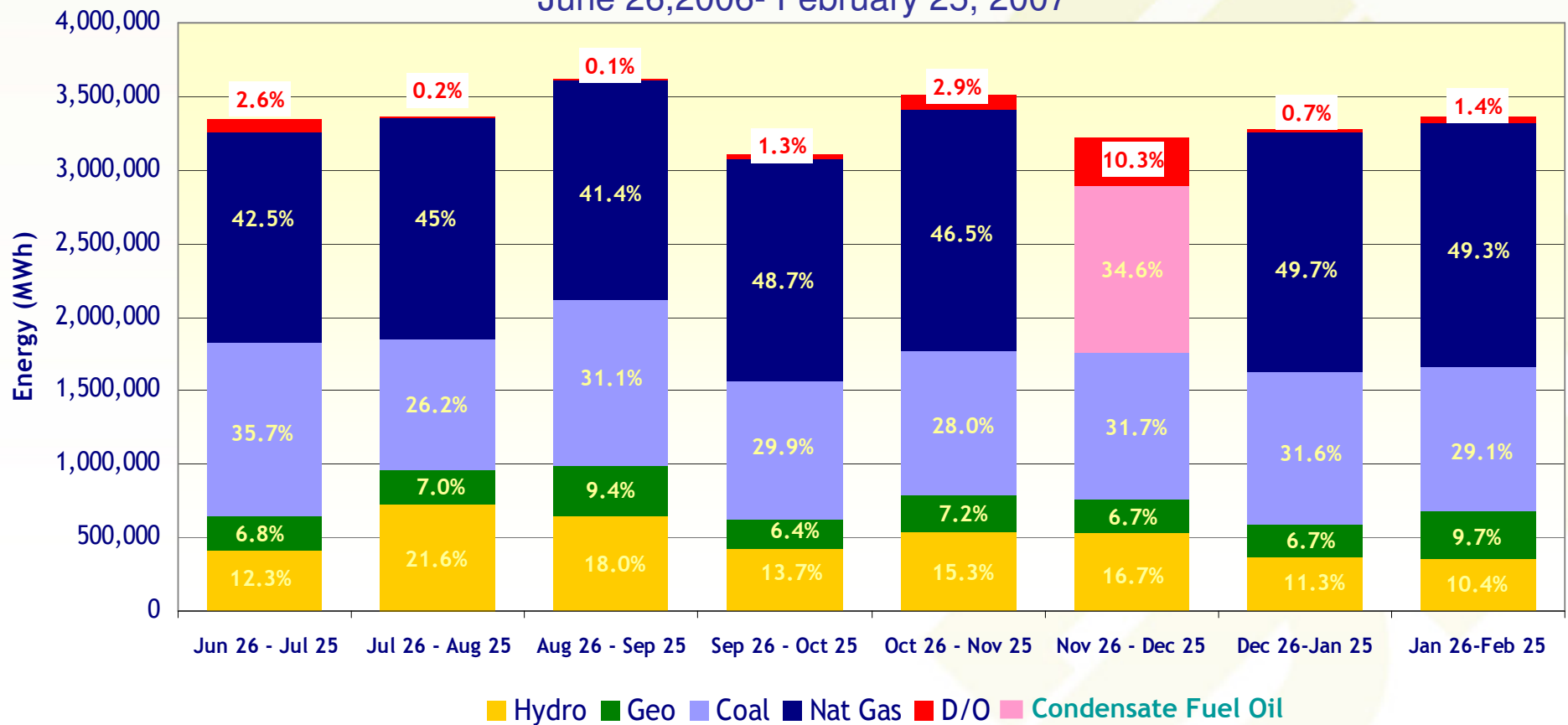
June 26, 2006 – February 25, 2007



Market Outcomes

Luzon Energy Mix (% Share)

June 26, 2006- February 25, 2007



Notes:

1. High Diesel/Oil-based generation from 5th to 6th month is due to scarcity of supply brought by the shutdown of Malampaya shallow water platform.
2. Natural Gas plants utilized alternate fuel during Malampaya shutdown.

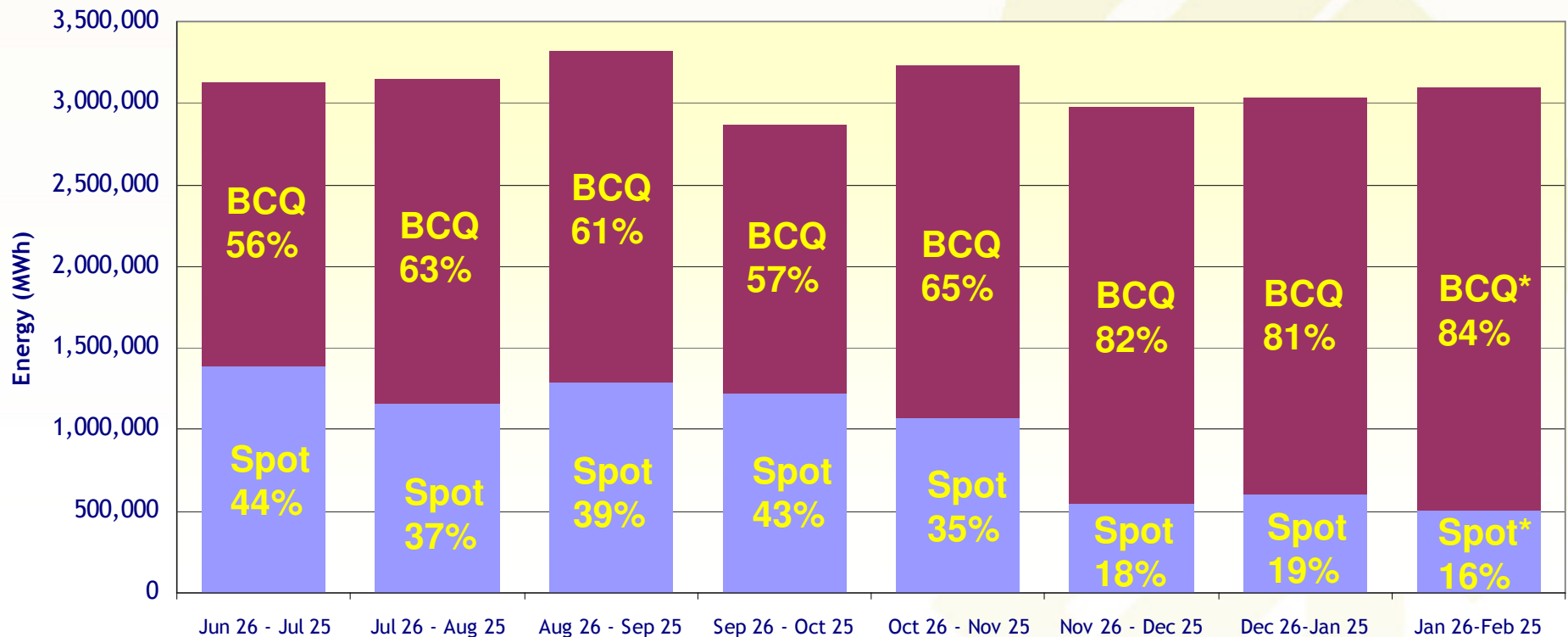


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Market Outcomes

Spot vs. Bilateral Contract Quantity

June 26, 2006- February 25, 2007



Thank You

