



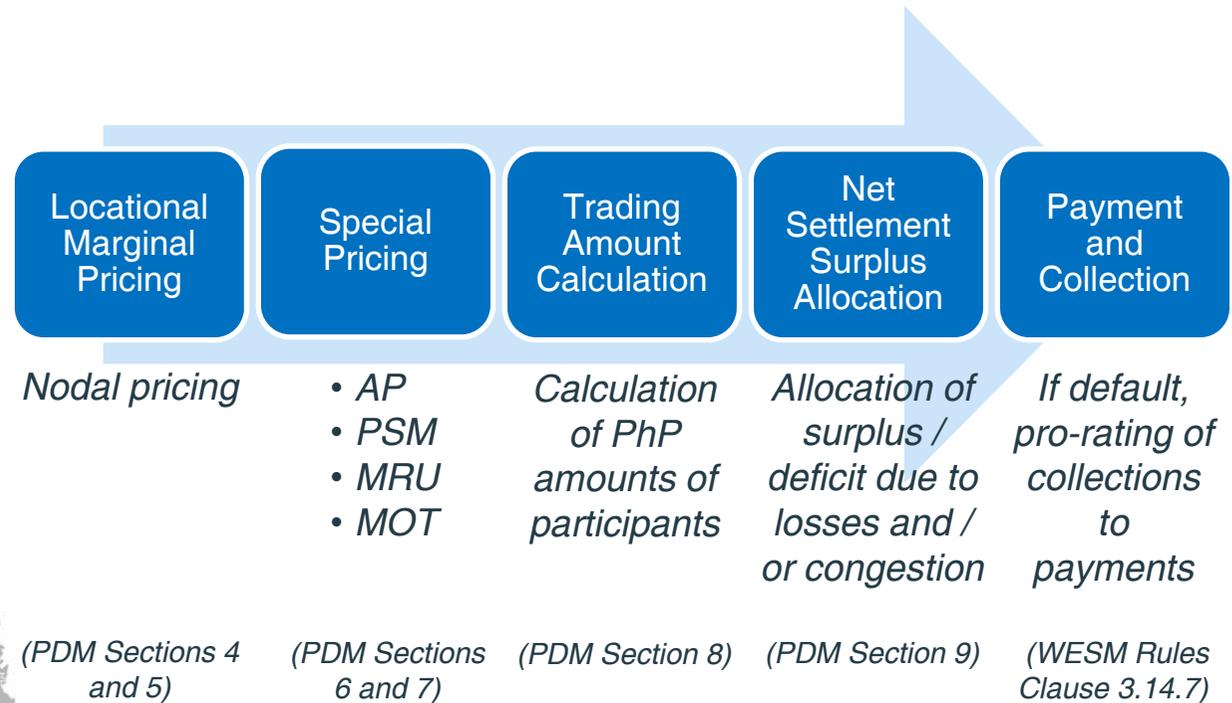
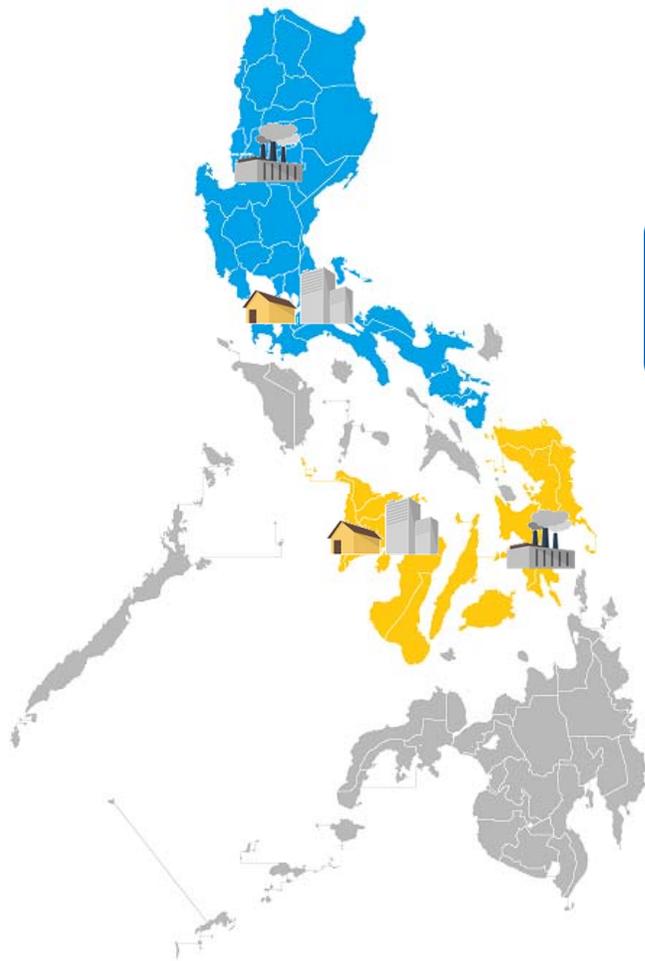
**Philippine Electricity
Market Corporation**

**IMPLEMENTATION OF
SETTLEMENT REGIONS
(LUZON/VISAYAS AND MINDANAO)**

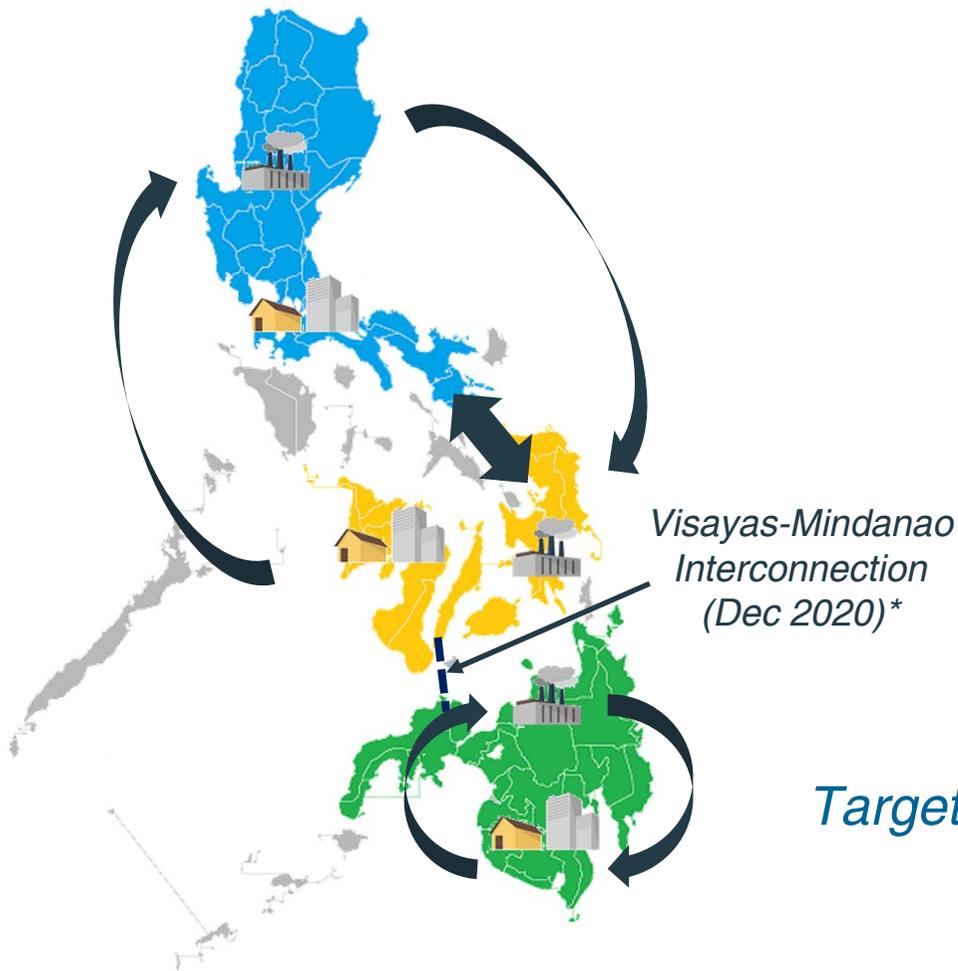
08 MARCH 2018

PDM Evidentiary Hearing

WESM PRICE DETERMINATION METHODOLOGY



WESM MINDANAO IMPLEMENTATION



*During the 1st ~3 years of WESM Mindanao, the Mindanao grid is not interconnected with the rest of the system; hence, **no physical flow of electricity***

Target WESM operations by 4Q 2018

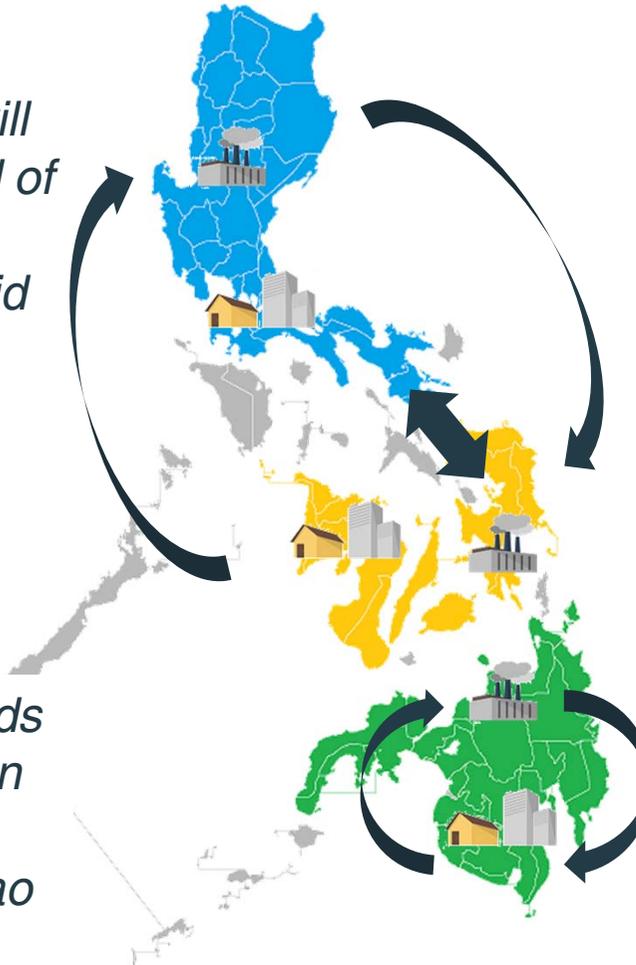
IMPLICATIONS OF NO PHYSICAL FLOW



*Prices in Luzon-Visayas grids will only be based on supply-demand of Luzon-Visayas grids;
Likewise, prices in Mindanao grid will only be based on supply-demand of Mindanao grid*



*Demand from Luzon-Visayas grids will be served only by generation from Luzon-Visayas grids ;
Likewise, demand from Mindanao grid will be served only by generation from Mindanao grid*

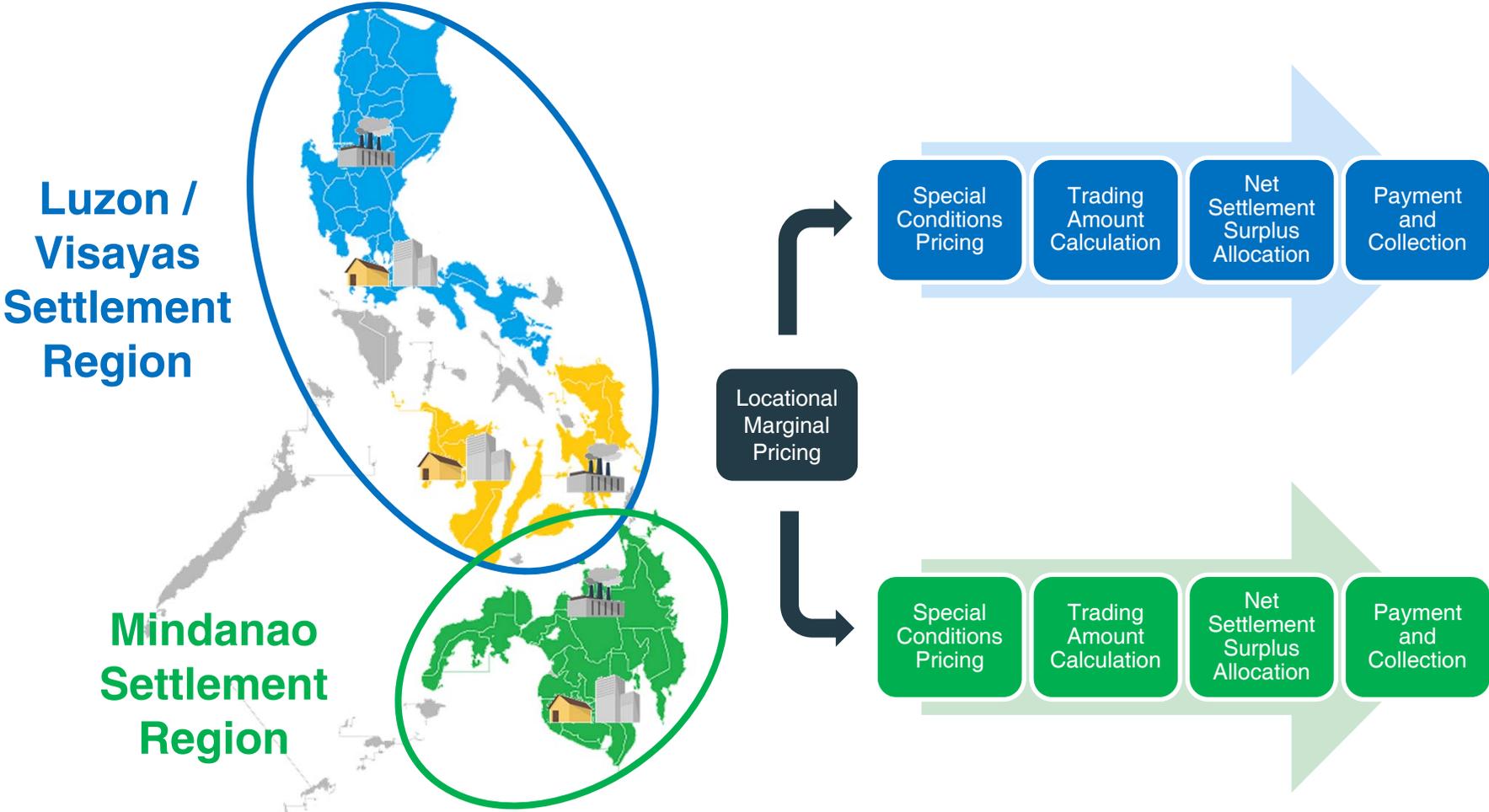


There are special pricing and settlement mechanisms that allocate generation costs to customers.

If performed under one settlement region, costs from Luzon-Visayas grids will be allocated to Mindanao grid or vice-versa.

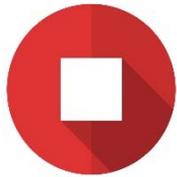
PRICE DETERMINATION METHODOLOGY

Proposal Prior to Interconnection of Mindanao



PRICE DETERMINATION METHODOLOGY

Items for Clarification



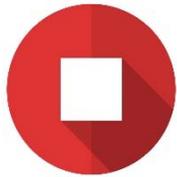
Administered Price
Determination Methodology



Net Settlement Surplus
Allocation

PRICE DETERMINATION METHODOLOGY

Items for Clarification

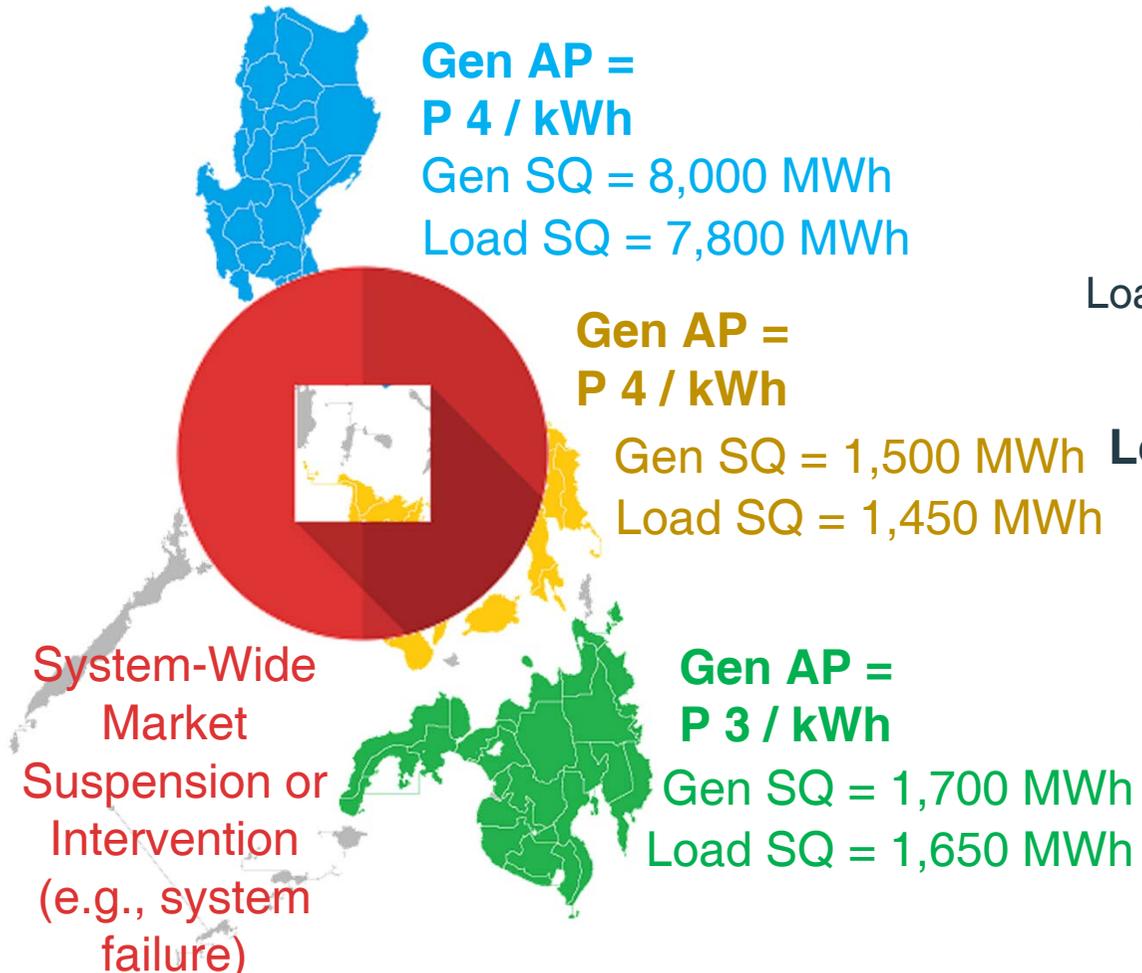


Administered Price
Determination Methodology



Net Settlement Surplus
Allocation

ADMINISTERED PRICE DETERMINATION METHODOLOGY



One Settlement Region

Gen AP – based on last 4 weeks (locational)

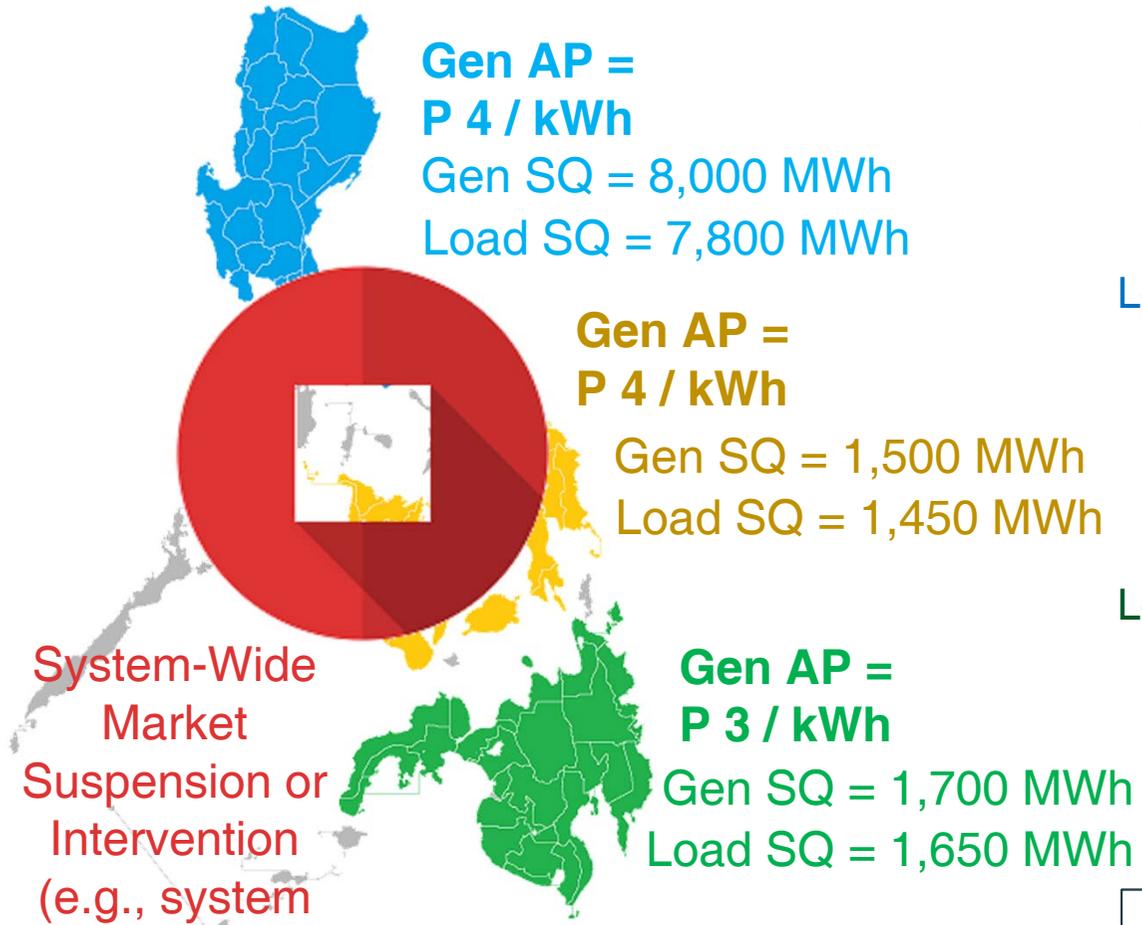
$$\text{Load AP}_{\text{LVM}} = \frac{\text{Total LVM Admin Gen PhP}}{\text{Total LVM Load}}$$

$$\text{Load AP}_{\text{LVM}} = \frac{43.1 \text{ M}}{10.9 \text{ GWh}} = \text{P } 3.85 / \text{kWh}$$

Some of the generation costs in Luzon/Visayas was allocated to Mindanao resulting in:

- Lower AP_{Load} (3.85) for Luzon/Visayas compared with AP_{Gen} (4.00)
- Substantially higher AP_{Load} (3.85) for Mindanao compared with AP_{Gen} (3.00)

ADMINISTERED PRICE DETERMINATION METHODOLOGY



System-Wide Market Suspension or Intervention (e.g., system failure)

Two Settlement Regions

Gen AP – based on last 4 weeks (locational)

$$\text{Load AP}_{LV} = \frac{\text{Total LV Admin Gen PhP}}{\text{Total LV Load}}$$

$$\text{Load AP}_{LV} = \frac{38.0 \text{ M}}{9.25 \text{ GWh}} = \text{P } 4.11 / \text{kWh}$$

$$\text{Load AP}_M = \frac{\text{Total M Admin Gen PhP}}{\text{Total M Load}}$$

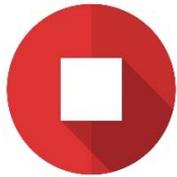
$$\text{Load AP}_M = \frac{5.1 \text{ M}}{1.65 \text{ GWh}} = \text{P } 3.09 / \text{kWh}$$

AP_{Load} generally reflects generation cost in the same settlement region plus cost of losses



PRICE DETERMINATION METHODOLOGY

Items for Clarification

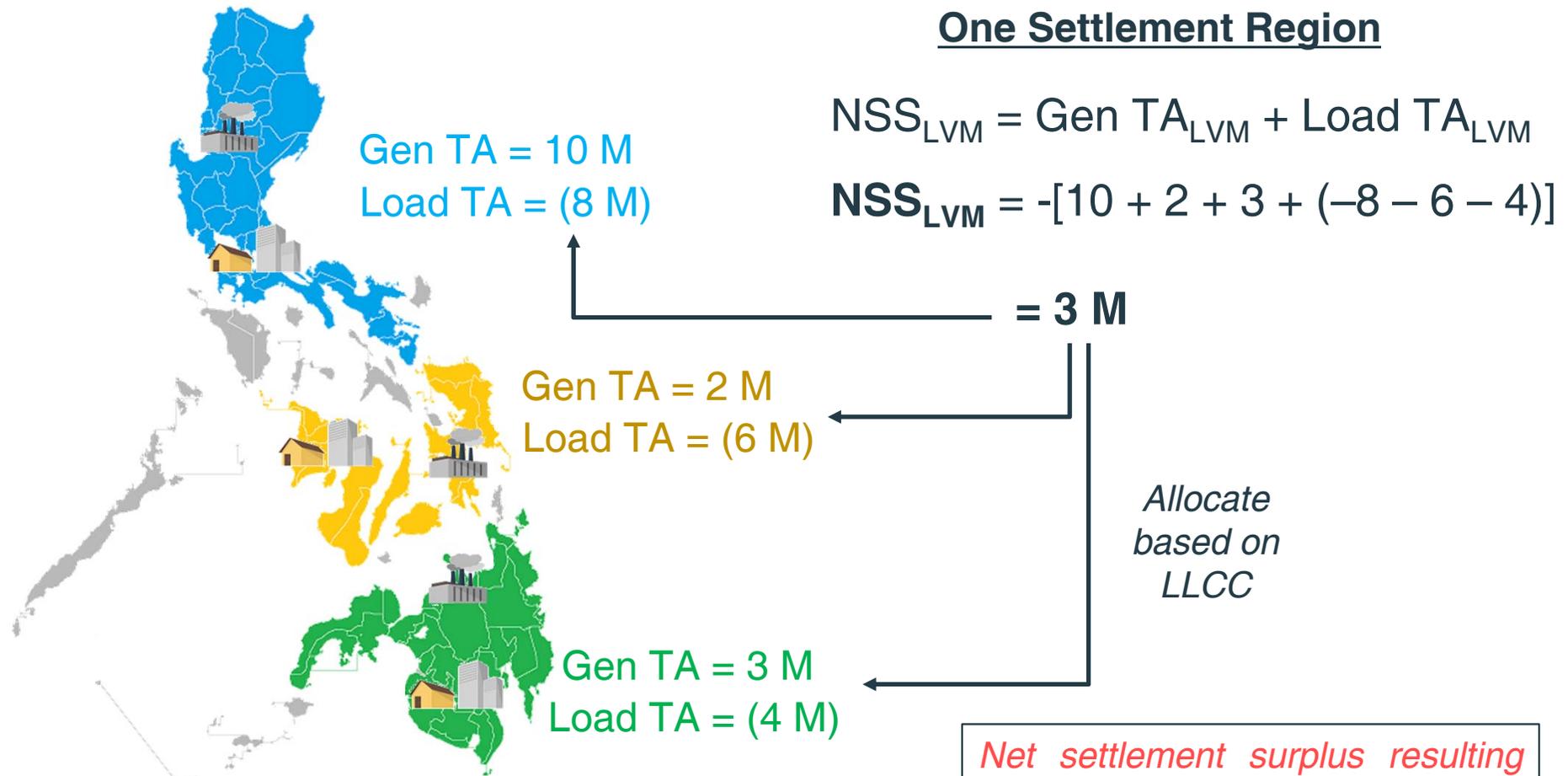


Administered Price
Determination Methodology



Net Settlement Surplus
Allocation

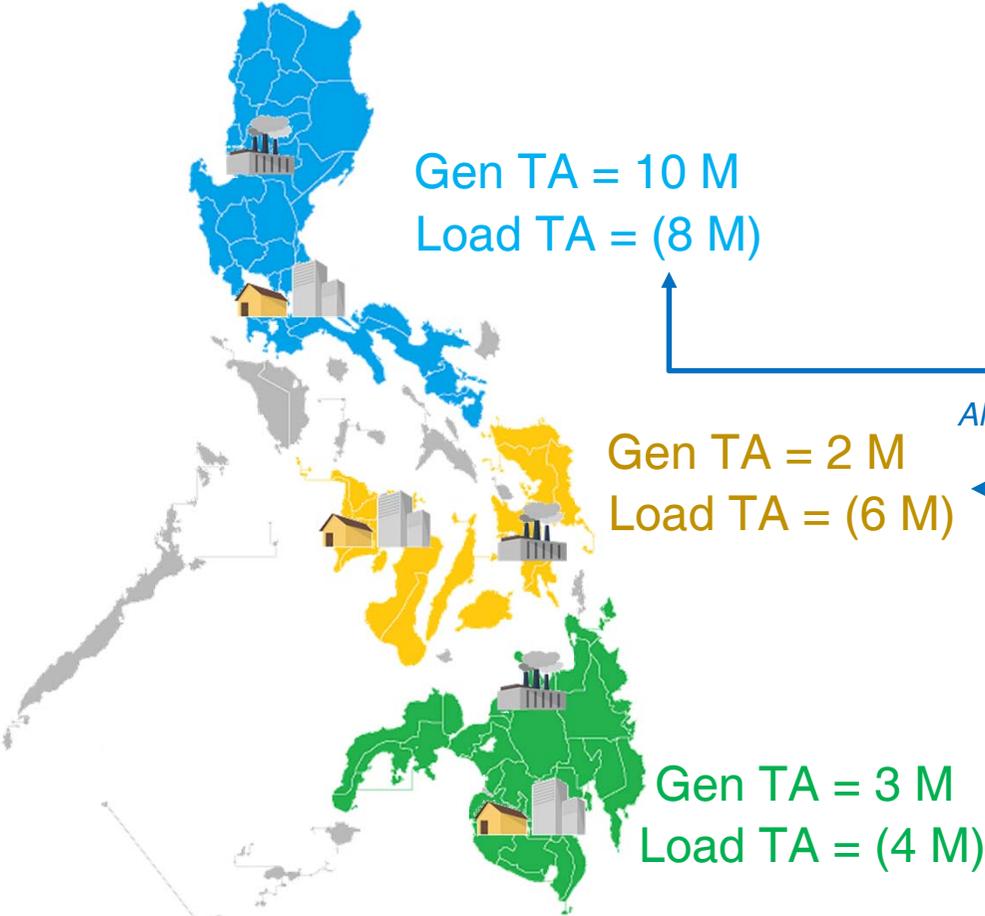
NET SETTLEMENT SURPLUS ALLOCATION



Net settlement surplus resulting from congestion from a settlement region may be allocated to the other settlement region

NET SETTLEMENT SURPLUS ALLOCATION

Two Settlement Regions



$$\begin{aligned}
 \text{NSS}_{LV} &= \text{Gen TA}_{LV} + \text{Load TA}_{LV} \\
 \text{NSS}_{LV} &= -[10 + 2 + (-8 - 6)]
 \end{aligned}$$

= 2 M
 Allocate based on LLCC

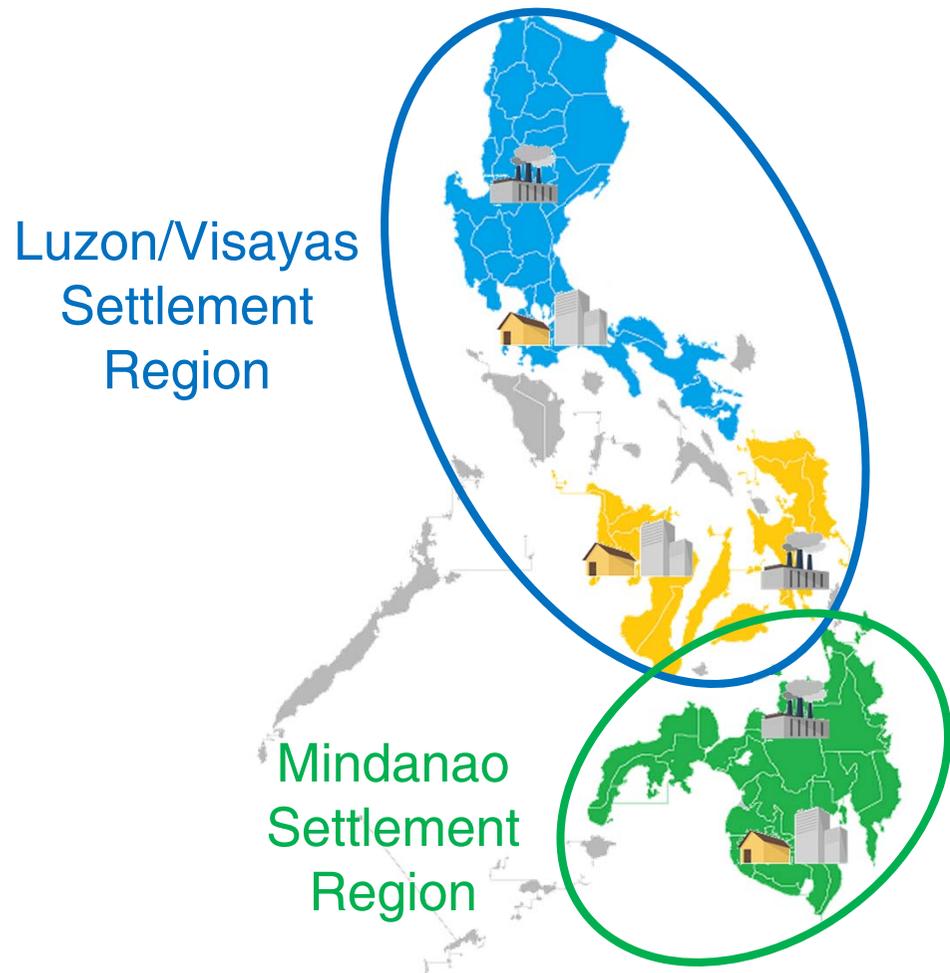
$$\begin{aligned}
 \text{NSS}_M &= \text{Gen TA}_M + \text{Load TA}_M \\
 \text{NSS}_M &= -[3 + (-4)]
 \end{aligned}$$

= 1 M
 Allocate based on LLCC

NSS due to losses / congestion of a settlement region are ensured to be allocated to the participants that paid for the losses / congestion

PRICE DETERMINATION METHODOLOGY

Summary



- Locational marginal pricing using the MDOM will be uniformly applied to the whole system.
- However, it is proposed that special pricing (i.e., AP) and settlement (i.e., NSS) mechanisms be performed per settlement region to ensure that costs and revenues are driven by actual market conditions.
- Inter-settlement region bilateral contract declaration will not be allowed with this proposal.



Philippine Electricity
Market Corporation

END OF PRESENTATION

WESM Works.



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