THE MARKET OPERATOR'S ROLE IN ENSURING RELIABLE, ACCESSIBLE, AFFORDABLE POWER

Presentation for The Manila Times Energy Forum
Environmental, economical generation'

| 20 March 2024

IEMOP
We Run Markets

01 OVERVIEW OF THE WESM



MARKET OPERATOR

*The MARET OPERATOR (MO) was created pursuant to **Section 30 of the EPIRA** which provides for the establishment of the Wholesale Electricity Spot Maret (WESM) by which competitive maret forces would establish generation prices and mae costs more transparent.*

WESM Rules Clause .3..

Maret Operator's Duties Responsibilities

- ✓ **Administer the operation of the WESM** in accordance with the WESM Rules
- ✓ Determine the dispatch schedule of all facilities in accordance with the WESM Rule. Such schedule shall be submitted to the System Operator
- ✓ Monitor daily trading activities in the maret
- ✓ Oversee transaction billing and *settlement* procedures

WESM Rules Clause .2.

WESM Obectives

- A level playing field eists among WESM Participants **(Competition)**
- Prices are governed as far as practicable by commercial and maret forces
- Trading of electricity is facilitated among WESM Participant within the spot maret **(Transparency)**
- Third Parties are granted access to the power system **(Accessibility)**
- **Efficiency** is encouraged

KEY CONCEPTS
WHOLESALE ELECTRICITY SPOT MARKET

W

Wholesale: Pertains to large quantities / volumes.

E

Electricity: Unique commodity being traded.

S

Spot: Transactions settled are only those that are not covered by contracts.

M

Market: A venue for buying and selling (trading) electricity.

HOW WESM AFFECTS ELECTRICITY RATES

Generators
- May also sell to the maret -

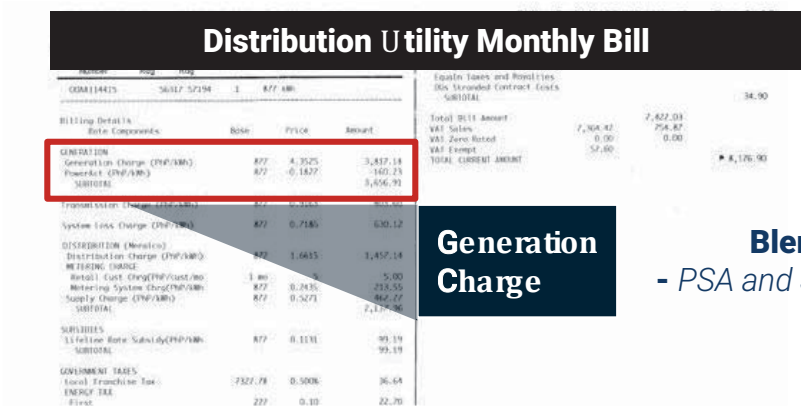
Generation Company

WESM

Power Supply Agreement (PSA)
- agreed contract rate -

Distribution Utility

Spot Quantities
- WESM Price (changes every interval) -



Blended Rate
- PSA and Spot Purchases -

Market Transactions
System-Wide 2023

17.95 TWh = 17.5%

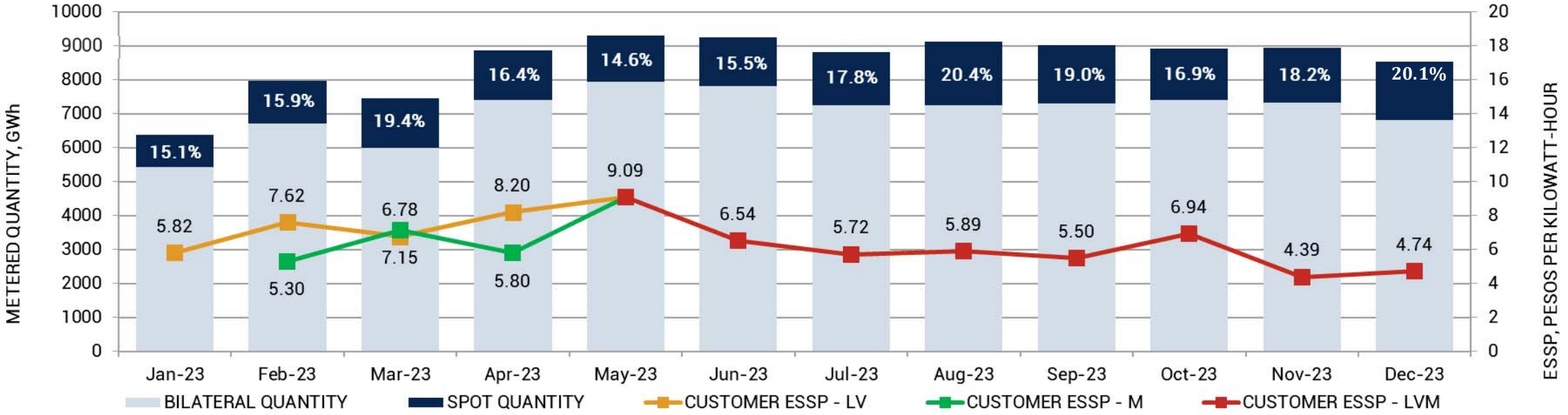
Total energy purchased From the WESM in 2023

of the customer's total consumption for the year

EFFECTIVE SPOT SETTLEMENT PRICE

PhP per KWh **6.44** YEAR 2023

PhP per KWh 7.88 YEAR 2022



BILLING PERIOD	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23
Metered Quantity (GWh)	6,388	7,977	7,445	8,870	9,306	9,254	8,817	9,124	9,031	8,909	8,949	8,545
Bilateral Quantity (GWh)	5,421	6,710	5,998	7,415	7,943	7,816	7,252	7,262	7,311	7,400	7,318	6,824
Spot Quantity (GWh)	967	1,268	1,447	1,455	1,363	1,438	1,565	1,862	1,720	1,509	1,631	1,721
Daily Average MQ [1] (GWh)	206	257	266	286	310	299	294	294	291	296	289	285
Luz-Vis ESSP[2] (PhP/KWh)	5.82	7.62	6.78	8.20								
Mindanao ESSP[2] (PhP/KWh)		5.30	7.15	5.80								
LVM ESSP[2] (PhP/KWh)					9.09	6.54	5.72	5.87	5.50	6.94	4.39	4.74

[1] Daily Average MQ is computed as [Total MQ / Total No. of Days] for the billing month

[2] ESSP refers to the Effective Spot Settlement Price. Prices used in the settlement.

[3]One Settlement System for the WESM Trading Participant in Luzon, Visayas, and Mindanao was effective starting the May 2023 Billing Period.

BENEFITS OF WESM

Competition

Accessibility

Transparency

Efficiency

- *Provides alternative venue in procuring additional MW requirements*
- *Proper accounting helps investors strategize and mae informed business decisions (e.g. pricing signals)*
- *Attract investors particularly generation developers*

Generation Companies
Ecess generation may be sold outside contracted party
Ecess generation may be sold outside a certain region (i.e. energy import eport)
Provide Ancillary Services/ participation in the Reserve Maret

Customers
Ecess bilateral quantity may be sold to other Customers
Have more options to procure power outside their region
Access to the retail maret





INDEPENDENT ELECTRICITY MARKET OPERATOR OF THE PHILIPPINES

ROLES AND RESPONSIBILITIES

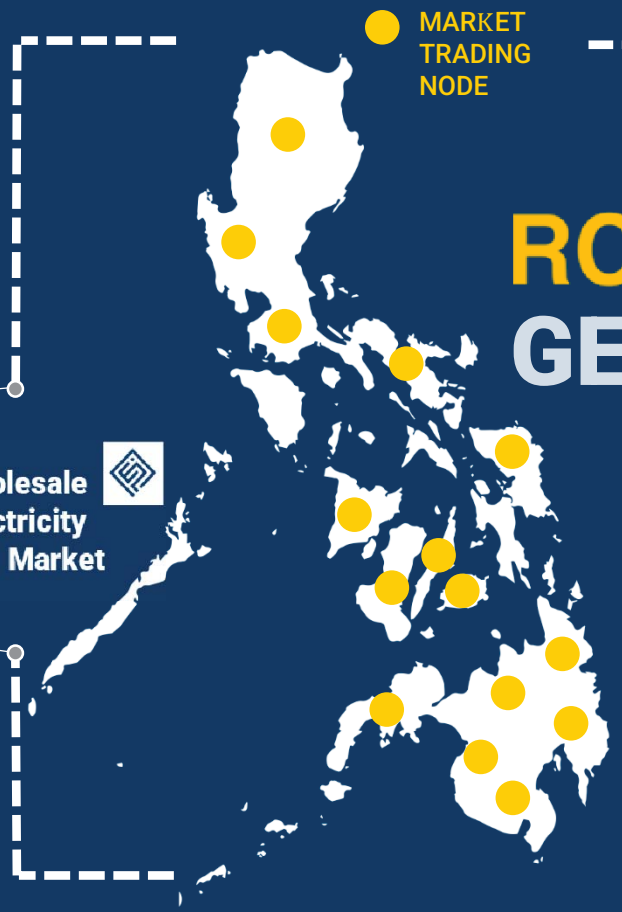
WHOLESALE ELECTRICITY SPOT MARKET (WESM)

Co-optimized Energy and Reserve Market

REGISTRATION

DEMAND FORECASTING, PRICING AND SCHEDULING

METERING AND SETTLEMENT



RCOA

GEAP

RETAIL ELECTRICITY MARKET

CENTRAL REGISTRATION BODY

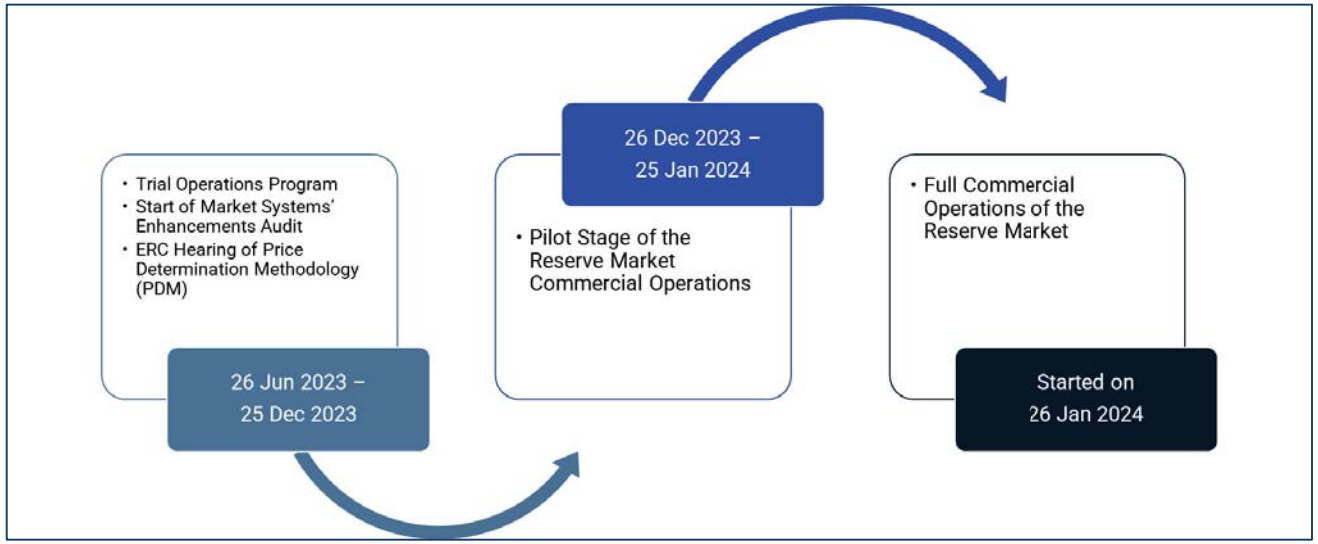
CUSTOMER SWITCHING

METERING AND SETTLEMENT

RESERVE MARKET

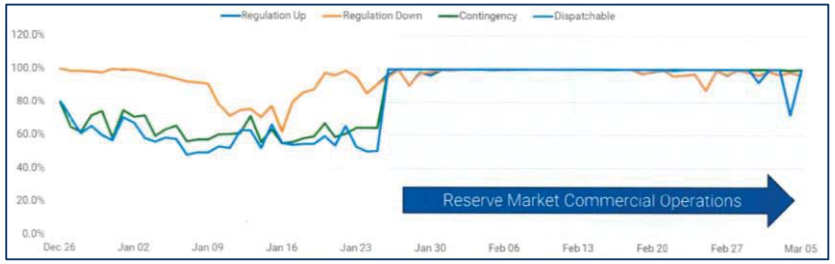
Reserves (or Ancillary Services) refer to services necessary to support the transmission of capacity and energy from resources to loads. These are standby capacities scheduled by the System Operator to ensure a stable and reliable operation of the Grid.

IMPLEMENTATION TIMELINE



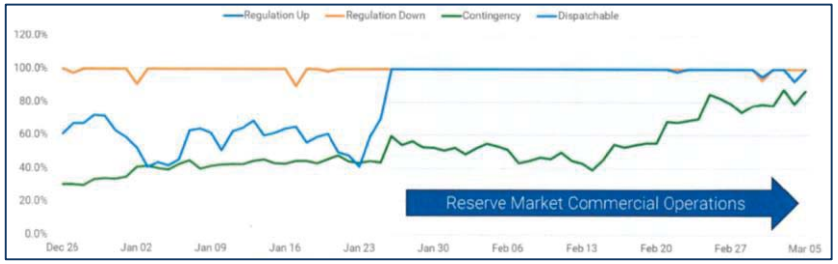
Trend in Capacity Scheduled vs. Requirement

Ratio of Scheduled Capacity vs. Requirement in Luzon Grid



	Before 26 Jan 2024	Since 26 Jan 2024	Change
Regulation Up	89.1%	98.4%	9.3%
Regulation Down	89.1%	98.4%	9.3%
Contingency	63.1%	100.0%	36.9%
Dispatchable	58.0%	99.0%	41.0%

Ratio of Scheduled Capacity vs. Requirement in Visayas Grid



	Before 26 Jan 2024	Since 26 Jan 2024	Change
Regulation Up	99.3%	99.8%	0.6%
Regulation Down	99.2%	99.8%	0.6%
Contingency	40.6%	60.2%	19.6%
Dispatchable	58.1%	99.6%	41.5%

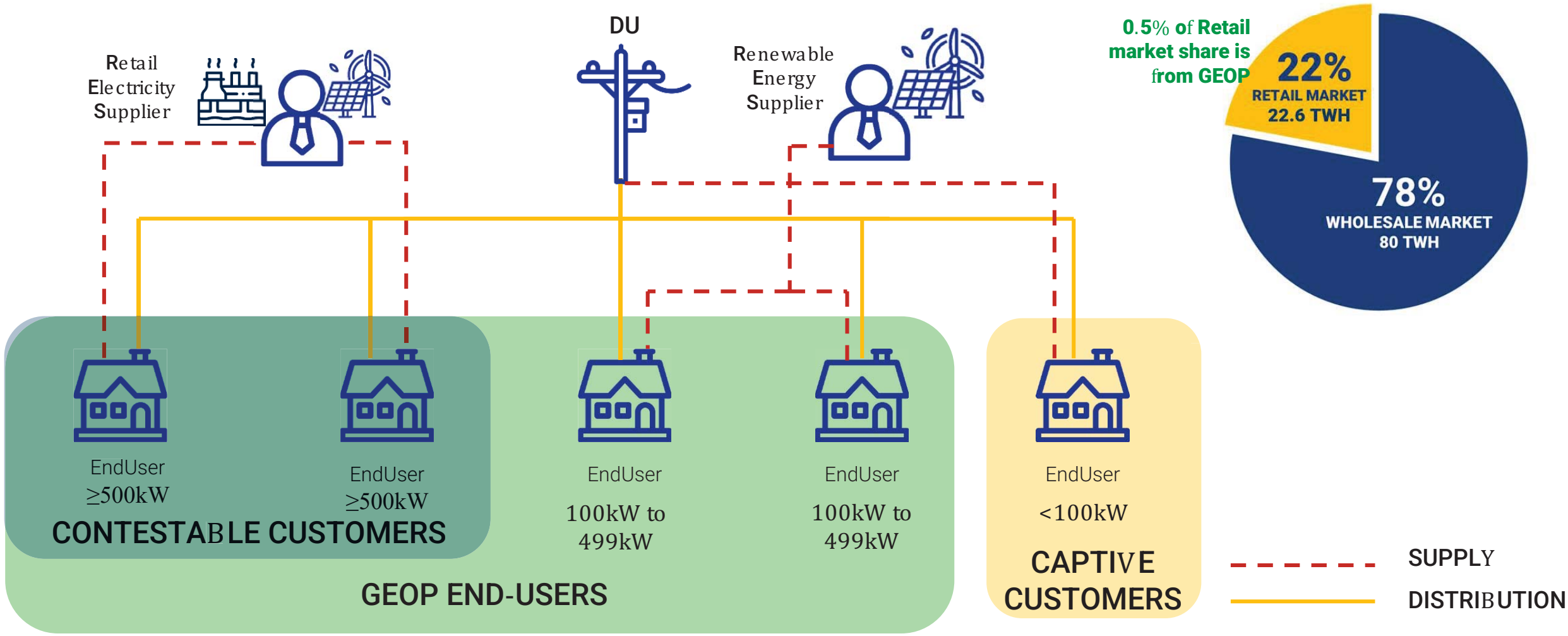
Ratio of Scheduled Capacity vs. Requirement in Mindanao Grid



	Before 26 Jan 2024	Since 26 Jan 2024	Change
Regulation Up	83.0%	96.6%	13.6%
Regulation Down	83.0%	96.6%	13.6%
Contingency	48.8%	100.0%	51.2%
Dispatchable	55.3%	100.0%	44.7%

COMPETITIVE RETAIL ELECTRICITY MARKET

RCOA + GEOP



2023 RETAIL MARKET TRANSACTION

RCOA and GEOP SWITCHING



Supplier enters into supply contract with Contestable Customer/GEOP enduser



Supplier registers with the Central Registration Body (CRB)



Supplier submits switch request to CRB



CRB processes Switch request application



Switch completed!

REGISTRATION DEMOGRAPHICS

Records as of 26 February 2024 | Luzon, Visayas and Mindanao

447 WESM Participants

210	Generation Companies
99	Electric Cooperatives
53	Directly Connected Customers
26	Private DUs and Local Gov't Utilities
39	Ancillary Service Provider
1	Ancillary Service Buyer
19	Wholesale Metering Services Provider

2,154 RCOA Participants

1,965	Contestable Customers
66	Retail Metering Services Provider
41	Directly Connected Contestable Customer
27	Supplier of Last Resort
40	Retail Electricity Supplier
15	Local Retail Electricity Supplier

391 GEOP Participants

326	DU Connected Enduser Customer
34	GEOP Metering Services Provider
17	Renewable Energy (RE) Supplier
14	Supplier of Last Resort (SOLR)

04 WHAT'S NEXT FOR WESM?



OFF-GRID SPOT MARKET

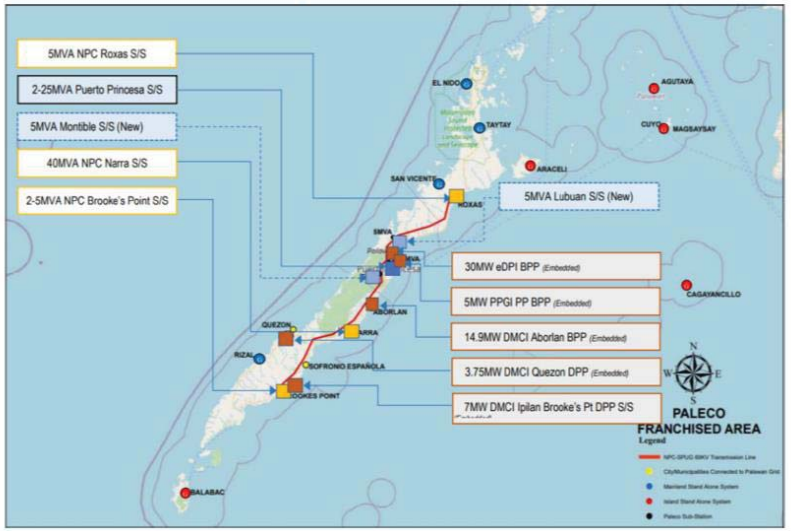
MINDORO



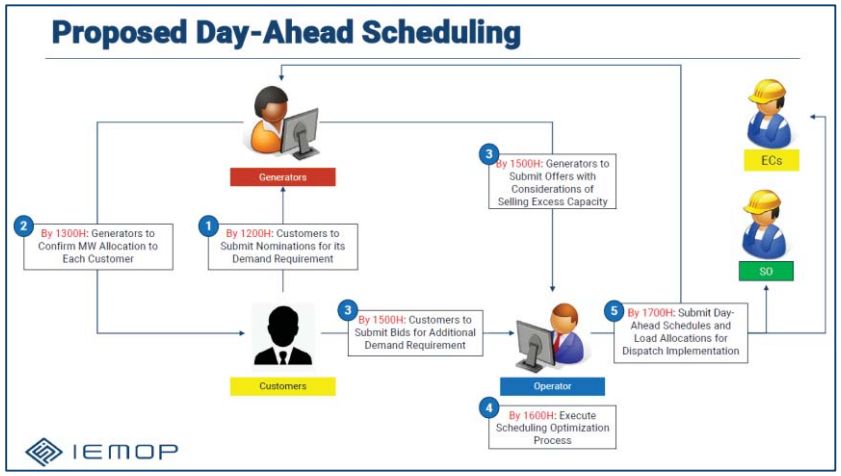
Main Power Grid of Mindoro
1. Occidental Mindoro EC (OMECO)
2. Oriental Mindoro EC (ORMECO)

PALAWAN

Power is provided through lone Distribution Utility: PALECO



Reference from the PALECO (Palawan Electric Cooperative) website



*Reference from the Philippine Energy Plan 2020-2040

Market Development Roadmap

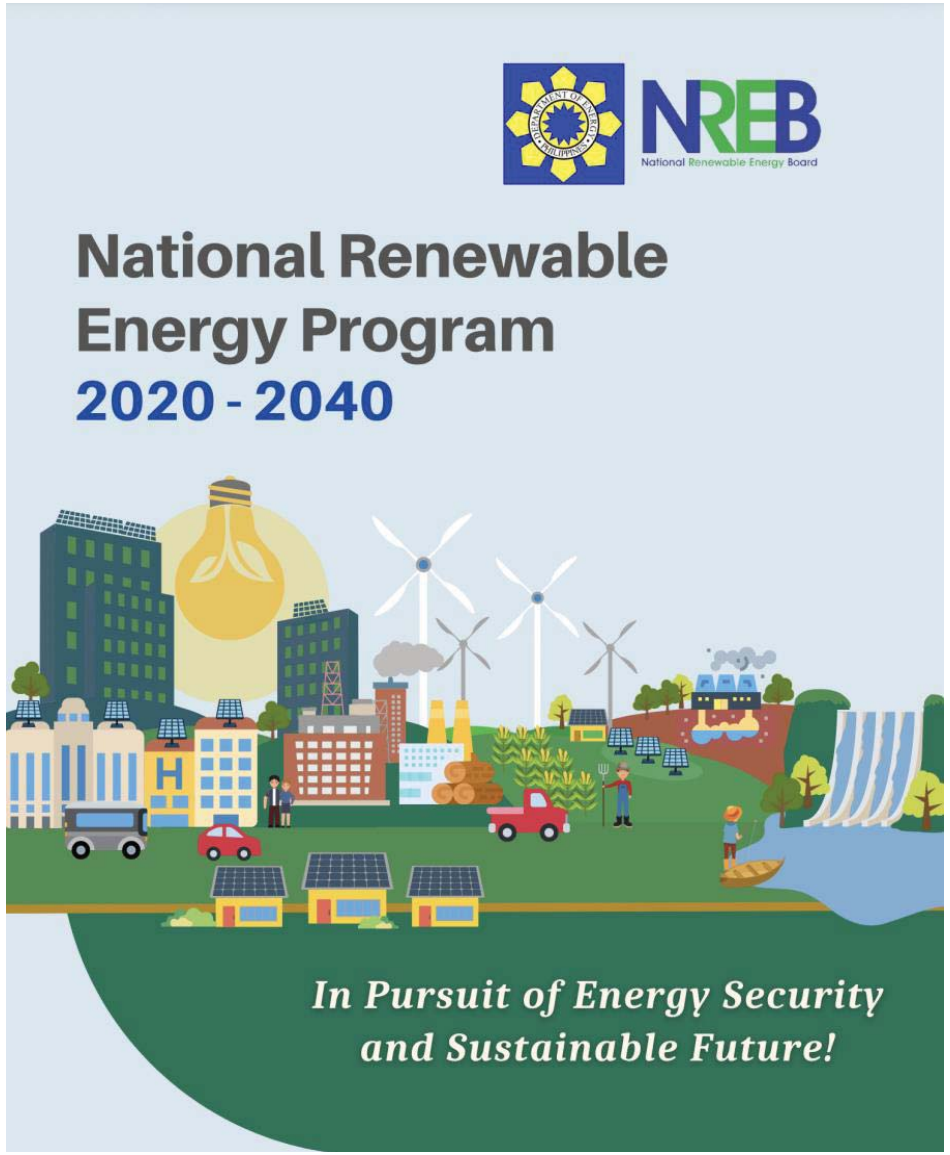


RENEWABLE ENERGY MARKET (REM)



It is a venue for **Mandated Participants** to buy and sell **Renewable Energy Certificates (RECs)** for them to **comply** with the **required RECs** for a certain **compliance period** pursuant to the **Renewable Portfolio Standards (RPS)**.

Renewable Energy Certificates (RECs) are maretbased instrument representing all renewable and environmental attributes from one MWH of electricity generation sourced from an eligible RE Generation Facility.



TARGET RENEWABLE ENERGY MIX SHARE

35% 2030

50% 2040

WESM REGISTERED CAPACITIES

WESM Registration Data as of 20 February 2024 | Luzon, Visayas, and Mindanao

**ESS refers to Energy Storage Systems*

Capacity (MW)	Scheduled Generators			Renewable Energy					ESS*	
Region	Coal	Natural Gas	Oil Based	Hydro	Geo-thermal	Biomass	Solar	Wind	Battery & Pump Storage	Total
Luzon	8,787	3,286	1,741	1,838 (+3)	783	182	1,533	416	1,050	19,614 (+3)
	45.2%	16.9%	9.0%	8.5%	4.0%	0.9%	7.9%	2.1%	5.4%	100.0%
Visayas	1,326 (+2)	0	433	53	850	191	411	91	100	3,455 (+2)
	38.8%	0.0%	12.7%	0.3%	24.9%	5.6%	12.0%	2.7%	2.9%	100.0%
Mindanao	2,266	0	651	1,115	105	52	67	0	80	4,335
	52.3%	0.0%	15.0%	25.7%	2.4%	1.1%	1.6%	0.0%	1.8%	100.0%
Total	12,378 (+2)	3,286	2,825	3,006 (+3)	1,738	424	2,011	507	1,230	27,404 (+5)
	45.5%	12.1%	10.4%	10.2%	6.4%	1.6%	7.4%	1.9%	4.5%	100.0%

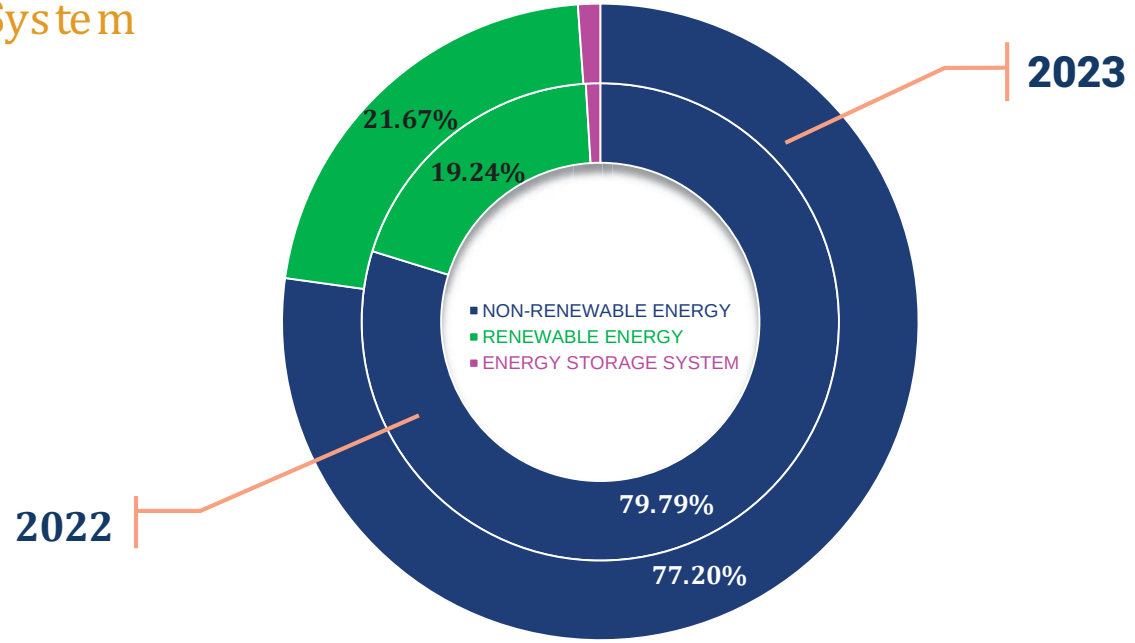
Generation Mix

System

	TYPE	2022		2023	
		GWh	%	GWh	%
NONRE	COAL	51,047	57.5	64,994	60.8
NONRE	NAT. GAS	17,485	19.7	16,340	15.3
NONRE	OIL-BASED	2,242	2.5	1,197	1.1
RE	GEO	9,107	10.3	10,156	9.5
RE	HYDRO	4,354	4.9	8,435	7.9
RE	BIOMASS	922	1.0	896	0.8
RE	WIND	912	1.0	1,231	1.2
RE	SOLAR	1,775	2.0	2,450	2.3
ESS	PUMP	831	0.9	1,133	1.1
ESS	BATTERY	28	0.0	70	0.1
	TOTAL	88,704	100	106,901	100

RE Contribution

System



SYNTHESIS

RELIABLILITY

- Increased generation capacity translates to improved supply mi
- With the integration of reserve maret, we have seen an improved reliability of the grid
  - Committing more capacities to meet the required level of frequency control ancillary services
  - Such committed capacities, in turn, were able to manage power frequency levels within acceptable levels for the different power grids

ACCESSIBILITY

- Grid interconnections have been pivotal in addressing the power supply challenges in Luzon and Visayas
- Transactions are facilitated within the spot maret

AFFORDABILITY

- WESM price offers an economical alternative to over or under contracting
- With the retail maret, customers have other power supply options which promotes competitive electricity prices

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