Interim Mindanao Electricity Market

Philippine Electricity Market Corporation
April 2013
Outline

Introduction

Governance and Regulatory Framework

Registration and Membership

Market Operations

Settlement and Metering

Disputes and Penalties

Interim Mindanao Electricity Market
Background

**DOE Roadmap for Mindanao**

- In line with its roadmap to address the power supply shortage in Mindanao, DOE directed PEMC to study the kind of electricity market that can be established in Mindanao.
- A Mindanao Power Summit was held last April 2012 where Mindanao supply issues were discussed.

**Public Consultations**

- DOE presented its Roadmap for Mindanao in Cagayan De Oro on 22 October 2012 and in Davao City on 14 November 2012
Background

**Department Circular No. DC2013-01-001**

- On 9 January 2013 DOE issued DC2013-01-001 entitled “Directing the Philippine Electricity Market Corporation to Develop and Implement an Interim Mindanao Electricity Market (IMEM) as a Measure to Immediately Address the Power Supply Situation in Mindanao”.
- DC2013-01-001 provided for the salient features of the IMEM

**Inter-agency Coordination Meetings**

- Meetings were held with NPC, PSALM, NEA, GMC, Transco, NGCP and other stakeholders
- Based on the inputs from various agencies, PEMC submitted the draft IMEM rules to the DOE on 25 March 2013
## Features of Electricity

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
</table>
| Electricity cannot be economically stored in large quantities. | • All electricity has to be generated when needed.  
• Demand for electricity over the day is highly variable. |
| Physical flow of electricity cannot be traced.        | • It is not physically possible to determine or even direct where the electricity generated by one power plant goes.   |
| Transmission of power over the network is subject to a complex series of physical interactions. | • What happens in one part of the system affects conditions elsewhere in the system. Ancillary services are necessary to ensure system reliability and security. |
| Electricity travels at the speed of light.        | • Each second, output has to be precisely matched to use. Electricity being generated at any given time equals actual demand and transmission losses. |

_Sally Hunt: Making Competition Work in Electricity (2002)_

Interim Mindanao Electricity Market
Power System
Industry Structure

<table>
<thead>
<tr>
<th>Sector</th>
<th>Pre-EPIRA</th>
<th>Now</th>
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</thead>
<tbody>
<tr>
<td>Generation</td>
<td>NPC</td>
<td>Competitive; privatized</td>
</tr>
<tr>
<td>Transmission</td>
<td>NPC</td>
<td>Regulated; privatized</td>
</tr>
<tr>
<td>Distribution</td>
<td>Regulated</td>
<td>Regulated</td>
</tr>
<tr>
<td>Supply/Retail</td>
<td>None</td>
<td>Competitive</td>
</tr>
</tbody>
</table>

Interim Mindanao Electricity Market
Mindanao Problem

Generation Capacity

- Insufficient generation and reserve capacity during peak demand periods
- Aging and unreliable power plants
- No incentive for embedded generation facilities and voluntary load participants
- Government is not allowed to enter into new power supply obligation under EPIRA
Objective

Deficiency

Transparent and efficient utilization of available resources
## Potential Additional Supply

<table>
<thead>
<tr>
<th>Distribution Utility</th>
<th>Facility</th>
<th>2012 Dependable Capacity (MW)</th>
<th>Fuel Type</th>
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<tbody>
<tr>
<td>CEPALCO</td>
<td>MINERGY 1 &amp;2</td>
<td>45</td>
<td>Diesel</td>
</tr>
<tr>
<td></td>
<td>FGBPC</td>
<td>1.6</td>
<td>Hydro</td>
</tr>
<tr>
<td></td>
<td>BUBUNAWAN</td>
<td>0 (4.9)</td>
<td>Hydro</td>
</tr>
<tr>
<td></td>
<td>SOLAR PV</td>
<td>1</td>
<td>Solar</td>
</tr>
<tr>
<td></td>
<td>CABULIG</td>
<td>8</td>
<td>Hydro</td>
</tr>
<tr>
<td>DLPC</td>
<td>SIBULAN</td>
<td>36</td>
<td>Hydro</td>
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<tr>
<td></td>
<td>TALOMO</td>
<td>4.5</td>
<td>Hydro</td>
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<td></td>
<td>BAJADA DPP</td>
<td>48</td>
<td>Diesel</td>
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<tr>
<td>CLPC</td>
<td>COTABATO LIGHT</td>
<td>9.9</td>
<td>Diesel</td>
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<tr>
<td>FIBECO</td>
<td>Crystal Sugar</td>
<td>7</td>
<td>Biomass</td>
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<tr>
<td></td>
<td><strong>Total Embedded</strong></td>
<td><strong>161</strong></td>
<td></td>
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<tr>
<td>Various</td>
<td>Self-Gen. within DU (&gt; 1 MW)</td>
<td>103.42</td>
<td>ILD</td>
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<tr>
<td></td>
<td><strong>TOTAL</strong></td>
<td><strong>264.42</strong></td>
<td></td>
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</tbody>
</table>

*Source: DOE, PSALM*

It is projected that about **150 MW** of the above capacities will be traded in the IMEM.
How do we tap these potential resources?
Principles

Day-Ahead Market

• Trade quantities in excess of Contracts
• Energy only, no ancillary services

Real time adjustment

• Dispatch variations are based on a merit order table

Market Price with Offer Cap

• Single price market
• Offer cap
Principles

Additional Participants

• Voluntary Load Curtailment
• Embedded Generation

Centralized Scheduling

• Contract Quantities
• Market Quantities
Current Process

NPC Gen

TMI

Interim Mindanao Electricity Market
Market Design Overview

Grid Gen

Voluntary Load Curtailment

Embedded Gen

System Forecast

Contract Allocation

Offers

IMEM Operator

IMEM Demand

Demand Forecast

Distribution Utility/End-User

Interim Mindanao Electricity Market
Market

Deficiency

Transparent and efficient utilization of available resources
Outline

- Introduction
- Governance and Regulatory Framework
- Registration and Membership
- Market Operations
- Settlement and Metering
- Disputes and Penalties

Interim Mindanao Electricity Market
Governance and Regulatory Framework

- **Policy**
  - DOE promulgates IMEM rules and manuals

- **Regulation**
  - ERC approves the price determination methodology and cost recovery mechanism
  - ERC monitors market and penalizes anti-competitive behavior

- **Self Governance**
  - IMEM Governance Committee monitors market
  - Enforcement and Compliance Officer investigates breaches

Interim Mindanao Electricity Market
Governance and Regulatory Framework

**Policy**
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**Regulation**
- ERC approves the price determination methodology and cost recovery mechanism
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**Self Governance**
- IMEM Governance Committee monitors market
- Enforcement and Compliance Officer investigates breaches

Interim Mindanao Electricity Market
Market Governance

IMEM Governance Committee

- Composed of independent members of the Philippine Electric Industry, the IMEM Operator and the DOE
- Members are appointed by the DOE
- Responsible for monitoring the activities of the IMEM
- Refers suspected incidences of breaches of the IMEM Rules to the Enforcement and Compliance Officer
- Imposes financial and/or non-financial penalties for breaches of the IMEM Rules

Enforcement and Compliance Officer

- Investigates breaches of the IMEM Rules
Registration and Membership Overview

Who will be the participants in the IMEM?

What roles will entities perform in the IMEM?
Categories of Membership

**IMEM Resources**
- Grid and Embedded Generators
- Grid and Embedded Load Curtailment Resources

**IMEM Customers**
- Distribution Utilities
- Grid-Connected End Users

**IMEM Service Providers**
- Mindanao System Operator
- Network Service Providers
- Metering Services Providers

Interim Mindanao Electricity Market
# Registration

<table>
<thead>
<tr>
<th>Entity</th>
<th>IMEM Resource</th>
<th>IMEM Customer</th>
<th>IMEM MSP</th>
<th>IMEM NSP</th>
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<tbody>
<tr>
<td>Generator (Grid-Connected)</td>
<td>M</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Generator (Embedded)</td>
<td>M</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>End-User (Grid-Connected)</td>
<td>V</td>
<td>M</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>End-User (Embedded)</td>
<td>V</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Distribution Utility</td>
<td>--</td>
<td>M</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>Grid MSP</td>
<td>--</td>
<td>--</td>
<td>M</td>
<td>--</td>
</tr>
<tr>
<td>Grid NSP</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>M</td>
</tr>
</tbody>
</table>

**Legend:**
- **M** – Mandatory
- **V** – Voluntary
- **E** – Mandatory if entity has an embedded facility registered in the IMEM

Interim Mindanao Electricity Market
Qualifications

Grid and Embedded Generators

• Rated capacity of at least 1MW
• Capable of synchronous operation
• Can be classified as either dispatchable or non-dispatchable

Voluntary Load Curtailment

• Daily average peak demand for the last 12 months of at least 1 MW
• Capable of curtailing its demand within 30 minutes from receipt of dispatch instructions
Outline

Introduction
Governance and Regulatory Framework
Registration and Membership
Market Operations
Settlement and Metering
Disputes and Penalties

Interim Mindanao Electricity Market
Introduction

Governance and Regulatory Framework

Registration and Membership

Market Operations

Settlement and Metering

Disputes and Penalties

Interim Mindanao Electricity Market
Market Operations Overview

How will the IMEM allow the utilization of all capacities during hours with deficiency?

How will the price be determined in the IMEM?

How will Generators and Load Curtailment Resources be dispatched with the IMEM?
How will the IMEM allow the utilization of all capacities during hours with deficiency?

If there is no deficiency in the Grid then the IMEM will not perform transactions.
IMEM Trading Intervals

Legend:  
- Gray: Contracted Capacity  
- Black: System Load Demand

Interim Mindanao Electricity Market
How will the price be determined in the IMEM?

**Load Curtailment Resource**
- 10 MW @ Php 10,000/MWh

**Embedded ROR Hydro**
- 5 MW @ Php 3,000/MWh

**Embedded Diesel Plant**
- 15 MW @ Php 8,000/MWh

**Economic Dispatch**

- **IMEM Day-Ahead Price**
- **Total IMEM Demand:** 10 MW

**Expected Demand:** 20 MW
- **Contracted Capacity:** 10 MW
- **Buying from the IMEM:** 10 MW

**Expected Demand:** 10 MW
- **Contracted Capacity:** 8 MW
- **Buying from the IMEM:** 0 MW

**EC 1**
- **Expected Demand:** 40 MW
- **Contracted Capacity:** 40 MW
- **Buying from the IMEM:** 0 MW

**EC 2**
- **Expected Demand:** 20 MW
- **Contracted Capacity:** 10 MW
- **Buying from the IMEM:** 10 MW

**EC 3**
- **Expected Demand:** 10 MW
- **Contracted Capacity:** 8 MW
- **Buying from the IMEM:** 0 MW
Centralized Schedule for the Mindanao Grid

Contracted Capacities

Day-Ahead Schedule

IMEM-Scheduled Targets
IMEM Process

Offers -> IMEM
Demand -> IMEM

Price -> Merit Order -> Schedule
What is the current day-ahead scheduling process for Mindanao?

1200H: Submit Day-Ahead Plant Available Capacity Nomination (DAPCN)

1600H: Prepare the Mindanao Power Outlook inc. APC TMI nomination

1700H: Prepare the Mindanao Hourly Day-Ahead Generator Schedule

1500H: Submit the Day-Ahead Load capability and consolidated Day-Ahead Bilateral Contract Quantities

1400H: Nominate needed Day-Ahead Bilateral Quantity

1300H: Submit NPC resources capacity allocation with excess or shortfall

1300H: Allocate the DAPACN of NPC Resources to the DASLP

1100H: Prepare the hourly Day-Ahead Load Projection (DASLP)
How is the current scheduling process different from the IMEM?

<table>
<thead>
<tr>
<th>Sub-Process</th>
<th>Current Protocol</th>
<th>IMEM Protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demand Forecasting</td>
<td>MSO prepares the day-ahead demand forecast based on historical data</td>
<td>DUs submit the day ahead demand forecast to MSO to determine the Mindanao day-ahead demand forecast</td>
</tr>
<tr>
<td>NPC Capacity Nomination and Allocation</td>
<td>Resources submit to MSO their contract allocations for finalization through SCD</td>
<td>Resources submit to MSO their contract allocations for finalization through SCD</td>
</tr>
<tr>
<td>Deficiency/ surplus Determination</td>
<td>MSO determines deficiency/surplus of DUs</td>
<td>SO determines deficiency/surplus of DUs</td>
</tr>
<tr>
<td>Nominations for additional supply</td>
<td>DUs nominate to APC-TMI for additional supply if contract exists</td>
<td>DUs submit their day-ahead additional supply need to the IMEM Operator</td>
</tr>
<tr>
<td>Price Determination for additional supply</td>
<td>Based on PSA</td>
<td>Based on day-ahead deficiency and supply offers</td>
</tr>
</tbody>
</table>
How will the IMEM obtain the information required to prepare the Day-Ahead Schedule?
Contracted Capacities

Merit Order Table for Real-Time Balancing

Load Curtailment Resource
10 MW @ Php 10,000/MWh

Embedded ROR Hydro
5 MW @ Php 3,000/MWh

Embedded Diesel Plant
15 MW @ Php 8,000/MWh

Cheapest to Most Expensive

Load Curtailment
Dispatch these Capacities
Won’t be Dispatched

Embedded ROR Hydro

In-Day System Demand
Day-Ahead System Demand
In-Day System Demand

Contracted Capacities

Interim Mindanao Electricity Market
Market Operations Recap

In the IMEM, untapped available resources will be centrally scheduled to meet the supply shortfall providing market-driven compensation for the scheduled capacities.

Pricing in the IMEM will be governed by market forces based on the available supply and submitted demand of DUs that is net of contracts.

The Generators and Load Curtailment Resources will be dispatched based on the merit order table determined day-ahead with premium provisions for In-Day Dispatch Service and dispatch variations.
Settlement Overview

- How will IMEM Resources be paid?
- How will payments to IMEM Resources be recovered from the IMEM Customers?
- What are the relevant dates in the billing and settlement process?
Settlement Overview

IMEM Resources

Determine All Payables for Billing Period
Transmit Payables for Billing Period

Interim Mindanao Electricity Market

IMEM Customers

Determine Payment for Billing Period
Collect Payment for Billing Period
Settlement Overview
Example

**IMEM Resources**

- 100 MWh
  - PhP 100,000
- 50 MWh
  - PhP 50,000
- 20 MWh
  - PhP 20,000

Total Payment to IMEM Resources = 100,000 + 50,000 + 20,000
Total Payment to IMEM Resources = PhP 170,000

**IMEM Customers**

- 80 MWh
- 10 MWh
- 80 MWh

Payment to IMEM = 80 x 1,000
Payment to IMEM = 80,000
Payment to IMEM = 10 x 1,000
Payment to IMEM = 10,000
Payment to IMEM = 80 x 1,000
Payment to IMEM = 80,000

Total Purchase from IMEM = 80 + 10 + 80
Total Purchase from IMEM = 170 MWh

Total Payment to IMEM = 80,000 + 10,000 + 80,000
Total Payment to IMEM = PhP 170,000

**Interim Mindanao Electricity Market**

IMEM Customer Price = Total Payment/Total Purchase
IMEM Customer Price = 170,000/170
IMEM Customer Price = PhP 1,000 / MWh
IMEM Resource Settlement

- **Energy**
  - Refers to the settlement of actual energy delivered or curtailed in MWh

- **Variation Adjustment**
  - Refers to the settlement of non-compliance to the Day-Ahead Schedule

- **In-Day Dispatch Service**
  - Refers to the settlement for In-Day Dispatch Adjustments of IMEM Resources
Customer Settlement

**Resources**
- Hourly Energy Payments
- Hourly Variation Adjustment Payments
- Hourly In-Day Dispatch Service Payments

**Customers**
- Hourly Customer Settlement Amount
- Premium Payment Allocation*

*Allocation of In-Day Dispatch Service Payments to IMEM Trading Participants is yet to be finalized

**All Participants**

Interim Mindanao Electricity Market
Example:
Example:

R1
20 MW @ Php 1,000/MWh

R2
20 MW @ Php 5,000/MWh

R3
20 MW @ Php 10,000/MWh

LCR1
10 MW @ Php 20,000/MWh

Expected Demand: 30 MW
Contracted Capacity: 20 MW
Buying from the IMEM: 10 MW

Expected Demand: 50 MW
Contracted Capacity: 35 MW
Buying from the IMEM: 15 MW

Expected Demand: 40 MW
Contracted Capacity: 15 MW
Buying from the IMEM: 25 MW

IMEM Day-Ahead Price = Php 10,000 / MWh

Total IMEM Demand = 10 + 15 + 25
Total IMEM Demand = 50 MW
Scenario: Ideal Case

**IMEM Offers**

- R4: 20 MW @ 20
- R3: 20 MW @ 10
- R2: 20 MW @ 5
- R1: 20 MW @ 1

**Actual**

- R3: 10 MW
- R2: 20 MW
- R1: 20 MW

**IMEM Demand**

- C3: 25 MW
- C2: 15 MW
- C1: 10 MW

**IMEM Demand** = 50 MW
**IMEM Day-Ahead Price** = PhP 10,000 / MWh
**Actual IMEM Demand** = 50 MW

**Resource**

<table>
<thead>
<tr>
<th>Resource</th>
<th>Energy</th>
<th>Variation Adjustment</th>
<th>In-Day Dispatch</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
<td>200,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>R2</td>
<td>200,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>R3</td>
<td>100,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>LCR1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>500,000</td>
<td>0</td>
<td>0</td>
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</tbody>
</table>

**IMEM Customer Price** = 500,000 / 50
**IMEM Customer Price** = PhP 10,000 / MWh

**Customer**

<table>
<thead>
<tr>
<th>Customer</th>
<th>Energy</th>
<th>Variation Adjustment</th>
<th>In-Day Dispatch</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>10 x 10,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>C2</td>
<td>15 x 10,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>C3</td>
<td>25 x 10,000</td>
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<td>0</td>
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<tr>
<td><strong>Total</strong></td>
<td>500,000</td>
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Interim Mindanao Electricity Market
### Scenario: C3 Consumes More

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<tr>
<th>Resource</th>
<th>Energy</th>
<th>Variation Adjustment</th>
<th>In-Day Dispatch</th>
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</thead>
<tbody>
<tr>
<td>R1</td>
<td>200,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>R2</td>
<td>200,000</td>
<td>0</td>
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<tr>
<td>R3</td>
<td>200,000</td>
<td>0</td>
<td>10,000</td>
</tr>
<tr>
<td>LCR1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>600,000</td>
<td>0</td>
<td><strong>10,000</strong></td>
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</tbody>
</table>

**IMEM Customer Price = 600,000 / 60**

**IMEM Customer Price = PhP 10,000 / MWh**

<table>
<thead>
<tr>
<th>Customer</th>
<th>Energy</th>
<th>Variation Adjustment</th>
<th>In-Day Dispatch</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>10 x 10,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>C2</td>
<td>15 x 10,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>C3</td>
<td>35 x 10,000</td>
<td>0</td>
<td><strong>Causer</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>600,000</strong></td>
<td>0</td>
<td><strong>10,000</strong></td>
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</tbody>
</table>

**Interim Mindanao Electricity Market**
Scenario: C3 Consumes Less

Pays for premium of IMEM Resource

IMEM Offers

R4 20 MW @ 20
R3 20 MW @ 10
R2 20 MW @ 5
R1 20 MW @ 1

Actual

R3 10 MW

Receives compensation for availability

<table>
<thead>
<tr>
<th>Resource</th>
<th>Energy</th>
<th>Variation Adjustment</th>
<th>In-Day Dispatch</th>
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</thead>
<tbody>
<tr>
<td>R1</td>
<td>200,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>R2</td>
<td>200,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>R3</td>
<td>0</td>
<td>0</td>
<td>10,000</td>
</tr>
<tr>
<td>LCR1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>400,000</td>
<td>0</td>
<td>10,000</td>
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IMEM Customer Price = 400,000 / 40
IMEM Customer Price = PhP 10,000 / MWh

<table>
<thead>
<tr>
<th>Customer</th>
<th>Energy</th>
<th>Variation Adjustment</th>
<th>In-Day Dispatch</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>100,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>C2</td>
<td>150,000</td>
<td>0</td>
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</tr>
<tr>
<td>C3</td>
<td>150,000</td>
<td>0</td>
<td>10,000</td>
</tr>
<tr>
<td>Total</td>
<td>400,000</td>
<td>0</td>
<td>10,000</td>
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IMEM Demand = 50 MW
IMEM Day-Ahead Price = PhP 10,000 / MWh
Actual IMEM Demand = 40 MW

Interim Mindanao Electricity Market
## Other Scenarios

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Dispatch Adjustment</th>
<th>Settlement Impact</th>
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<tbody>
<tr>
<td>IMEM Demand Forecast is higher than Actual</td>
<td>Increase supply of IMEM Resources</td>
<td>Customer that contributed to the forecast deviation pays for the premium of re-dispatched IMEM Resources</td>
</tr>
<tr>
<td>IMEM Demand Forecast is lower than Actual</td>
<td>Reduce supply of IMEM Resources</td>
<td>Facility on forced outage pays for the premium of re-dispatched IMEM Resources</td>
</tr>
<tr>
<td>Forced Outage</td>
<td>Increase supply of IMEM Resources</td>
<td>Facility on forced outage pays for the premium of re-dispatched IMEM Resources</td>
</tr>
<tr>
<td>IMEM Generator produces more than instructed</td>
<td>Reduce supply of IMEM Resources</td>
<td>IMEM Generator that produced more will pay for the premium of re-dispatched IMEM Resources</td>
</tr>
</tbody>
</table>
Example:
Load Curtailment Resources

Selling (Day-Ahead)

Expected Demand = 5 MW

Scheduled Demand = 3 MW

Offered Capacity = 2 MW

Capacity “Supplied” = 2 MW

Interim Mindanao Electricity Market
Load Curtailment Resources

Selling (Actual, Grid-Connected)

5 MW

3 MW

5 MW

2 MW

Sold 2 MW through the IMEM

Interim Mindanao Electricity Market
Load Curtailment Resources

Money Flow (Grid-Connected)

Pay for 5 MW

Pay for 2 MW

IMEM

Pay for 2 MW

Interim Mindanao Electricity Market
Load Curtailment Resources

Selling (Actual, Embedded)

Agreement to supply all power needs

5 MW

3 MW

3 MW

5 MW

2 MW

Sold 2 MW through the IMEM

Interim Mindanao Electricity Market
Load Curtailment Resources

Money Flow (Embedded)

Pay for 5MW

Pay for 2 MW

IMEM

Pay for 2 MW

Interim Mindanao Electricity Market
# IMEM Load Curtailment Resource vs Interruptible Load Program

<table>
<thead>
<tr>
<th>Feature</th>
<th>IMEM LCR</th>
<th>ILP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Potential Buyer</strong></td>
<td>Anyone connected to the Mindanao Grid</td>
<td>Host DU Only</td>
</tr>
<tr>
<td><strong>Design</strong></td>
<td>End-user submits IMEM Offer to curtail or deload. If price clears in the IMEM, End-user will be dispatched on its offer price.</td>
<td>DU and a Participating Customer agree on either partial or full deloading/disconnection for a period of time as determined by the DU.</td>
</tr>
<tr>
<td><strong>Payment</strong></td>
<td>Based on the IMEM Offer of the End-User</td>
<td>Based on the Generation Cost of Fuel, fixed Fuel Consumption Rate and DU Average Rate</td>
</tr>
</tbody>
</table>

Interim Mindanao Electricity Market
Billing and Settlement Process

Billing Period: 26th of the Month to 25th of the Next Month

IMEM Operator

+1D: Transmit Metered Quantities

+3D: Transmit Metered Quantities and Adjusted Metered Quantities

+6D: Declare Contract Quantities

+10D: Provide Prelim Settlement Statement

+18D: Provide Final Settlement Statement

25th of Next Month: Pay Bill

25th of Next Month + 3BD: Pay Trading Participants

IMEM Trading Participants

IMEM Resources

Before +6D: Coordinate Contract Quantities

IMEM Customers

Interim Mindanao Electricity Market
Payment Guidelines

Mode of Payment

• In Cleared Funds
• Through an electronic funds transfer facility provided by the IMEM Operator

Unpaid Amounts

• Will be applied a default interest (IMEM Rules Clause 5.4.6.5)
• Payment default is a ground for suspension
Prudential Security Requirements

Purpose

- To ensure the effective operation of the IMEM by providing a level of comfort that IMEM Trading Participants will meet their obligations to make payments
- The IMEM Operator may immediately draw on the security without need of prior consent

Amount and Form

- Must always be below the Maximum Exposure of the IMEM Trading Participant
- In Cash
Settlement Recap

IMEM Resources will be settled on three (3) areas: Energy, In-Day Dispatch Service, and Variation Adjustment.

Energy and Variation Adjustments will be recovered across all IMEM Customers. Recovery of In-Day Dispatch Service Payments is yet to be finalized.

The billing period is from the 26th of a month to the 25th of the next month with the payment for that billing period on the 25th of the following month after the billing period.
Metering Overview

Basis for Settlement

- Metered Quantities (MSP)
- Contract Quantities (IMEM Resources)
- Scheduled Targets (IMEM Day-Ahead Schedule)
- Dispatch Targets (Mindanao SO)
IMEM Metering Services Providers

Directly Connected to Mindanao Grid?

- Yes
  - Grid MSP
- No
  - Host DU

IMEM Member
Metered Quantities

Metering Services Provider

- Responsible for collecting and validating Metered Quantity

Basic Meter Requirements

- Metered Quantity for each IMEM Interval
- Metering Data can be stored for collection at the end of the billing period
Outline

- Introduction
- Governance and Regulatory Framework
- Registration and Membership
- Market Operations
- Settlement and Metering
- Disputes and Penalties

Interim Mindanao Electricity Market
Disputes

- Must be lodged within twelve (12) calendar months of the date of issuance of the relevant Final Settlement Statement (IMEM Rules Clause 5.4.3.2)
- Disputed amounts must be paid on the relevant deadline (IMEM Rules Clause 5.4.4.4)
Penalties

Classes

Automatic

Deviation from scheduled dispatch

Payment Default/Failure to Satisfy Requirements

Investigation Process

Imposed for Breach
Penalties

Classes

Automatic

Payment Default/ Failure to Satisfy Requirements

Imposed for Breach

Deviation from scheduled dispatch

Investigation Process

Interim Mindanao Electricity Market
Breaches

Failure of a generator to offer all available capacity

Failure to comply with obligations under the IMEM Rules or Manuals

Should not be due to payment default or failure to follow dispatch schedule
Penalties

Types of penalties imposable for breach

Financial
  - PhP10,000

Non-Financial
  - Warning/Reprimand
  - Suspension and Disconnection
  - Deregistration

Interim Mindanao Electricity Market
Penalties

Types of penalties imposable for breach

Financial
  - PhP10,000 / breach / facility

Non-Financial
  - Warning / Reprimand
  - Suspension and Disconnection
  - Deregistration

Interim Mindanao Electricity Market
Suspension and Deregistration

**Grounds for Suspension**
- Breaches of the IMEM Rules
- Failure to maintain to satisfy any requirement under the IMEM Rules
- Default in Payment

**Notice of Suspension**
- IMEM Operator sends written notice
- Notice is published in market information website

**Disconnection**
- IMEM Operator sends written request to Mindanao System Operator to disconnect
- Mindanao System Operator implements disconnection within 5 business days

**Deregistration**
- Failure to reconnect to the grid within 60 days from disconnection

Interim Mindanao Electricity Market
Outline

- Introduction
- Governance and Regulatory Framework
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- Market Operations
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- Disputes and Penalties
Important Dates

- Posting of Registration Requirements (15 May)
- Start of Registration (03 Jun)
- Start of Training (15 Jul)
- Start of Trial Operations (26 Aug)
- Start of Commercial Operations (26 Sep)

Public Consultations (04, 10 & 12 Apr)

Start of Commercial Operations (26 Sep)
End of Presentation