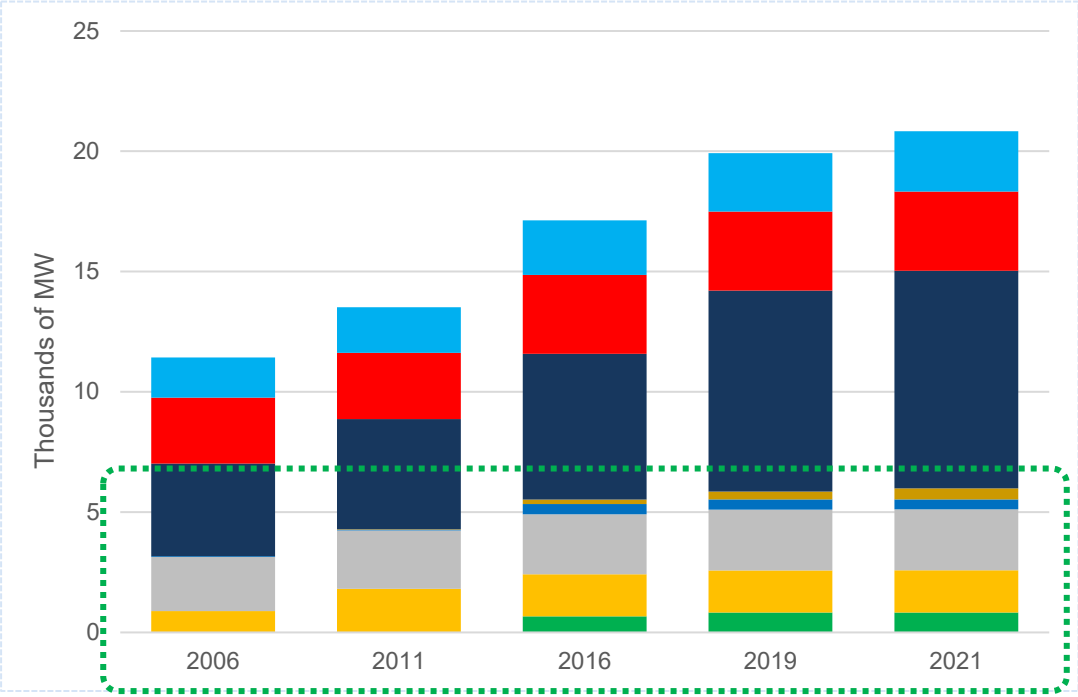
Philippine Electricity Market Corporation

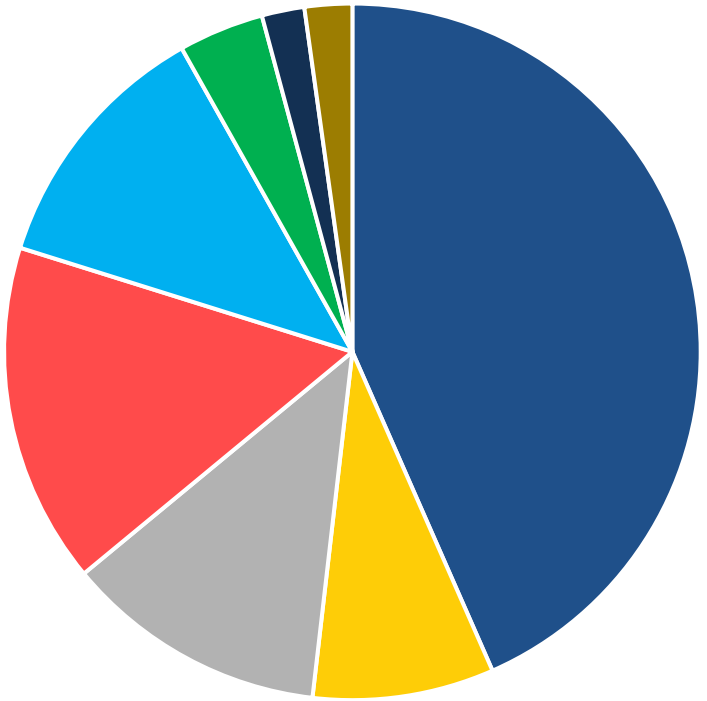
Policy Enhancements for the Participation of Battery and Other Energy Storage Systems in the Electricity Market

ASIA CLEAN ENERGY FORUM
15 June 2022

PHILIPPINE CAPACITY MIX

Annual Market Assessment Report 2020, PEMC, July 2021





- Coal, 9042 MW (43%)
- Natural Gas, 3295 MW (16%)
- Hydro, 2537 MW (12%)
- Oil, 2503 MW (12%)
- Geothermal, 1754 MW (8%)
- Solar, 826 MW (4%)
- Wind, 412 MW (2%)
- Biofuel, 460 MW (2%)

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RENEWABLE ENERGY (RE) RESOURCES

HYDRO
12%

WIND
2%

GEOTHERMAL
8%

BIOMASS
2%

SOLAR
4%

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BATTERY ENERGY STORAGE SYSTEMS (BESS)

CAPACITIES

LUZON
1493 MW

VISAYAS
343 MW

MINDANAO
280 MW

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WESM TECHNICAL COMMITTEE

Study on the Framework of Participation of Battery Energy Storage (BES) Systems in the WESM, 2017

BESS OPERATIONAL BENEFITS:

1. Improved short- and long-duration voltage quality
2. Reliable and cleaner back-up power for a limited time
3. Reduced need for peak generation capacity
4. More efficient use of renewable and other off-peak generation
5. Increased and improved availability of ancillary services

Partnership Agreement between

PEMC & ETP UNOPS

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ENERGY TRANSITION PARTNERSHIP

Powering Prosperity and Enabling Sustainability in South East Asia

Enhancing the Participation and Governance of Battery and Other Energy Storage Systems (ESS) in the Wholesale Electricity Spot Market (WESM)

EXISTING ESS PROVISIONS IN THE MARKET RULES

Registration	Stand-alone ESS facilities have dedicated registration
Scheduling	Market engine allows ESS to submit bidirectional bids/ offers
Dispatch	ESS follows dispatch instructions in the market engine in real time
Pricing and Settlement	ESS injections/ withdrawals are dealt with in the settlement methodology
Compliance	ESS are monitored separately for their generator and load functions

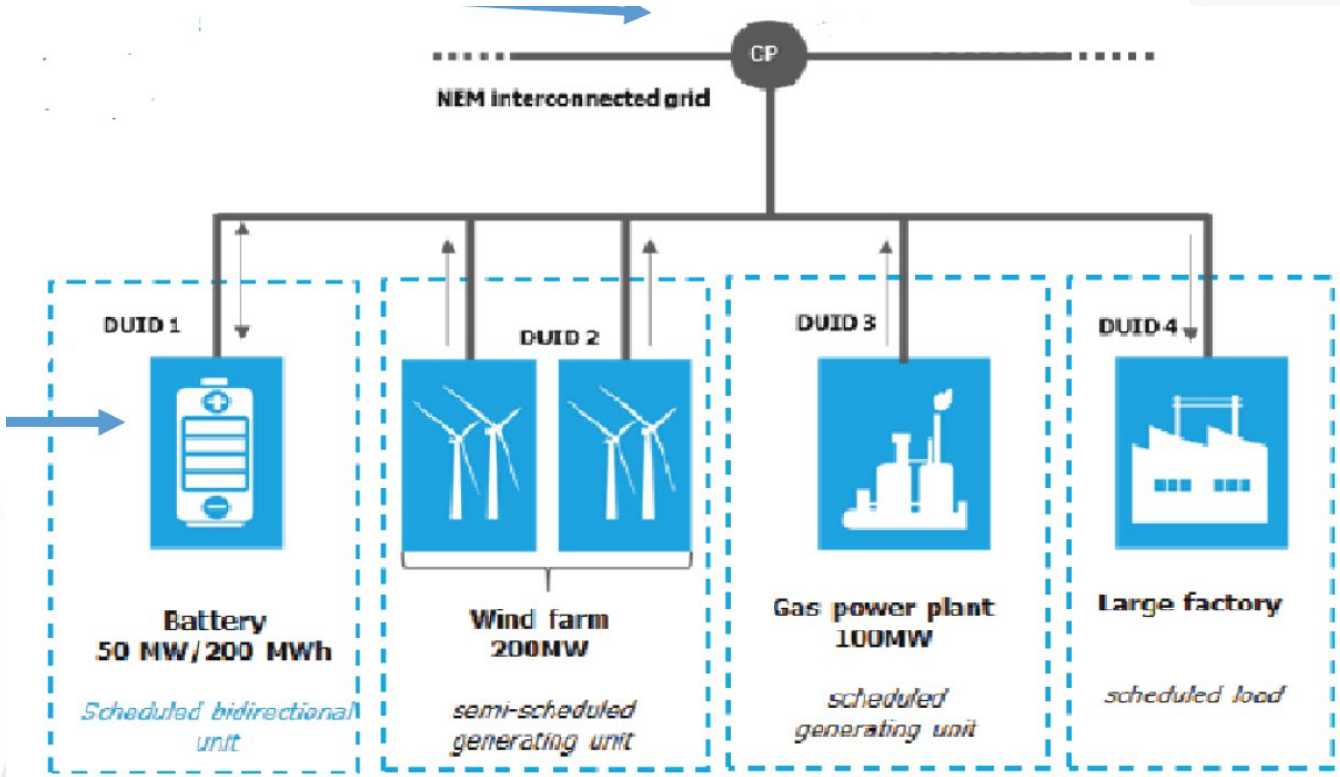
ESS INTEGRATION IMPROVEMENTS

- Streamlining the registration requirements for all all VRE-ESS configurations
- Disallowing ESS charging during a system emergency in order to lessen the supply-demand imbalance and therefore minimize market price spikes
- Enabling ESS to provide Ancillary Services even if the market for reserves is not yet operational
    - Facilitating the accreditation of ancillary services that ESS can provide
    - Enhancing the market protocols, if necessary

COMPLIANCE OF ESS FACILITIES

- Scheduling is done at the unit level for both the energy and AS markets. AEMO sends dispatch instructions to each unit

- The AER measures compliance with dispatch at the connection point or at unit level, as determined by an AEMO operating procedure



AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

NCL

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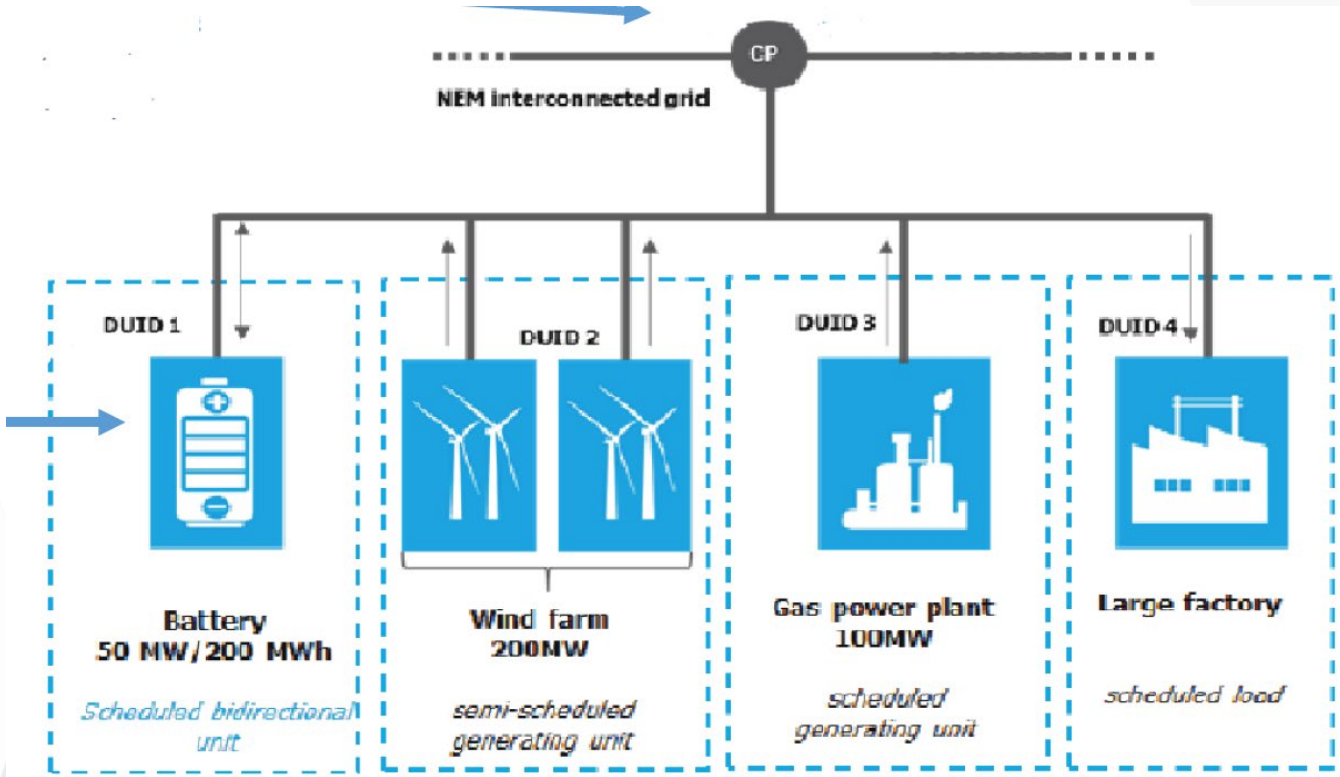

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Effective governance will deter disadvantageous ESS owner actions that can reverse the benefits introduced by RE integration in the spot market.

Image: ACEN

COMPLIANCE

- Monitor the withholding of energy to force prices to rise due to
  - Transmission constraints not alleviated by storage
  - Insufficient reactive power (with-held by storage)
  - Black Start (storage declared unavailable)

- Facilitating the collection of adequate telemetering of data for each unit and all ESS configurations, and validating compliance through mathematical logic

- Development of conformance standards for all ESS and generator configurations

Enforcing an effective governance framework for ESS will optimize the facilities' capabilities while maximizing the near-zero costs of clean generation technologies that participate in the market.

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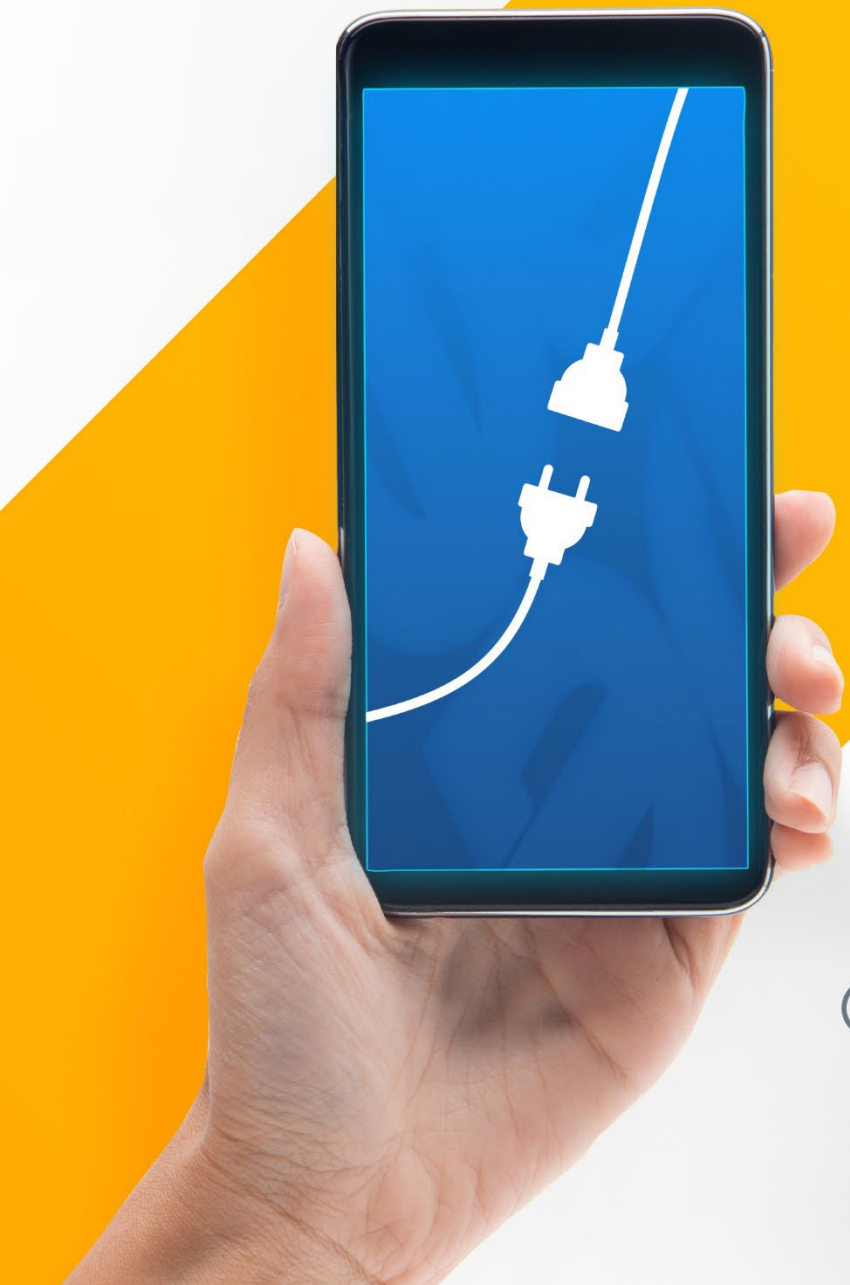

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