



Technical Committee 2021 Annual Report

January 2021 to December 2021

MARCH 2022

This Report is prepared by the
Philippine Electricity Market Corporation –
Corporate Planning and Communications Department
for the WESM Technical Committee

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1.0 INTRODUCTION

Pursuant to Section 3.3.1 of the Technical Committee (TC) Market Manual¹, this Report is submitted to provide the Committee's accomplishment, pending issues, and activities for the period covering January to December 2021. It shall also include the work plan of the Committee for the succeeding calendar year.

2.0 TC RESPONSIBILITIES AND MEMBERSHIP

2.1 Responsibilities

The responsibilities of the TC are set out in the WESM Rules² as follows:

- i. Monitor technical matters relating to the operation of the spot market,
- ii. Provide a report to the PEM Board on any matter of a technical nature relating to any WESM member which in the reasonable opinion of the Technical Committee, causes:
 - a. That WESM Participant to be unable to comply with the WESM Rules; or
 - b. Unintended or distortionary effects to the operation of the WESM;
- iii. Assist the PEM Board by providing expertise in relation to:
 - a. Information technology;
 - b. Metering technology and metering data; and
 - c. Any other matter of a technical nature relation to the spot market;
- iv. From time to time if the Technical Committee in its discretion deems necessary or appropriate, propose amendments to the WESM Rules in relation to technical matters, in accordance with chapter 8 with a view to:
 - a. Improving the efficiency and the effectiveness of the operation of the spot market; and
 - b. Improving or enhancing the prospects for the achievement of the WESM objectives; and
- v. Assist the Rules Change Committee in relation to its assessment of proposals of a technical nature to amend the WESM Rules under chapter 8.

¹Section 3.3.1 Technical Committee Market Manual- The TC shall prepare an Annual Report to be submitted to the PEM Board not later than three (3) months from the end of the calendar year. The report shall cover the Committee's accomplishments and pending issues and activities for the stated period. It shall also include the work plan of the Committee for the succeeding calendar year.

² WESM Rules Clause 1.7.2. *Responsibilities of the Technical Committee*

In addition, the TC is also tasked to conduct technical reviews and studies pursuant to the guidelines³ set forth in the TC Market Manual.

2.2 Membership

Pursuant to Section 8.01 of WESM Manual on Guidelines Governing the Constitution of the PEM Board Committees Issue 4.0, the TC shall consist of at least five (5) members with a representative from the following:

Composition	PEM Board-Appointed Member/Representative	Date of Appointment
Two (2) Independent Members	1. Jordan Rel C. Orillaza (Chairperson)	October 2019 to present
	2. Mario R. Pangilinan	November 2021 to present
	Former: Fortunato C. Leynes	November 2018 to July 2021
One (1) Member from the Grid Management Committee		
One (1) Member from the Distribution Management Committee	Former: Jaime V. Mendoza	November 2017 to October 2021
One (1) Member from the System Operator	Ermelindo R. Bugaoisan Jr.	August 2018 to present

In performing its responsibilities, the TC conducted regular monthly meetings and special meetings. For 2021, the TC conducted twelve (12) regular meetings and three (3) special meetings. The TC has conducted their meetings and discussions through an online platform due to the ongoing COVID-19 pandemic.

³ WESM-TCMM-002 Section 4.3 *Procedures*

3.0 2021 ACCOMPLISHMENTS

The Technical Committee (TC) submits this Annual Report covering the activities undertaken and accomplishments of the TC for 2021, and the proposed activities for 2022.

3.1 Market Surveillance Committee's (MSC) Request for Study

3.1.1 Review on the Methodology for Setting the Threshold for the Application of Price Substitution Methodology (PSM) during the Occurrence of Extreme Nodal Price Separation

The TC continued its review of the PEMC proposal to the Energy Regulatory Commission (ERC) in 2018 on the methodology in Setting the Threshold for the Application of the PSM for the Enhanced WESM Design in line with the MSC's request for study in March 2020.

In the revised Price Determination Methodology (PDM), the proposed Price Trigger Factor (PTF) is computed based on the absolute value of the ratio of the scheduled-weighted standard deviation of all nodal prices to the scheduled weighted average price. The change in the PTF formula is proposed to remove the Market Clearing Price (MCP) as the basis of nodal price spread. This is also in anticipation of the implementation of reserve co-optimization and to simplify calculation by covering all cases in a single formula. Given the change in formula, the threshold value of 1.2 in the current Market Management System (MMS) is revised to 0.2 subject to annual review.

Based on the calculations and various consultations with MAG and IEMOP to verify the process used and the results calculated by the TC, the TC submitted the following observations to the MSC on 31 May 2021:

1. Maximum of PTF may not be the basis in determining the new threshold. The rules should not be based on outliers but rather on central tendencies while recognizing variances.
2. Adding the threshold loss and threshold congestion is not recommended since the range of values are generally not comparable. As expected, the PTF congestion is generally larger than the PTF loss and should provide a better indicator of network condition.

In conclusion, the TC report stated that price substitution does not reflect well on the market, hence should be avoided. The current PSM is based on the idea that wide Locational Marginal Price (LMP) variance results from network congestion. However, such condition should not necessarily warrant a price substitution. The TC learned from IEMOP and MAG that the main driver for the PSM is the possibility of a spring-washer effect during extraordinary network congestion. In which case, the TC

recommended that a PSM be crafted based on an analysis on the Philippine grids' susceptibility to spring-washer effect.

PEMC has likewise submitted the results of the TC's calculation in compliance with the ERC's directive⁴ for PEMC to propose PTF for Luzon and Visayas, interim PTF for Mindanao and interim PTF for regional combinations with Mindanao.

3.1.2 Review on the Impact of Different Metering Configurations and the Appropriateness of the Procedures In-place in Deriving the Settlement Quantities of Generator Nodes

In February 2021, the MSC requested for the TC's assistance in reviewing the impact of different metering configurations and the appropriateness of the procedures in place in deriving the settlement quantities of generator nodes as these quantities affect final settlement data.

After a series of review of the relevant manuals and rules and consultations with MAG, the TC provided the following recommendations and opinion to the MSC, through its letter dated 17 March 2021:

1. There is a need to strengthen the compliance of Metering Service Providers (MSP) and Market Participants to the WESM Rules, Philippine Grid Code (PGC) and Department of Energy (DOE) policies regarding dedicated metering installations at every Market Trading Node (MTN) and the appropriate location of metering points relative to MTN in the WESM;
2. Post-processing of metered quantities should be kept to a minimum. Any sophisticated calculations, similar to what were presented to the TC, to produce the final metered quantity (MQ) should be avoided. This will improve participants' confidence in the market and its billing and settlement processes; and
3. Issues regarding non-updating of meters should be discussed separately. Any non-updating situations should require the issuance of Meter Trouble Reports (MTRs).

3.1.3 Review on Matters Related to System Operator (SO) – initiated Market Intervention (MI) Events

Through a letter dated 13 September 2021, the MSC requested assistance from the TC regarding the following concerns:

⁴ ERC Case No. 2017-042 RC, *In The Matter Of The Application For The Approval of the Price Determination Methodology (PDM) for the Wholesale Electricity Spot Market (WESM)*, December 2020

- A. Relative to the inclusion of commissioning plant GNP Dinginin Coal Fired Thermal Power Plant (CFTPP) Unit 1 in the available capacity calculation by the National Grid Corporation of the Philippines – System Operator (NGCP-SO) during the May 2021 billing month, the MSC requested for the review of:
1. SO criteria in the determination/calculation of available capacity and the subsequent declaration of red and yellow alerts.
 2. SO's test completion and acceptance procedure for plants that underwent test and commissioning (T&C) that are certified as ready for commercial operations.
- B. Relative to the market intervention events initiated by NGCP-SO on grounds of emergency or threat to system security, the MSC requested for the review of the adequacy and for clarification on Chapter 6, Section 6.3.1 Emergencies of the WESM Rules.

On 20 December 2021, the TC submitted a report to the MSC in response to their request. In the process, the TC observed that some of the concerns are better addressed by referring to the PGC instead of the market rules. For this reason, the TC findings were divided based on their relevance to the PGC and the WESM Rules, as follows:

A.1 Findings on Available Capacity Determination and System Alert Declarations

The TC deems that the inclusion of GNP Dinginin CFTPP Unit 1 in the determination of Available Generating Capacity (i.e., available capacity) is consistent with the PGC. The PGC also provided definitions for Red Alert and Yellow Alert and the subsequent declarations of Red Alert or Yellow Alert by NGCP-SO is part of its responsibility under the PGC Chapter 6 Section GO 6.4.1 “Grid Operation Notices”.

In general, the TC opined that the actions of NGCP-SO regarding the Significant Incidents in question are consistent with the relevant provisions of the PGC.

A.2 Findings on Power Plant Test and Commissioning

The PGC⁵ implies that the approval of the T&C procedure by NGCP is required prior to connection of the plant to the grid. In addition, Section 4.3.7 of the PGC enumerates the steps in the commissioning of the plant leading to final certificate approval of NGCP wherein it can be assumed that the last step is the certification by NGCP-SO of the readiness of the power plant for the commercial operation (i.e., excluding WESM registration and ERC COC).

⁵ Section 4.3.6.2, PGC 2016

With this, the TC opined that it is imperative to understand that the process for the T&C of power plants is difficult (even financially risky) not only for the NGCP-SO but also for the project owners and their contractors. There are two periods when failure rates are high for any power plant, at the beginning and at the end of its commercial operation (which is referred by reliability engineers as the “bathtub curve”). It is incumbent upon the NGCP-SO to facilitate the T&C process knowing the risk involved to boost the generation capacity of the grid in the long run. In so doing, the supply in the market also increases to the benefit of the customers.

B. Findings Relative to WESM Rules on Market Intervention

Chapter 6 of the WESM Rules clearly defines the grounds for *market intervention* declaration by NGCP-SO. It is further reinforced by the WESM Manual on System Security and Reliability Guidelines (2021).

The two *market intervention* cases in question using Emergency and Threat to System Security as a ground is well within the conditions of Section 6.3.1.2 items (a). Declaration of Yellow Alert and Red Alert and is enough to justify the *market intervention* declaration.

Based on the review provided above, the TC apprised the MSC that the concerns raised by MSC on two market intervention cases triggered by the outages of Dinginin 2 x 668-MW CFTPP is generally consistent with the provisions of the WESM Rules and the PGC. Together, the PGC and the WESM Rules have sufficiently provided instructions related to a Market Intervention related to Significant Incidents in the grid.

3.2 Support to PEM Audit Committee (PAC)

The TC assisted the PEM Audit Committee (PAC) in the selection of External Auditor for the joint conduct of the 7th Market Operational (MO) Audit and 4th Review of Metering Installations and Arrangements (RMIA).

The 4th RMIA on-site inspection was further moved to January 2022 due to the prevailing travel restrictions.

3.3 Review of Proposed Amendments to the WESM Rules and Manuals

As part of its mandates under the WESM Rules 1.7.2⁶, the TC reviewed and submitted to the RCC its comments to five (5) proposed amendments below:

⁶ WESM Rules 1.7.2 – TC Responsibilities- Assist the Rules Change Committee (RCC) in relation to its assessment of proposal of a technical nature

- i. Proposed Revisions to the PEM Board-Approved Amendments to Clarify Bilateral Contracts Accounted for in Settlements;
- ii. Proposed Amendments to WESM Manuals for Improvements to Market Resource Modelling and Monitoring;
- iii. Proposed Amendments to the WESM Rules and WESM Manual on Registration, Suspension and De-Registration Criteria and Procedures regarding De-registration and Cessation;
- iv. Proposed General Amendments to the WESM Rules and WESM Manuals regarding Market Operator and System Operator Procedures; and
- v. Proposed Amendments to the WESM Rules and Various WESM Manuals on Implementation of the Reserve Market; and

The TC has likewise attended two (2) RCC Meetings to participate in the deliberation of various proposed amendments.

3.4 Attendance to PEMC Membership Meetings and other Market Participants' Events

The TC attended and actively participated in the following events organized by PEMC and other stakeholders:

1. PEMC Annual General Membership Meeting held on 21 July 2021; and
2. IEMOP's Market Participants' Updates held on 27 May 2021 and 26 November 2021.

4.0 ONGOING ACTIVITIES

4.1 Proposed Distribution System Operator (DSO)-Managed Network

The TC continued its task to identify potential technical issues that may affect the operation of WESM Mindanao and to recommend possible solution to address such potential issues specifically on the participation of embedded generators in the WESM.

Based on the activities conducted by the TC in 2020, the TC acknowledged the critical role of the Distribution Utility (DU) in the participation of EGs in the WESM. Since EGs are connected to the Distribution System and indirectly connected to the Transmission System, the TC proposed the role of a Distribution System Operator (DSO).

The TC proposes that the DU should be responsible in the participation of their EGs in the WESM. In the proposal, the DU acts as the DSO to keep the operation of the distribution system while the

Transmission System Operator (TSO) is responsible for the operation of the Grid. EG's coordination with the MO and the TSO shall be coursed through the DSO. This may include submission of net generation offers, dispatch schedules and dispatch instructions, among others.

The TC initially presented this proposal to the DOE, ERC and other WESM Mindanao Stakeholders during the 22nd WESM Mindanao Readiness Assessment (WMRA) Meeting held on 24 March 2021 to gather comments on the subject proposal.

Following recommendation of the MRSC, the TC also presented the proposal to the Office of the Chief Governance Officer on 18 August 2021 to gather comments and request approval to endorse the subject proposal to the PEM Board for approval.

To address one of CGO's concern during the discussion the TC, the TC conducted a survey for embedded generation in Mindanao in October 2021 to determine the number of EGs who have the capacity and intention to provide supply to the grid. Twenty EG have responded to the TC survey wherein 35% of the respondents with potentially 225.28 MW of EG capacity intend to supply outside their host DU and who may benefit from a DSO-managed procedure.

The TC is in the process of finalizing the proposal by first quarter of 2022.

4.2 Proposed Framework for Battery Energy Storage System (BESS)

With the recent development on the signing of partnership agreement between PEMC and the United Nations Office for Project Services (UNOPS) through the Southeast Asian Energy Transition Partnership (ETP) held online on 25 November 2021, PEMC received a technical assistance from UNOPS which includes a study on the establishment of a framework for the coordinated operations and governance of BESS and other ESS in the power grid. This covers the TC's earlier proposed activity to study BESS participation in the WESM. As such, the TC agreed to be involved on this consultancy project by providing inputs to the report of the Consultant instead of having a separate study.

4.3 Study on Demand-Side Bidding in the WESM

The TC continued its study on Demand-Side Bidding (DSB). The TC finalized and published the consultation paper on the PEMC website on 23 March 2021. The consultation paper aimed to:

1. Provide information and background on demand-side bidding; and
2. Gather information on the interest and preparedness of market participants on demand-side bidding.

To gather information on the interest and preparedness of market participants on DSB, the TC conducted a consultation via an online survey form that was sent to direct and indirect WESM Members. The consultation from 23 March 2021 to 30 April 2021; 54 responses were gathered from various companies as follows:

Membership Category	No. of Companies
PDU	11
EC	16
RES	19
DCC	3
CC	5
Total	54

Based on the results of the consultation, majority of the respondents claimed basic to no knowledge on DSB, including its benefits and risks. Still, some respondents recognized that customers may gain benefits from this market feature if policies and rules on the participation in DSB are properly laid out.

Currently, no one from WESM participants has participated in DSB by submitting customer demand bids. This can be attributed to the lack of knowledge and inadequate policies on the implementation of DSB in the WESM.

In view of the foregoing, the TC recommended for PEMC to conduct the following activities to promote and encourage participation in DSB in the WESM even if it is still voluntary:

1. In coordination and consultation with the Department of Energy (DOE), ERC, Independent Electricity Market Operator of the Philippines (IEMOP), and stakeholders, propose rules on DSB implementation including among others rules related to cost implications, incentives, and penalties for non-compliance.
2. Conduct trainings, information education campaigns, and other related activities to raise participants' awareness on DSB.

The results of the TC consultation were published on the PEMC website on 16 July 2021. PEMC also adopted the results of the TC consultation as PEMC's compliance to the ERC's directive for PEMC to study or conduct a survey on the customers' awareness of, interest in, and preparedness for DSB.

The TC then continued its study on DSB by determining the benefits of DSB. The TC conducted various consultations with various organizations to gather inputs as regards their experience in DSB and other demand-side participation programs.

1. Discussion with Mr. Jaime Patinio of SM Prime Holdings held on 11 August 2021
2. Discussion with Nord Pool held on 18 August 2021
3. Discussion with Energy Market Company (EMC) of Singapore on 15 September 2021

Based on the consultations, the TC was asked on the potential benefits of demand response to market prices. The TC is providing a way to estimate the financial benefits of demand-side bidding in the WESM based on historical demand and prices in the WESM.

The TC is currently finalizing their report as a follow through to the market participant consultation conducted by the TC last March 2021. The TC report aims to:

1. Provide additional background information on DSB within the context of the Philippine electric power industry
2. Provide a method to estimate the potential financial benefits of DSB to the WESM
3. Provide general recommendations on the implementation of DSB in the WESM for the consideration of PEMB.

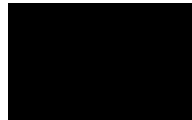
The TC will submit the subject report to the PEM Board within the first quarter of 2022.

5.0 TC 2022 WORK PLAN

Annex A provides details of the TC's program of activities for 2022 consistent with PEMC's Corporate Strategic Plan for 2022-2024, which was approved by the PEM Board on 26 January 2022.

Submitted by:

TECHNICAL COMMITTEE



JORDAN REY C. ORILLAZA
Chairperson




MARIO R. PANGILINAN
Member



ERMELINDO R. BUGAOISAN, JR.
Member

ANNEX A: TECHNICAL COMMITTEE 2022 WORK PLAN

Legend:  Submission/Completion of Report
 Regular Activity

	ACTIVITIES	OUTPUTS	2022			
			Q1	Q2	Q3	Q4
POWER & MARKET						
1	Study on the Embedded Generators' (EG) Participation in the WESM	Introducing Distribution System Operator (DSO) to the Philippine Electric Power Industry				
2	Study on Demand-side Bidding (DSB) in the WESM	TC Position on the Potential Benefits of Demand Side Bidding in the WESM.				
3	Studies on VRE integration and other new technologies	Provide inputs on the Study on the Establishment of a Framework for the Coordinated Operations and Governance of Battery Energy Storage Systems and Energy Storage Systems				
4		Study on VRE participation in WESM				
5	Study on the Viability of EG as Insurance Generators in Highly Urbanized Cities	Discussion Paper on the Viability of EG as Insurance Generators in Highly Urbanized Cities				
6	Study on the implementation of Day-ahead Market in the WESM	Discussion Paper on Day-ahead Market in the WESM				
7	Review of the threshold for price substitution (Price Trigger Factor)	Assessment and Endorsement of the Proposed PTF to the PEM Board				

	ACTIVITIES	OUTPUTS	2022			
			Q1	Q2	Q3	Q4
EFFICIENCY & GOVERNANCE						
8	Assist PAC in the conduct of metering arrangements review	Assistance to the PAC in the site inspection activities, as required Submission of comments/suggestions to the RMIA reports, depends on the audit timelines				
9	Regular conduct of TC Meetings (every 1st Wednesday of the month)	Participation to TC Meetings				
10	TC Annual Report and 2022 Work Plan	Submission and publication of TC 2021 Annual Report and 2022 Work Plan				
11	Attend PEMC events and trainings, as required	Attendance to PEMC Membership meetings, WCO Summit, trainings, as scheduled				
12	Provide comments on proposed amendments to WESM, REM Rules and various Manuals to the RCC or RGC, as applicable	Comments to proposed amendments to Market Rules and various Manuals				
13	Submit proposed amendments to the RCC as a result of market studies or best practice recommendations	Review of the WESM Manual on Market Network Model Development and Maintenance - Criteria and Procedures				