

TC-ANREP-2017

Technical Committee 2017 Annual Report

JANUARY 2017 TO DECEMBER 2017

MARCH 2018

This Report is prepared by the Philippine Electricity Market Corporation-Market Assessment Group for the Technical Committee.



**Philippine Electricity
Market Corporation**

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The Technical Committee (TC) submits this Annual Report covering the activities undertaken and accomplished by the TC for the year 2017. This report also presents the proposed activities of the TC for the year 2018.

The Market Assessment Group (MAG) provides support to the TC in performing its functions and obligations under the WESM Rules and applicable WESM Manuals.

I. 2017 ACCOMPLISHMENTS

A. Conduct of Technical Studies and Reviews

A.1. Study on the Framework of the Participation of Battery Energy Storage Systems in the Market

The TC finalized its study on the Framework of the Participation of Battery Energy Storage Systems¹ (BESS) in the Market on 05 January 2017 and had the same transmitted to the PEM Board on 20 January 2017 and thereafter published in the WESM Information Website on 23 January 2017.

The TC recommended the categorization of BESS as a Non-Generator Resource² (NGR) in its participation in the WESM. In the absence of this categorization in the current version of the WESM Rules, the TC recommended, in the interim, that BESS register as both a generator and a customer in the WESM. The TC likewise addressed the concerns regarding the monitoring of BESS' state of charge and its participation in the market.

In line with the recommendations of the TC in this study, several other activities emanated as follows:

1. Presentation of the Study on the Framework of the Participation of Battery Energy Storage Systems in the Market

¹ The details of the study are provided in the [TC-ANREP-2016](#).

² Adopted from California Independent System Operator (CAISO) and from the terminologies used by SIEMENS for the New Market Management System

Upon the request of the Department of Energy, the Energy Regulatory Commission (ERC), the Distribution Management Committee (DMC) and the Grid Management Committee (GMC), the TC scheduled a series of presentation³. The ERC commissioners who were present found merit in the TC's recommendation to review the ERC Resolution No. 09 Series of 2015 – *A Resolution Adopting the Grid Management Committee's Recommendations Classifying the Battery Energy Storage System as a New Source of Frequency Control Ancillary Services and the Exemption thereof from the Conduct of System Impact Study* providing exemption to BESS from Grid Impact study. At the very least, the TC recommended that a threshold may be set for such exemption. Hence, the commissioners request for a formal transmittal of the report for the Commission to act on it. The TC submitted its recommendation to the ERC through its letter to the ERC dated 24 April 2017.

Upon conclusion of the series of presentations, the TC noted the issues raised and agreed to include the same in its ongoing review of the WESM Rules and Market Manuals in consideration of the imminent participation of battery energy storage systems in the market.

2. Proposed Amendments to the WESM Rules and Market Manuals on the Participation of Non-Generator Resources (NGR) (i.e. Battery Energy Storage System) and Pumped-Storage Units (PSU) in the WESM

As part of the recommendation of the TC in its published Study on the Framework of the Participation of Battery Energy Storage Systems (BESS) in the Market, the TC commenced with the review of the WESM Rules and relevant Market Manuals that needed to be revised to effect the implementation of the participation of BESS in the Market. The TC mapped out the various manuals that needed to be reviewed to address the various issues/concerns with regard to the registration, participation, mode of operation and modelling of BESS in the WESM. Parallel to the said review, the TC was informed that along with the amendments for the

³ Presentation with the DOE – 23 March 2017; Presentation with the ERC, GMC and DMC – 19 July 2017

implementation of enhancement to WESM Design and Operation, PEMC also considers the participation of Limited Energy Sources (LES) in the said implementation. Noting the same intention of both parties, TC requested for a coordination meeting with PEMC in order to submit a common set of proposed amendments the proposed amendments to the Rules Change Committee. The agreements were as follows:

- On the terms of reference for the category where BESS shall be categorized, PEMC recommended to use LES which is currently used in the new Market Management System (MMS). On the other hand, TC's recommendation was to use Non-Generator Resource (NGR) as the term of reference since the definition, as adopted from the California Independent System Operator (CAISO), emphasizes that this equipment does not operate as a Generator which has a rotating machine converting mechanical to electrical energy. Such characterization and models for rotating generators do not apply to this resource. The parties then agreed to use the term NGR in the proposal;
- On the registration of NGRs, the TC proposed that the same be categorized under Generation Company. This position is consistent with that of PEMC's which also opined that due to the absence of a provision for a Certificate of Compliance (COC) for NGRs, BESS shall in the meantime be categorized under a Generation Company. It was further clarified by PEMC that the New MMS allows for the generators to submit negative Megawatt offers through its Market Participants' Interface (MPI) – clearing out the issue on how the NGRs shall withdraw energy from the grid. Likewise, PEMC recommended to cover PSUs in the proposed amendments;
- On the operation of NGRs, PEMC and TC agreed that NGRs must observe the dispatch conformance standards when it operates as a generator. NGRs must also submit offers similar with conventional generators except that the offers of NGRs may start form a negative quantity to represent its projected maximum consumption;

- On the modelling of NGRs and PSUs, PEMC proposed for the same to be represented in the market network model having its own market trading nodes.

Upon finalization of the proposed amendments, the TC intended to submit the same to the Rules Change Committee to facilitate the necessary rules change procedures.

A.2. Study on the Operation of the Reserve Market and the Integration of Variable Renewable Energy Resources

The TC continued with its study on the Operation of the Reserve Market and the Integration of Variable Renewable Energy (VRE) Resources. During the period covered, the following activities were done by the committee:

- The TC established the intention of the study which aims to: 1) discuss the development of Reserve Market implementation in the Philippines; 2) review the behavior of VREs; and 3) consider the effects and challenges of the participation of VREs in the WESM;
- As part of the TC's assessment on the integration of the VRE Resources in the grid, the committee agreed to look into the performance of the same through the measures set by the WESM Manual on Forecast Accuracy Standards⁴ specifically on the computation of mean absolute percentage error (MAPE)⁵;
- Relevant to the preceding activity, the TC also looked into the procedures in forecasting of nomination for VRE Resources to consider its effect on the same;
- The TC also discussed about the challenges that the WESM shall face upon integration of VRE resources in the grid. One of the notable challenges is regarding the variability VRE resources which affects the supply in the grid. By looking at available data, the

⁴ WESM Manual on Forecast Accuracy Standards *Section 4.1 Standards*

⁵ WESM Manual on Forecast Accuracy Standards *Section 4.2 Calculations*

TC is of the position that the commencement of the reserve market may address the fluctuation of generation from VRE resources.

Upon conclusion of the said study, the same will be submitted to the PEM Board copy furnished the Head of PEMC and shall be published in the market information website for the public's consumption.

A.3. Review of PEMC – Corporate Planning and Communication Department's Issues Paper on Embedded Generation in the Market

As a background, the TC started its study on the participation of embedded generators in the WESM as recommended by the DOE representative during the TC's planning session in 2016. Soon after, the TC was informed that PEMC has submitted to the DOE a discussion paper on the same matter. The TC then agreed to put its study on hold and include in its 2017 Work Plan the review of the PEMC – Corporate Planning and Communication (CPC) Department's Issues Paper on Embedded Generation in the Market.

In the TC letter submitted to the DOE last 20 February 2017⁶, the TC enumerated various issues in the participation of embedded generators in the WESM as well as provided its comments on PEMC – CPC's issues paper on the same, as follows:

1. TC's Issues on the Participation of Embedded Generation in the WESM

- There are no clear provisions and established protocol on the role of embedded generators as ancillary services providers in the WESM. Also, there may be possible metering issues particularly on billing and settlement;
- There may issues on the reliability of embedded generators considering that these are connected to the distribution network while the System Operator may need to access them; and

⁶ COR-EXT-TC-17-01 *Issues on the Participation of Embedded Generation in the WESM*

- There may be issues on the compliance monitoring of embedded generators.

2. Comments to PEMC-CPC's Discussion Paper on the Participation of Embedded Generation in the WESM

The TC expressed its general agreement with the discussions and recommendations of PEMC-CPC in its paper except on the recommendation *to have a more comprehensive policy to support the current practice, allowing for the assignment of embedded generators to the nearest node as provided in Section 6.4.7 of the Market Network Model Development and Maintenance – Criteria and Procedures Issue 3.0*⁷.

The TC recognizes that distribution utilities (DU) are not yet modelled in the market network model (MNM), although major DUs such as Manila Electric Company (MERALCO) and Visayan Electric Company (VECO) have been identified and recommended to already be modelled in the MNM, due to its impact in pricing and scheduling. The TC also recognizes that due to the unavailability of the DU network data, embedded generators are assigned to the nearest node in the market network model.

The TC expressed that it would rather support various efforts to require the DUs to incorporate its network models in the MNM, instead of agreeing with the recommendation to issue a policy to legitimize the practice.

⁷ 6.4.7 If the Trading Participant is a dispatchable generator connected to a distribution system (embedded facility), then its market trading node shall be assigned to the nearest node represented in the market network model. Adjustments to the real-time monitoring of the Customer market trading node shall be made accordingly to reflect the total power consumed by that Customer market trading node accounting for the power generated by the dispatchable generator situated downstream.

B. Review of TC Business Procedures

B.1. Review of the TC Internal Rules

As part of its responsibility, the TC reviewed its Internal Rules Issue 3.0 with the following objectives in mind: (a) to achieve consistency of the terminologies used throughout the Internal Rules; (b) to uniformly apply among all TC members the requirement for the submission of an official written explanation addressed to the PEM Board upon accumulating three (3) consecutive absences without prior notice; (c) to implement a majority vote rule for TC decisions during meetings constituting a quorum; and (d) to remove the certification of the Vice President of Market Assessment Group (MAG) on the amended Internal Rules of the TC for consistency with the Internal Business Procedures of MAG. The TC thereafter promulgated the revised TC Internal Rules (Issue 4.0) effective 15 June 2017⁸.

C. Review of Proposed Amendments to the WESM Rules and Manuals

As part of the TC's mandate under *WESM Rules Clause 1.7.2 e⁹*, the TC reviewed the published proposed amendments by the Rules Change Committee to the Market Information website which invites all WESM stakeholders to provide comments on the same. Among the said proposals, the TC sent comments on the following:

C.1. Proposed Amendments to the WESM Rules and Retail Rules and Various Manuals for the Implementation of WESM Design Enhancements

Following the invitation of the Rules Change Committee to submit comments on the published proposed amendments related to the implementation of WESM Design enhancements, the TC submitted its comments specifically expressing its reservations on the proposed error thresholds applied in the dispatch compliance criteria. The TC is of the opinion that the apparent relaxation from the current $\pm 3\%$ dispatch tolerance of the RTD,

⁸ TC Resolution No. 2017-01 *A Resolution Adopting the Technical Committee Internal Rules Issue 4.0*

⁹ WESM Rules Clause 1.7.2 *Responsibilities of the Technical Committee*

to the proposed 3% (small error threshold, SET) or 5% (large error threshold, LET) of the maximum energy offer submitted by the trading participant for the particular dispatch interval, can have significant effect on the ancillary service requirement. Also, the TC clarified that a generating company should follow its dispatch schedule and observe a linear ramp rate during the hour ahead projection and/or dispatch interval.

The TC finalized and submitted its comments to the Rules Change Committee on 08 February 2017¹⁰ for its consideration.

C.2. Proposed Changes to the Market Operator Information Disclosure and Confidentiality Manual regarding the Implementation of WESM Design Enhancements

During the TC's meeting held on 04 May 2017, the TC reviewed the proposed amendments to the WESM Manual on Market Operator Information Disclosure and Confidentiality regarding the Implementation of WESM Design enhancements. On the non-exhaustive list of information to be published on the market network model technical data and parameters, the TC commented on the specified data format (PSS/E raw) which is particular to a proprietary software. The TC recommended for the formatting to be in a more generic format. Meanwhile, regarding the details of the data to be published publicly, the TC inquired if the same include models for sub-transmission and distribution levels.

The TC submitted its comments to the Rules Change Committee on 29 May 2017.

D. Support to PEM Audit Committee

Pursuant to its mandate in the WESM Rules, the TC continued to provide assistance to the PEM Audit Committee in the conduct of the joint 6th Market Operational (MO) Audit and 3rd Review of Metering Installations and Arrangements (RMIA). As member of the Audit Technical Working Group (TWG), the TC participated in the PAC- Audit TWG

¹⁰ COR-IN-TC-17-02 *TC Comments on the Proposed Amendments to the WESM Rules and Retail Rules and Various Manuals for the Implementation of WESM Design*

meetings held during the covered period. Following are the activities done by the Audit (TWG) for the year 2017:

1. Evaluation of financial and technical proposals submitted by Intelligent Energy Systems (IES) for the Independent Software Certification Audit of the NMMS and CRSS;
2. Close-out meeting with the auditees/process owners and external auditor for the 6th Market Operations (MO) Audit and 3rd Review of Metering Installations and Arrangements (RMIA3)¹¹; and
3. Review of the reports for the 6th Market Operations (MO) Audit, 3rd Review of Metering Installations and Arrangements (RMIA3), NMMS Software Certification Audit and the CRSS Software Certification Audit.

E. Conduct of Consultation Meetings

E.1. Demand-side Bidding and Demand Response

In its effort to keep itself updated on matters that concern the electric power industry, the TC requested a representative from PEMC – Corporate Planning and Communications Department to present updates on the status of demand-side bidding and demand response implementation in the WESM during its meeting held on 23 March 2017.

The TC noted the information and considered the matter subject of presentation for inclusion in the list of topics to be reviewed/studied by the committee.

E.2. Renewable Energy Certificates Market and Renewable Portfolio Standards

Upon the request of the TC, the PEMC – Corporate Planning and Communications Department presented updates on Renewable Energy (RE) Certificates Market and Renewable Portfolio Standards, the implementation of which aim to aid in the achievement of the targeted 30% RE resource installed capacity in the grid of the

¹¹ 6th MO Audit – 23 October 2017; 3rd RMIA – 9-11 & 27 October 2017

Philippines. It was elaborated by PEMC that a percentage of the energy requirements of distribution utilities, retail electricity supplier and directly-connected customers will be enforced to be sourced from RE resources by the DOE but the level of percentage of the said requirement would still be determined. In cases when Trading Participants will not be able to contract or acquire energy from RE resources, this is where RE Certificates Market comes in. With regards the operation of the RE Certificates Market, the TC was informed that the same is a separate market from the energy market and that PEMC would also be the operator of the same.

The TC noted the information and considered said topic for inclusion in the list of topics to be reviewed/studied by the committee.

F. Participation in Department of Energy's Performance Assessment and Audit Team

Pursuant to the Section 3 of the DOE Department Circular No. 2017-05-0008¹² which provides the guidelines for the Creation of Power Generation, Transmission Systems and Distribution Systems' Performance Assessment and Audit Task Forces, the TC was requested to nominate one (1) representative per task force. During the DOE workshops held on 28, 31 July and 01 August 2017 at the Legend Villas, Mandaluyong City, and Engr. Fidel D. Dagsaan Jr. attended the said workshop and provided inputs on the framework of the said assessment and audit. Prof. Jordan Rel C. Orillaza likewise participated in the public consultation held on 21 September 2017 at the same venue.

¹² DOE Department Circular No. 2017-05-0008 *Providing for the Policies and Guidelines on the Conduct of Performance Assessment and Audit for All Power Generation, Transmission and Distribution Systems and Facilities*

Activities in Sections **A.2**, **D** and **F** were included as carried-over activities for 2018 since discussion and deliberations on the said topics are still ongoing. **Section II** provides the details of the TC 2018 Work Plan which contains said carried-over activities¹³ as well as new activities for the 2018, as follows:

II. 2018 WORK PLAN

Item	Activity	Requested by	Period Covered ¹⁴	Responsible Lead Person/s	Status	Remarks/Deliverables
1.	Review of TC 2017 Annual Report	TC	Q1	TC	(new)	To be submitted to the PEM Board
2.	Study on Operation of Reserve Market and Integration of VRE Resources	TC	Q2	FDD	Carried-over activity	Submit report to PEM Board
3.	Proposed Amendments to the WESM Rules (Battery Energy Storage)	TC	Q1	JCO	Done	Submitted to the RCC on 29 January 2018
4.	Joint 6 th MO Audit and 3 rd Review of Metering	PAC	Q1	JVM/JCO	Carried-over activity	Assist PAC/ Participate in Meetings Conducted for the Joint 6 th MO Audit and 3 rd RMIA

¹³ Items 1 and 7 in the 2017 Work Plan are carried-over activities from the 2016 Work Plan, while item 2 is the action item for the Study on the Participation of Embedded Generation in the Market (Section A.4).

¹⁴ "Period Covered" refers to the commencement and completion of each activity

Item	Activity	Requested by	Period Covered ¹⁴	Responsible Lead Person/s	Status	Remarks/Deliverables
	Installations and Arrangements (RMIA)					
5.	Review of the Results of 3 rd Review of Metering Installations and Arrangements (RMIA)	TC	Q2	JVM	(new)	Submit recommendations to PAC Initiate Rules Change Proposals, if necessary
6.	Review of the Resiliency Standards, Business Continuity Plans, Contingency Plans and best practices in other jurisdictions	TC	Q4	JCO	(new)	Related to Emergency Response and Contingency Plan of Generating Facilities and Related Facilities in the Event of Earthquakes and Similar Natural Events.
7.	Conduct of New Study/ies	TC or any requesting party		TC	(new)	Submit report to PEM Board and/or requesting party.
	a. Separate Study on Integration of VRE	TC	Q2 – Q3	FDD		Submit report to the PEM Board.
8.	Comments to Various Proposed Amendments	RCC	Q1 – Q4	TC	(continuing)	Submit comments or proposed amendments to RCC
9.	Participation in Market Participants' Update, Open House, etc.	PEMC-CPC	(CPC timeline)	TC	(recurring)	Participate as resource speaker, if required

Item	Activity	Requested by	Period Covered ¹⁴	Responsible Lead Person/s	Status	Remarks/Deliverables
10.	Conduct of Training/Seminar	Any requesting party	Q3	TC	(new)	Conduct of training or seminar.
11.	Others (as may be directed by DOE or PEM Board and as may be requested by PEMC and by other Governance Committees)	DOE/ PEM Board or any requesting party		TC	(continuing)	
	a. DOE Performance Assess and Audit Team	DOE		JCO, JVM, FDD	On-going	Contribute as members of the PAAT-PGF, PAAT-DSF and PAAT-TSPO

III. MEMBERSHIP

For 2017, the members of the Technical Committee ("TC") were as follows:

1. Prof. Jordan Rel C. Orillaza (Independent)
2. Engr. Jaime V. Mendoza (DMC representative)
3. Engr. Fidel D. Dagsaan, Jr. (SO representative)

Prof. Jordan Rel C. Orillaza was appointed as independent member of the TC on 01 July 2013 and was designated as chairperson on 28 April 2015. The SO representative, Engr. Fidel D. Dagsaan, Jr., was appointed on 28 April 2015. Engr. Jaime V. Mendoza was appointed as DMC representative on 24 June 2010.

IV. RESPONSIBILITIES

The main role and responsibilities of the TC are set out in the WESM Rules as follows:

1. Monitor technical matters relating to the operation of the spot market,
2. 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;
3. 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 relating to the spot market;
4. 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
- 5. Assist the Rules Change Committee in relation to its assessment of proposals of a technical nature to amend the WESM Rules under chapter 8.

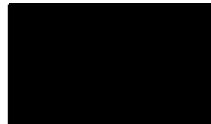
In addition, the TC is also tasked to conduct technical reviews and studies pursuant to the guidelines set forth in the TC Market Manual.

The TC conducted thirteen (13) meetings¹⁵ in 2017. The TC deliberated on a number of matters during its meetings in line with its responsibilities as provided in the WESM Rules.

¹⁵ At any time and as may be practicable, the TC may conduct meetings more than once a month

Submitted By:

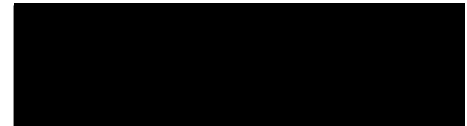
Technical Committee



Jordan Rei C. Orillaza
Chairperson



Jaime V. Mendoza
Member



Fidel D. Dagsaan, Jr.
Member

(Vacant)
Member

(Vacant)
Member