

TC-ANREP-2015

Technical Committee 2015 Annual Report

January 2015 to December 2015

Market Assessment Group
March 2016

TABLE OF CONTENTS

I.	2015 ACCOMPLISHMENTS	1
	A. Conduct of Technical Studies and Reviews	1
	B. Proposals to WESM Rules and Market Manuals	10
	C. Review of Proposed Amendments to WESM Rules and Market Manuals	11
	D. Support to PEM Audit Committee	16
II.	2016 WORK PLAN	17
III.	MEMBERSHIP	20
IV.	RESPONSIBILITIES	20

The Technical Committee (TC) submits this Annual Report covering the activities undertaken and accomplished by the TC for the year 2015. This report also presents the proposed activities of the TC for the year 2016.

I. 2015 ACCOMPLISHMENTS

A. Conduct of Technical Studies and Reviews

A.1. Study on the on Impact of N-1 Contingency Imposed on Transmission Lines and Substation Transformers to the Delivery of Power¹

The TC continued its discussion of the Market Surveillance Committee's (MSC) request for study on the impact of N-1 contingency imposed on transmission lines and substation transformers to the delivery of power. The result of the study would assist the MSC in its review of over-riding constraints imposed by the NGCP-System Operator (SO) on transmission lines and substation transformers.

On 05 February 2015, the TC transmitted to the MSC a memo updating the MSC of the actions undertaken by the TC relative to the study. A consultation meeting with the SO was conducted on 17 February 2015 to discuss matters regarding the (a) preparation and submission of contingency list; (b) imposition of overriding constraints; (c) preparation of the Transmission Development Plan; and (d) the effect of ERC Resolution No. 21 Series 2014².

The TC highlighted the following statements in its report:

- 1. A Security Constrained Economic Dispatch (SCED) is a fundamental principle upon which the market is based. The N-1 Contingency is a PGC requirement and it is a criterion necessary to ensure the security of the grid.*

¹ Carried-over activity from 2014 TC Work Plan

² ERC Resolution No. 21 Series 2014 -- *Resolution Adopting the GMC's Recommendations on the Interpretation, Imposition and Implementation of the N-1 Contingency Operational Criterion in the Philippine Grid Code (PGC) on Grid Security.*

2. *The System Operator generates the Contingency List using power system simulation tools based on the latest condition of the Grid.*
3. *The preparation and timely implementation of the Transmission Development Plan (TDP) is crucial to minimize network constraints.*
4. *The inclusion of the Meralco Network Model is important in predicting and analyzing Grid constraints.*

The TC also indicated in the same report its recommendations as follows:

1. *As prescribed by the Dispatch Protocol Manual, generating the Contingency List is a System Operator's process. The Dispatch Protocol Manual Sec. 6.6 -- Contingency Planning cites this accordingly. The TC recommends that this documented process be reviewed at an appropriate venue.*
2. *The Market Operator shall monitor Grid components that are critically loaded and are affecting the Real Time Dispatch (RTD) schedule and electricity prices. The Market Operator (MO) shall support the upgrade of these components as included in the Transmission Development Plan (TDP).*
3. *Inaccurate modeling of the Meralco network in the Market Network Model (MNM) does affect contingency analysis and planning. The TC further supports the on-going recommendations to accurately incorporate the Meralco network model in the MNM being used by the Market Dispatch Optimization Model (MDOM).*

Following the completion of its study, the TC transmitted its memo incorporating the result of the study to the MSC on 25 May 2015.

A.1.1. Meeting with the Market Surveillance Committee regarding the Study on N-1 Contingency

Following the MSC's request to further discuss the result of the study, the MSC and the TC had a discussion meeting held on 18 June 2015. After further discussions on the TC recommendations, the MSC informed that they resolved to attach the TC report as a reference in the MSC paper recommending the accurate modelling of Meralco

model in the MNM which the MSC intended to transmit to the Department of Energy (DOE).

A.2. Study on Dispatch Tolerance Limit³

The TC also continued its study on the dispatch tolerance limits in the WESM. Said study was requested by the MSC for the TC to conduct a simulation and further review of the reasonability of the rule allowing $\pm 3\%$ deviation in real time dispatch (RTD) in accordance with the PEM Board Resolution No. 2005-15. Said request was in connection with the monitoring of the MSC on the possible non-compliances by generator TPs to the RTD schedule/ instruction. Specifically, the MSC requested that RTD deviations below 10 MW be included in the scope of the study and that simulations be conducted as necessary, with a view to amend the above rule as applicable.

In its report, the TC concluded that there was no indication that the current $\pm 3\%$ dispatch tolerance limit needed to be revised. The TC however recommended that further investigation be conducted if the deviation in MW exceeded the frequency bias (in MW/0.1 Hz) for each grid as declared by the SO. The report stated that the balance between supply and demand, including losses, is the basis for maintaining the system frequency. As such, the TC was of the opinion that analyzing dispatch accuracy should be done together with demand forecast accuracy.

Also, as with the TC's previous recommendation in 2011, the TC still recommended that the trading interval be reduced from the current one-hour trading interval. A shorter trading interval shall minimize both end-of-interval dispatch deviations and intra-interval variations, etc. Since energy units are traded in the Market, a shorter trading interval shall result to more accurate technical and commercial transactions.

The TC transmitted its report on the dispatch tolerance limit to the MSC, copy furnished to Pres. Melinda L. Ocampo, on 30 September 2015.

³ Carried-over activity from 2014 TC Work Plan

A.2.1. Review of SN Aboitiz Power's (SNAP) Proposed Amendment to the Dispatch Protocol Manual and the RCC Request for Study of the $\pm 3\%$ Dispatch Tolerance Limit

In the course of the conduct by the TC of its study on the dispatch tolerance limit, a proposed amendment to the Dispatch Protocol Manual was submitted by SN Aboitiz Power (SNAP) on 23 February 2015. The proposed amendment was essentially an addendum to the definition of dispatch tolerance under the glossary of the Dispatch Protocol Manual, in consideration of the difficulties of power plants with low RTD in complying with the $\pm 3\%$ dispatch tolerance limit, given their technical limitations and other external factors.

The TC was in the process of reviewing the proposed amendment when the Rules Change Committee (RCC) transmitted a request for the TC to conduct a study on the applicability of the $\pm 3\%$ dispatch tolerance limits relative to RTD instructions for each type of plant/technology in the WESM, as set out in the WESM Rules. Said request emanated from SNAP's proposed amendment to the Dispatch Protocol Manual.

The TC discussed the request to determine the scope of the study to be undertaken pursuant to the rules set forth in the TC Market Manual on the review of technical matters and noted the following:

- 1. SNAP's proposed amendment was on the dispatch tolerance limit for renewable energy but did not specifically mention about the type of plant/technology while the RCC's request is on the applicability of the $\pm 3\%$ dispatch tolerance limit for each type of plant/technology; and*
- 2. SNAP's proposed amendment is premised on the difficulty of renewable plants in complying with the $\pm 3\%$ dispatch tolerance limit, mainly due to the inaccuracy of meters and other factors. However, the TC observed that the arguments raised were related to the capacity and the scheduled load and not the power plant technology.*

In view of the above, the TC requested for clarification with the RCC on the following:

- 1. whether the issue at hand is power plant technology or power plant size (together with scheduled dispatch); and*
- 2. if the request to set the dispatch tolerance limit is for renewable resources only as proposed by SNAP or for all types of plant/ technologies as mentioned in the RCC request for study.*

The RCC however did not pursue the request with the TC as the RCC decided to conduct its own study through the MO-SO collaboration.

A.2.2. Presentation of the TC Study on Dispatch Tolerance Limit to PEMC and DOE

On 26 November 2015, the TC chairperson presented to the PEMC and the DOE the TC study on dispatch tolerance limit. The meeting was convened per the request of Pres. Melinda L. Ocampo, to discuss the TC study on dispatch tolerance limit with the DOE and PEMC in attendance. During the meeting it was agreed that the TC would publish a public version of its report in the market information website.

A.2.3. Review of TC Report on the Study on Dispatch Tolerance Limit

On 03 December 2015, the TC conducted a special meeting to discuss the result of the presentation of the TC study on dispatch tolerance limit following the presentation of the same to the PEMC and DOE. On 14 December 2015, the TC reviewed the report on the said study and agreed to revise the same accordingly. The TC focused its review on the observations raised by the PEMC and DOE during the presentation of the study. The public version of the report is being finalized and will be published once completed.

A.3. Study on the Pmin of Combined Cycle Gas Turbine Plants⁴

The TC continued its study on the minimum stable load (Pmin) of combined cycle gas turbine plants. The decision to conduct the study emanated from the TC's previous correspondence with the PEMC-Trading Operations Department (TOD) on the Pmin issue of the 1200 MW Ilijan Power Station ("Ilijan").

The TC deliberated on matters regarding the Pmin of CCGT plant such as the need to establish uniform testing procedures or guidelines in determining the Pmin of CCGT plants, among others.

As reference to the ongoing study, the TC also reviewed relevant documents, i.e. resolutions, guidelines or rules regarding the testing of Pmin and registration of other CCGT Plants, other than Ilijan, in the WESM. Reference documents such as the historical records on the request for change in Pmin of CCGT plants and recorded procedure in requesting the change in Pmin as submitted by trading participants to the MO, were also made available for the TC's reference.

The TC also discussed the Power Block Start-up Chart of Ilijan. The chart showed the graph of Ilijan's GT 1, GT 2 and ST 1 indicating the speed of the unit in revolutions per minute (rpm) and loading in MW per unit for both cold start, warm start and hot start.

The TC also requested the assistance of the Market Assessment Group (MAG) in securing a copy of the final report of the Pmin performance test of the 1200 MW Ilijan Power Station that was transmitted to the Energy Regulatory Commission (ERC) and was furnished to the PEMC. (The TC previously transmitted a separate report incorporating its issues and concerns on the conduct of the Pmin performance test of Ilijan after the conduct of the said test. See Section **A.3.1**). As reference in its ongoing study, the TC reviewed the "*Technical Report on the Plant Minimum Stable Load Test for Ilijan CCGT*" submitted by KEPCO Research Institute (KEPRI) to the ERC.

⁴ Carried-over activity from 2014 TC Work Plan

The TC also discussed the issues on operating states and fuel source of CCGT plants and the recently issued DOE Circular No. DC2015-10-0015⁵ which provides the policies for further enhancement of the WESM design and operations. Section 2 of the Circular provides for the adoption, among others, of the removal of Pmin constraint in the market dispatch optimization model (MDOM).

The TC subsequently consolidated its inputs based on information gathered. The draft report is being finalized and the same is expected to be submitted to the PEM Board, copy furnished the PEMC-TOD, in the first quarter of 2016.

A.3.1. Report on Conduct of Pmin Performance Test of the 1200 MW Ilijan Power Station by Korea Electric Power Research Institute (KEPRI).

In the course of its review, the TC was furnished with a copy of the letter from the ERC, granting the request of South Premiere Power Corporation (SPPC) to conduct a performance test to establish the new Pmin of Ilijan. In its letter, the ERC directed the SPPC to conduct the test in the presence of representatives from the Commission, Grid Management Committee (GMC), National Grid Corporation of the Philippines (NGCP) and TC⁶.

Likewise, the TC was furnished, through PEMC, with a copy of the SPPC's letter addressed to the ERC, in which the Performance Test Procedure ("Test Procedure") on the Pmin Stable Load was attached⁷. Pursuant to the ERC directive, SPPC invited representatives from the NPC/PSALM, NGCP, GMC and TC to witness the conduct of performance test of Ilijan on May 11-13, 2015⁸.

TC representatives attended the briefing held on 12 May 2015, which was set before the actual Pmin performance test. However, due to the Malampaya Gas restriction, the scheduled test was postponed and was conducted the next day. On 13 May 2015, test for the 2 GT + 1 ST for 420 MW (70%) block load was conducted from 0430H - 0630H,

⁵ DOE Circular No. DC2015-10-0015 -- *Providing the Policies for Further Enhancement of the Wholesale Electricity Spot Market (WESM) Design and Operations*

⁶ Letter from ERC to SPPC dated 26 January 2015

⁷ Letter from SPPC to ERC dated 16 April 2015

⁸ Letter from SPPC to NPC/PSALM, NGCP, GMC and PEMC dated 27 April 2015

while the test for 400 MW (66%) block load was conducted from 0800H – 1000H. The Pmin performance test was conducted by Korea Electric Power Research Institute (KEPRI).

During the TC regular meeting held on 14 May 2015, the TC discussed their comments on the test procedures for the Pmin Performance Test of Ilijan and observations on the actual conduct of test. On 26 May 2015, the TC transmitted its report on the conduct of the Pmin performance test of Ilijan to Pres. Melinda L. Ocampo, incorporating its issues on the purpose of the test, test procedures and other concerns⁹. The TC report was forwarded by PEMC to the ERC on 08 June 2015, for the Commission's consideration.

On 14 July 2015, SPPC submitted the final report of Ilijan's Pmin performance test prepared by KEPRI, to the ERC. Copies of the letter with the attached report -- "*Technical Report on Plant Minimum Stable Load (Pmin) Test for Ilijan CCPP*" were also furnished to PSALM, PEMC, NPC and NGCP.

A.4. Study on the Framework of Participation of Battery Energy Storage Systems in the Market

To be able to draft the scope and objective of its study, the TC reviewed the energy storage systems, particularly BES systems, in other jurisdiction as its reference. The items and issues covered and discussed were as follows:

- 1. manner on how BES systems are integrated in other jurisdictions, in terms of the size and capacity of BES systems available in the other markets;*
- 2. classification or treatment of BES systems, i.e. whether BES systems are classified as scheduled or non-scheduled;*
- 3. participation of BES systems in trading, i.e. whether BES systems participate for energy or for ancillary;*

⁹ COR-INT-TC-15-08 TC -- *Report on the Conduct of the Pmin Performance Test of 1200 MW Ilijan Power Station*

The TC also discussed the possible classification of BES systems noting its inability to comply with the must-offer rule in the WESM due to its inherent technical limitation. In its study, the TC considered the possibility of defining the BES systems in order to identify its role among the emerging technologies.

In 18 May 2015, the ERC issued the Resolution No. 09 Series of 2015, a Resolution classifying the BES system as a new source of frequency control ancillary services and the exemption of the same from the conduct of system impact study.

In said Resolution, the GMC states that the purpose for which the system impact study should be conducted is not much of a necessity under the present circumstances being that:

- 1. The power flow analysis which is conducted in order to ensure that thermal limits are not breached can be remedied by simply allocating the capacity that can be accommodated by the transmission line;*
- 2. Batteries produce direct current, which flows only in one and same direction. Hence, the possible occurrence of short circuit is slim and has negligible impact to the grid; and*
- 3. As to the dynamics, the BES system is static and will only be used for frequency regulation. Thus, it cannot cause instability to the grid.*

On 15 September 2015, the TC requested from the GMC the copy of the GMC's study on BES systems, as mentioned in the Resolution, for the TC's reference in its study. The TC is finalizing the draft report which is expected to be submitted to the PEM Board in the first quarter of 2016.

B. Proposals to WESM Rules and Market Manuals

B.1. Proposed Amendments to the WESM Rules and TC Market Manual Issue 1.0

Pursuant to Section 1.3¹⁰ of the TC Market Manual, the TC initiated the review of the said Manual with the view to identify any need to update and amend the rules and provisions. In the process of its review of the TC Market Manual, the TC noted that there were provisions in the WESM Rules that needed to be revised consistent with the proposed amendments to the Manual.

In general, the proposed amendments to the WESM Rules and TC Market Manual updated the first issuance of the Manual and revised the procedures in the conduct of technical study and review. The TC transmitted its proposed amendments to the RCC on 15 September 2015.

B.2. Proposed Amendments to the WESM Rules and Market Manual on Dispatch Protocol Issue 11.0 regarding the Implementation of Market Intervention, Market Suspension and Market Restoration¹¹

The TC continued its review of the WESM Rules and Market Manual on Dispatch Protocol Issue 11.0 ("Dispatch Protocol Manual"). The TC particularly focused its review on the provisions related to the implementation of market intervention, market suspension and market restoration.

¹⁰ Section 1.3.1 The PEM Board, with the assistance of the TC and MAG, shall maintain this Manual under review, to identify any need for updates and amendments, and accordingly update the same to respond to the evolving needs of the market.

Section 1.3.3 Amendment proposals to this Manual may arise from (a) The PEM Board, upon its own initiative or upon a recommendation by other PEM Committees; (b) A WESM Member, the Market Operator, the System Operator, or any party affected by the operations of this Manual; and (c) The Technical Committee in view of: (i) Experience, problems or other issues that may arise in the implementation and application of this Manual; or (ii) Amendments to the WESM Rules or other Applicable Law, Rules and Regulations; or (iii) Conflict of interpretation; and (iv) Provisions or parts of this Manual being annulled or declared invalid.

¹¹ Carried-over activity from 2014 Work Plan

The TC also noted that changes should also be made to relevant provisions in the WESM Rules consistent with the proposed changes to the Dispatch Protocol Manual. As such, the TC included proposed changes to the WESM Rules in addition to its proposed amendments to the Dispatch Protocol Manual.

The TC reviewed the procedures on intervention, suspension and resumption set forth in the Dispatch Protocol Manual Appendix B.1. Main sections reviewed by the TC are as follows: (a) Section 4.2 *Power System/ Market Emergency Procedure*; (b) Section 4.3 *Declaration of Market Intervention*; (c) Section 4.3.2 *System Operations*; and (d) Section 5 *Process Flow particularly the Market Suspension & Restoration Procedure and Market Intervention & Restoration Procedure*.

In summary, the proposed amendments included enhancements, clarifications and minor clerical corrections, as may be appropriate, to relevant provisions of the WESM Rules and Market Manual. Additional proposed amendments were revisions and enhancements to the processes of the SO and MO in the declaration of market intervention, market suspension and resumption of market operations.

The TC transmitted its proposed amendments to the RCC on 03 December 2015.

In the course of the TC's review, the RCC also published for comments the proposed amendments to Dispatch Protocol Manual Issue 11.0 (*"Proposed Dispatch Protocol Manual Issue 12.0"*) submitted by the Philippine Electricity Market Corporation (PEMC). The TC comments to the proposed amendments are discussed in **Section C.1**.

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

C.1. Review of Proposed Amendments to the Manual on Dispatch Protocol Issue 11.0 (*"Proposed Manual on Dispatch Protocol Issue 12.0"*)

The TC reviewed the proposed amendments submitted by PEMC to the Dispatch Protocol Manual Issue 11.0 (revised as Proposed Dispatch Protocol Manual Issue 12.0). Said proposed amendments originated from the recommendations resulting from the external

market operations audit, and likewise integrated the additional recommendation for revisions from the RCC deliberations, after the first publication of the proposal, in January 2015

The proposal covered the following changes:

1. Submission process of registration data (from PIPPA)
2. Obligation to submit offers (generation and reserve) for the Pre-Dispatch Market Projections (WAP and DAP)
3. Obligation to submit offers (generation and reserve) for the RTD
4. Criteria for Non-Security Limits
5. Definition of over-riding constraints
6. Dispatch Implementation referring to MRU/MSU
7. Dispatch Implementation referring to Section on Market Intervention/Suspension
8. SO Review on the RTD schedule
9. Reference on the Dispatch Tolerance
10. Notice on Market Intervention/Suspension
11. Changes relevant to APDM
12. Publication Requirements
13. Overriding Constraints
14. Significant Incident Report
15. Revised Section for MOT
16. New Section for Start-up/ Shutdown of Generating Units
17. Complement the procedures set out in the Dispatch Protocol, the System Operator and the Market Operator shall formulate and maintain the following procedures
 - a. System Emergency and Restoration Procedures
 - b. EMS Disaster Recovery Procedures
 - c. MMS Disaster Recovery Procedures
 - d. Business Continuity Plan

The TC focused its review on the proposed amendments to Section 15 *Procedures during Market Intervention and Suspension* and transmitted its comments to the RCC on 13 November 2015.

C.2. Review of Proposed Amendments to: (a) WESM Market Manuals on System Security and Reliability Guidelines; (b) WESM Rules on Chapter 6: Intervention and Market Suspension; and (c) WESM Market Manual on Emergency Procedures

The RCC invited all WESM members and interested parties to submit comments on the proposed amendments of the NGCP to the following:

1. WESM Market Manuals on System Security and Reliability Guidelines;
2. WESM Rules on Chapter 6: *Intervention and Market Suspension*; and
3. WESM Market Manual on Emergency Procedures

The proposed amendments sought to reflect changes in the power industry practices brought about by the stricter implementation of applicable or amended rules and increasing technical requirements.

On the NGCP's proposed amendments to the WESM Rules on Chapter 6: *Intervention and Market Suspension*, the TC drew the RCC's attention to proposed amendments to the WESM Rules and the Dispatch Protocol Manual Issue 11.0, specifically on the matter of market intervention, market suspension and restoration, which the TC submitted to the RCC for its consideration (Refer to Section **B.2**).

In its letter, the TC suggested that the TC's proposed amendments be discussed alongside the proposed amendments of the NGCP. The letter incorporating the TC's comments to the NGCP's proposed amendments was transmitted to the RCC on 11 December 2015.

C.3. Review of Proposed Amendments to WESM Rules on Preferential Dispatch (Must Dispatch and Priority Dispatch)

The TC reviewed the PEMC's proposed amendments to the WESM Rules on Must Dispatch and Priority Dispatch. The proposal was in compliance with the DOE's directives to PEMC, through DOE Department Circular DC2015-03-0001¹², to submit proposals to the WESM Rules, to give way to the implementation of must-dispatch and priority dispatch in the WESM.

The proposal revised the existing provisions and likewise incorporated new provisions, to specify the treatment of must-dispatch and priority dispatch generating units, in the following market processes:

1. Registration
2. Submission of Data
3. Scheduling and Pricing
4. Dispatch Implementation
5. Information Disclosure

The same proposal included additional amendments to allow the Feed-in Tariff Allowance (FIT-All) Administrator, to facilitate the settlement of FIT-eligible generating units in accordance with the FIT-All Guidelines.

The TC drafted its comments and recommendations to the proposals and transmitted the same to the RCC on 03 July 2015.

¹² Department Circular No. DC2015-03-0001 -- *Promulgating the Framework for the Implementation of Must Dispatch and Priority Dispatch of Renewable Energy Resources in the Wholesale Electricity Spot Market*

C.4. Review of Proposed Amendments to Market Manuals on (a) Dispatch Protocol Issue 11.0; (b) WESM Billing and Settlement; and (c) Guidelines for Significant Variations In and Between Trading Intervals

The TC reviewed the proposed amendments to the Market Manuals on (a) Dispatch Protocol Issue 11.0; (b) WESM Billing and Settlement; and (c) Guidelines for Significant Variations In and Between Trading Intervals. The amendments were proposed by the PEMC to address the findings and recommendations of PA Consulting during the 2nd Market Operations Audit of the systems and procedures on market operations undertaken in 2011.

The TC did not pose any objections to the proposed amendments to the Market Manuals on (a) Billing and Settlement; and (b) Guidelines for Significant Variations In and Between Trading Intervals. On the other hand, the TC provided comments and recommendations to the proposed amendments to the Dispatch Protocol Manual Issue 11.0. The same was transmitted to the RCC on 25 February 2015 for the RCC's consideration.

C.5. Review of Proposed Amendment to the WESM Rules for the Implementation of Enhancements to Market Design and Operations

The TC reviewed the proposed amendments submitted by PEMC to the WESM Rules for the implementation of enhancements to market design and operations. Said proposed amendments was in accordance with the policies as provided for under the DOE Circular No. DC2015-010-0015¹³ and covered the enhancements in WESM design and operations, as follows:

1. Shortening of trading and dispatch interval from one (1) hour to five (5) minutes;
2. Ex-ante pricing only for energy and reserves for every 5-minute dispatch interval;
3. One (1) hour settlement interval for settlement purposes based on weighted average of the 5-minute ex-ante prices;
4. Automatic pricing corrections;

¹³ Department Circular No. DC2015-010-0015 -- *Providing Policies for Further Enhancement of the Wholesale Electricity Spot Market (WESM) Design and Operations*

5. Implementation of hourly day-ahead projections (DAP) with sensitivities and hour-ahead projections (HAP);
6. Implementation of nodal-based short-term demand forecasting; and
7. Automatic dispatch conformance monitoring for energy and reserves.

The TC transmitted its comments and recommendations on the proposed amendments to the RCC on 21 January 2016.

D. Support to PEM Audit Committee

D.1. PAC-TC Joint Conduct of the 2nd Metering Arrangements Review¹⁴

As part of the Technical Working Group (TWG) created for the conduct of the 2nd Metering Arrangements Review (“Metering Review”), the TC continued to provide assistance to the PEM Audit Committee (PAC) in the completion of the said Review¹⁵.

The TC joined the PAC during its regular meetings and the harmonization TWG meetings held during the period. The TC also continuously assisted the PAC in the finalization of the report on the 2nd Metering Review, which is expected to be submitted in the first quarter of 2016.

D.2. Preliminary Activities for the 5th Market Operational Audit

Pursuant to its mandate in the WESM Rules, the TC continued to provide assistance to the PAC in the conduct of the 5th MO Audit, beginning the preliminary activities until its completion in September 2015.

¹⁴ Carried-over activity from 2014 Work Plan

¹⁵ Department Circular No. DC2014-01-0001 – *Creating A Technical Working Group to Assist the Philippine Electricity Market Auditor Under the Philippine Electricity Market Corporation in the Conduct of 2nd Metering Arrangements Review*

Items **A.3**, **A.4** and **D.1** were carried over to 2016 since discussion and deliberations on the said topics are still ongoing. **Section II** provides the details of the TC 2016 Work Plan which contains said carried over activities¹⁶ as well as new activities for the 2016, as follows:

II. 2016 WORK PLAN

Item	Activity	Requested by	Period Covered ¹⁷	Responsible Lead Person/s	Status	Remarks/Deliverables
1.	2 nd Metering Arrangements Review	PAC	Q1	Engr. Jaime V. Mendoza	(ongoing)	Completion and submission of report on 2nd Metering Arrangements Review.
2.	Review of Proposed Amendment to the WESM Rules for the Implementation of Enhancements to Market Design and Operations	RCC	Q1	TC	Done	Submit/recommend proposed rules changes to the RCC. <ul style="list-style-type: none"> ▪ The TC transmitted its comments and recommendations to the RCC on 21 January 2016.

¹⁶ Items 1, 3 and 4 in the 2016 Work Plan are carried-over activities from the 2015 Work Plan

¹⁷ "Period Covered" refers to the commencement and completion of each activity

Item	Activity	Requested by	Period Covered ¹⁷	Responsible Lead Person/s	Status	Remarks/Deliverables
3.	Study on the Pmin of CCGT Plants	TC	Q1	Prof. Jordan Rel C. Orillaza	(ongoing)	Transmit/ recommend proposal to PEM Board (cc: TOD).
4.	Study on the Framework of Participation of Battery Energy Storage Systems in the Market	TC	Q1	Engr. William C. Alcantra	(ongoing)	Submit report to PEM Board.
5.	Review of Draft Terms of Reference for Market Audit CY 2016	PAC	Q1	TC	Done	Submit comments to PAC. ▪ The TC provided its comments and to the PAC on 7 January 2016.
6.	Study on Operation of Reserve Market and Integration of VRE Resources	TC	Q1 - Q2	Engr. Fidel D. Dagsaan, Jr.	(new)	Submit report to PEM Board.
7.	Review of TC Internal Rules (Performance Evaluation, etc.)	TC	Q1 – Q2	Engr. Jaime V. Mendoza	(new)	Recommend proposed amendments to the TC Internal Rules.
8.	Study on the Planned Forecasting Methodology in the New MMS	TC	Q2 – Q3	Prof. Jordan Rel C. Orillaza	(new)	Submit report to PEM Board.

Item	Activity	Requested by	Period Covered ¹⁷	Responsible Lead Person/s	Status	Remarks/Deliverables
9.	Study on Participation of Embedded Generation in the Market	DOE	Q2 – Q3	Engr. William C. Alcantara	(new)	Submit report to DOE.
10.	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)	

III. MEMBERSHIP

For 2015, the members of the Technical Committee ("TC") were as follows:

1. Prof. Jordan Rel C. Orillaza (Independent)
2. Engr. William C. Alcantara (Independent)
3. Engr. Jaime V. Mendoza (DMC representative)
4. 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. Similarly, Engr. William C. Alcantara was appointed as independent member of the TC on 01 August 2013.

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 and has been on hold-over status since the expiry of his three-year appointment.

No GMC representative has been appointed as TC member since the expiry of appointment of the previous GMC representative on 31 July 2014.

The MAG acts as the Technical and Administrative Secretariat of the TC.

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.

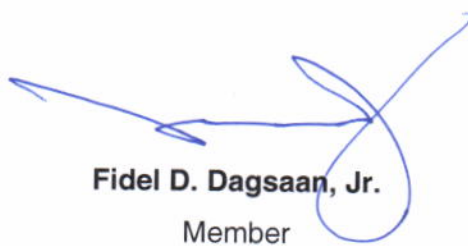

In addition, the TC is also tasked to conduct technical reviews and studies pursuant to the guidelines set forth in the TC Market Manual.

The TC conducted fourteen (14) meetings¹⁸ in 2015. The TC deliberated on a number of matters during its meetings in line with its responsibilities as provided in the WESM Rules.

¹⁸ At any time and as may be practicable, the TC may conduct meetings more than once a month

Submitted By:

Technical Committee


Jaime V. Mendoza
Member
Jordan Rel C. Orillaza
Chairperson
Fidel D. Dagsaan, Jr.
Member
William C. Alcantara
Member