



PEM Audit Committee 2018 Annual Report

January 2018 to December 2018

MARCH 2019

This Report is prepared by the
Philippine Electricity Market Corporation –
Market Assessment Group for the
PEM Audit Committee



TABLE OF CONTENTS

I. 2018 ACCOMPLISHMENTS	2
A. Market Audits and Metering Review	2
A.1. Software Audit of PEMC's Accounts Management System	2
A.2. Software Certification Audit of the New Market Management System	4
A.3. Joint Conduct of the 6th Audit of the Systems, Procedures and Performance of the Market Operator and the 3rd Review of Metering Installations and Arrangements, and Software Certification Audit of the Central Registration and Settlement System	6
B. Other Activities	7
B.1. Proposed Amendments to Provisions related to Audit and Performance Monitoring under the WESM Rules, Retail Rules, PEM Audit Manual, and Guidelines Governing the Constitution of PEM Board Committees	7
B.2. Conduct of Market Readiness Assessment for the Enhanced WESM Design and Operations	7
B.3. Participation in Strategic Planning Workshops and Activities	8
C. Regular Activities	9
II. COMMITTEE WORK PLAN	9
III. MEMBERSHIP	9
IV. RESPONSIBILITIES	10

FOREWORD

This report summarizes the activities in which the PEM Audit Committee (PAC) delivered audit efficiency, resonant results and holistic insights that made 2018 an invaluable year.

In 2018, PAC undertook technical assessments of the newly installed technologies, the New Market Management System (NMMS), and the Accounts Management System (AMS), which were initiated to affirm and strengthen the confidence of the participants on the efficacy of information systems used in the Market Operations.

The issuance of Software Certificate for the AMS audit indicates the compliance of the AMS components with respect to the WESM Rules on the Settlement Process and Prudential Requirement, and internal business procedure. The AMS which will have interface with the Central Registration and Settlement System, will allow execution of recurring account-related tasks to be achieved at greater accuracy and efficiency through streamlined processes.

Progress on the software certification audit of the NMMS signifies the continuous efforts of PEMC and the Market Operator to validate the system's conformance with the WESM Rules and Manuals, and the Price Determination Methodology (PDM). Two components namely the, Market Participant Interface (C3) and Post-Market Run Calculations (C5) have been certified by IES by the end of 2018. The NMMS incorporates the enhancements to the WESM Design and Operations, highlighting the system's improved capabilities, as indicated in the DOE Circular 2015-010-0015.

In the performance of PAC's responsibilities to make recommendations consistent with efficient and effective systems, software and working processes, the PAC's proposed market readiness assessment aims to ensure that that the NMMS components including interfaces with the other systems of the Market Operator and System Operator, will operate collectively as an integrated system.

The PAC extends its utmost gratitude to the PEMC and IEMOP, its management and board of directors, the DOE, the ERC, its commissioned external auditors (Intelligent Energy Systems and KPMG R.G. Manabat & Co.) and all the organizations that supported and participated in the events and engagements of the PAC.

This Annual Report covers the activities undertaken and accomplished by the PAC for the year 2018.

I. 2018 ACCOMPLISHMENTS

A. Market Audits and Metering Review

A.1. Software Audit of PEMC's Accounts Management System

The Philippine Electricity Market Corporation (PEMC) developed a software system called the Accounts Management System (AMS) to facilitate an automated collection and payment system for the wholesale and retail markets. An evaluation of the AMS was initiated to provide assurance to WESM participants on the accuracy and validity of the components of the said system and compliance to all relevant rules on the Settlement Process and Prudential Requirements. This audit was conducted by KPMG R.G. Manabat & Co. (KPMG), the external auditor engaged by the PAC and PEMC.

The audit project involved the validation and testing of the nine (9) components of the AMS, as listed below.

1. CRSS Interface. To determine the accuracy of WESM bill exported from CRSS database.
2. Masterfile. To determine if the information contained in the Masterfile are reflected properly in the documents and reports generated by AMS.
3. WESM Bill Processing. To determine the accuracy of the WESM Bill generated versus the flat file uploaded in the system and process the WESM Bill based on the participants mapping.
4. Collection. To determine if the collection entered is posted to the specific account of the participant. Likewise, determine if the collection/drawn prudential were tagged properly to the outstanding WESM Bills.
5. Payment. To check if the collection was applied to the recipients in accordance with defined allocation parameters.
6. Reports. To check if the results of the above processes are accurately reflected in the summary or individual reports of the WESM Member and the related journal entries. Enumerated below are the AMS Reports checked by the auditor.

7. Special Payment Agreement. To determine the accuracy of the application of collection from the participants to the recipients based on the agreed contract between the defaulting participant and the generators and the defined allocation procedures.
8. Withholding Tax Adjustment. To determine the accuracy of the adjustment in withholding tax and the related reports.
9. Prudential Requirement Management. To determine the accuracy of processing the Prudential Replenishment, Prudential Interest Build-up and Transfer of Interest to Prudential.

The KPMG has certified that the AMS components demonstrated compliance with the WESM Rules and internal business processes. The table below summarizes the deliverables/activities during the audit.

Deliverables/Activities	Date Completed
Consultation meetings (Auditor and Auditees)	May 22-28, 2018
Submission of Inception Report	May 30, 2018
Submission of Preliminary Audit Report	June 25, 2018
Conduct of audit; Weekly progress meeting (Auditor, PAC and Auditees)	
1st Weekly Meeting	May 30, 2018
2nd Weekly Meeting	June 06, 2018
3rd Weekly Meeting	June 14, 2018
4th Weekly Meeting	June 22, 2018
5th Weekly Meeting	June 27, 2018
6th Weekly Meeting	July 04, 2018
7th Weekly Meeting	July 11, 2018
8th Weekly Meeting / Close-out Meeting	July 23, 2018
Submission of Final Audit Report and Software Certificate	July 30, 2018

The result of the audit was presented by the PAC to the Department of Energy (DOE) and the PEM Board on 28 August 2018 and 30 August 2018, respectively. The PAC prepared a report in September 2018 summarizing the results of the audit, which was published in the market website.

A.2. Software Certification Audit of the New Market Management System

The Intelligent Energy Systems Pty Ltd (IES) has been engaged by PEMC in 2017 to undertake the independent audit of the New Market Management System (NMMS). The IES is tasked to perform an extensive audit of specific NMMS components to validate its conformance with the WESM Rules and Manuals, and the Price Determination Methodology (PDM).

The audit project involved the validation and testing of eight (8) NMMS components, as follows:

1. **Market Dispatch Optimization Model.** Determine if the mathematical algorithms used are mathematically equivalent to the formulation described in the proposed PDM.
2. **Market Projections and Real-Time Dispatch Runs.** Determine if the processes in executing the Week-Ahead Projection, Day-Ahead Projection, Hour-Ahead Projection, and Real-Time Dispatch conform to the relevant provisions of the proposed WESM Rules and Manuals.
3. **Market Participant Interface.** Determine if the interface for market participants employ schemes, particularly involving the bid validation rules, that are consistent with the provisions of the proposed WESM Rules and Manuals.
4. **Compliance Monitoring.** Determine if the process for determining dispatch compliances for energy dispatch and reserve response conform to the proposed dispatch conformance standards that is stated in the relevant WESM Manual.
5. **Post-Market Run Calculations.** Determine if the applications for the post-processing of real-time spot prices are consistent with the Price Determination Methodology.
6. **Forecast.** Determine if the applications for determining regional and nodal load forecasts conforms to the objectives of providing accurate net load forecasts as provided for in the WESM Rules.
7. **Financial Transmission Rights.** Determine if the design intended by PEMC for Financial Transmission Rights are consistent with the relevant business requirements document and design documents of the NMMS Project.

8. Market Publications. Determine if the required information are published consistent with the timelines proposed in the relevant provisions of the WESM Rules and Manuals.

Two components namely the, Market Participant Interface (C3) and Post-Market Run Calculations (C5) have been certified by IES by the end of 2018. The table below provides the updates as of 31 December 2018.

Component	Status
Component 1: Market Dispatch Optimization Model	Completed nine (9) out of 16 sub-tasks. Completion of remaining sub-tasks scheduled in January 2019.
Component 2: Market Projections and Real-Time Dispatch Runs	Ongoing execution by the auditees of additional test cases submitted by IES. Completion of testing scheduled in January 2019.
Component 3: Market Participant Interface	Completed in September 2018.
Component 4: Compliance Monitoring	Completed testing of the Dispatch Compliance Standards (DCS) module in July 2018. Variances and defects in the Offer Compliance Standards (OCS) module being evaluated and fixed by Siemens, the NMMS vendor/developer.
Component 5: Post-Market Run Calculations	Completed in September 2018.
Component 6: Load Forecasting	Initial assessment of RTD (5-minute ahead) forecasts for periods in September and October triggered further discussion and variance resolution between the auditees and Siemens, and IES.
Component 7: Financial Transmission Rights	Testing planned to commence in January 2019.
Component 8: Market Publication / Market Operations Archive Repository	Completed testing in December 2018. IES issued the draft audit report for review and comments of the PAC and auditees.

A.3. Joint Conduct of the 6th Audit of the Systems, Procedures and Performance of the Market Operator and the 3rd Review of Metering Installations and Arrangements, and Software Certification Audit of the Central Registration and Settlement System

The PAC administered the conduct of two (2) audit projects in 2017, namely: (i) the Joint Conduct of the 6th Audit of the Systems, Procedures and Performance of the Market Operator (MO Audit) (*for the period 26 December 2014 to 25 June 2016*) and 3rd Review of Metering Installations and Arrangements (RMIA) (*for the period 26 December 2013 to 25 June 2016*); and (ii) the Software Certification Audit of the Central Registration and Settlement System (CRSS). Both audit projects were undertaken by the IES.

The Certification Audit of the CRSS was completed in December 2017. Meanwhile, the joint conduct of the 6th MO Audit and the 3rd RMIA was formally concluded in January 2018 upon submission by the IES of the holistic review reports and acceptance by the PAC of the final audit report.

During the 132nd PEM Board Meeting on 28 February 2018, the Board was informed of the results of the said audit projects. The PAC likewise presented to the DOE on 28 August 2018 the result of the audits highlighting the key findings and recommendations for policy directions.

Further, the PAC, per its letter dated 09 March 2018, furnished the Energy Regulatory Commission (ERC) with copy of the final audit reports. The PAC intended to present to the ERC the key findings and recommendations on the joint 6th MO Audit and 3rd RMIA and to discuss, among others, the ERC guidance with regards to the audit findings on metering service providers (MSPs).

The PAC prepared separate reports in September 2018 summarizing the results of the 6th MO Audit, 3rd RMIA, and CRSS Certification Audit, which were published in the market website.

B. Other Activities**B.1. Proposed Amendments to Provisions related to Audit and Performance Monitoring under the WESM Rules, Retail Rules, PEM Audit Manual, and Guidelines Governing the Constitution of PEM Board Committees**

As a consequence of the audits and reviews performed and the support of the stakeholders through the Rules Change Committee on its former proposal, the PEM Audit Committee deems it necessary to resubmit and recommend further changes to the WESM Rules, Retail Rules, PEM Audit Manual, and Guidelines Governing the Constitution of PEM Board Committees. The proposed amendments include, among others, the following:

1. Market audits to include review of MSPs and System Operator, aside from the audits of the Market Operator, Central Registration Body, and market systems;
2. Development and monitoring of System Operator Performance Standards;
3. Fine tuning of the responsibilities of the PAC to oversight functions, while maintaining its accountability and responsibility in the conduct of timely, fair and independent market audits;
4. Change “PEM Auditor” to “PEM Audit Committee”; and
5. Enhancements and clarifications to the audit process and timeline.

The abovementioned proposal was submitted to the Rules Change Committee on 23 November 2018 for deliberation.

B.2. Conduct of Market Readiness Assessment for the Enhanced WESM Design and Operations

During the PAC Special Meeting No. 2018-12, IES presented that the NMMS Certification Audit is limited to review of specific components of the NMMS in which scope of work is to assess whether the algorithms, optimization formulations, calculations, logic and processes that has been implemented in these components conform to the WESM Rules and WESM Manuals, including the PDM. IES furthered that the NMMS audit work is necessary but not sufficient for commercial operation. IES recommended that market “go-

live” requires other assessments including at least three (3) month of parallel operations without significant issues. Considering this recommendation, the PAC deemed that a market readiness assessment is necessary to ensure that the NMMS components as well as interfaces with the other systems of the Market Operator and System Operator, will operate collectively as an integrated system. This is in accordance with the provisions under Section 3.1.3 (e) of the PEM Audit Manual stating that, in the performance of its responsibilities, the PAC shall endeavor to conduct audits and make recommendations consistent with efficient and effective systems, software and working processes.

On 12 December 2018, the PEM Board approved the PAC proposed conduct of market readiness assessment which includes:

- Parallel operations by the Market Operator for at least three (3) billing months
- Readiness Assessment of the Market Operator, System Operator, PEMC, Metering Service Providers, generators, customers and other market participants
- Engagement of a third-party expert under the oversight of PAC to assess market readiness

Separate readiness assessments shall be made for a) Luzon and Visayas, and b) Mindanao since Mindanao will be implementing the WESM for the first time.

B.3. Participation in Strategic Planning Workshops and Activities

The PAC members actively participated in the planning workshops and activities organized by PEMC aimed at formulating the work plans of PEMC and the WESM Governance Committees for year 2019-2021. The planning workshops and activities were as follows:

1. PEMC Strategic Planning: Management Review of PEMC's Vision, Mission, Values and Directions (20 November 2018);
2. PEMC Strategic Planning: Review of Balanced Scorecard Strategies and Outcomes (03 December 2018); and
3. WESM Governance Committee Strategic Planning Workshops (04-05 December 2018 and 17 December 2018).

C. Regular Activities

During the covered period CY 2018, the PAC held twelve (12) meetings. In addition, the members of the PAC actively participated as resource speakers for PAC presentations to the PEMC Management and the PEM Board regarding its various activities. Similarly, the PAC enthusiastically joined PEMC in its various activities with WESM stakeholders.

II. COMMITTEE WORK PLAN

Annex A provides details of the PEM Audit Committee's program of activities for 2019 until 2021 consistent with the PEMC's Corporate Strategic Plan which was approved by the PEM Board on 27 March 2019.

III. MEMBERSHIP

The PEM Audit Committee is currently composed of the following experts in the fields of risk and financial management, information technology, and information systems:

Chairperson	:	Prof. Felixberto U. Bustos, Jr.
Members	:	Mr. Eduardo Alejandro O. Santos Engr. Christian M. Orias

Prof. Bustos was appointed as member of the PEM Audit Committee on 27 April 2007 and was designated as the Chairperson. He was then re-appointed as PAC Chairperson on 30 August 2018. Mr. Santos and Engr. Orias have been appointed to the PAC as members since September 2011 and were re-appointed as PAC members on 30 August 2018.

IV. RESPONSIBILITIES

Pursuant to WESM Rules Clause 1.5.2, the responsibilities of the PEM Auditor¹ are as follows:

- a. Conduct annual audits of the Market Operator and the settlement system and any other procedures, persons, systems or other matters relevant to the spot market;
- b. Test and check any new items or versions of software provided by the Market Operator for use by WESM members;
- c. Review any procedures and practices which are covered by the WESM Rules at the direction of the PEM Board;
- d. Recommend changes to the WESM Rules where the PEM Auditor detects deficiencies as a consequence of an audit, review, test, check or other form of review; and
- e. Publish on the market information website the results of any findings and recommendations under WESM Rules 1.5.1.

The PEM Auditor's main responsibility is summarized in the PEM Audit Committee Market Manual Section 3.1, which states that it has to conduct, on his own or through an appointment of auditor, and to coordinate and supervise effective and independent audits of the operation of the spot market and of the Market Operator, in order to reinforce Trading Participants' confidence in the transparency and adequacy of the operation of the WESM.

Moreover, Section 11.2.2 of the same manual provides that the PEM Auditor shall review the security arrangements and requirements of metering installations.

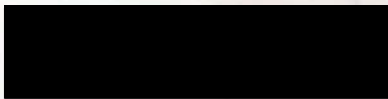
¹ Pursuant to the Guidelines Governing the Constitution of PEM Committees, the PEM Auditor was already changed to constitute as PEM Audit Committee (PAC). The WESM Rules, PEM Audit Market Manual Issue 2.0 and Retail Market Manual are currently being revised in harmony with the existing guidelines.

Submitted By:

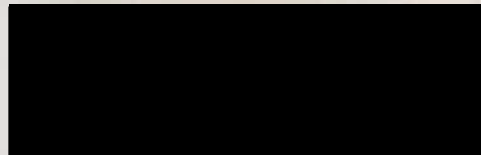
THE PEM AUDIT COMMITTEE



Felixberto U. Bustos, Jr.
Chairperson



Eduardo Alejandro O. Santos
Member



Christian M. Orias
Member