



**Philippine Electricity
Market Corporation**

Report on the Independent Operational Audit on the Systems and Procedures on Market Operations conducted by Deloitte Touche Tohmatsu

PEM Audit Committee

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I. About this Report

In compliance with Section 3.7.2¹ and 3.7.4² of the PEM Audit Market Manual ("Manual"), this report which describes the first independent operational audit on market operations, including the objectives, scope and results of the audit, is being made available.

II. Background

Under the WESM Rules, the PEM Board established the PEM Audit Committee (PAC), which is mandated, on its own or through appointment of external auditors, to conduct, coordinate and supervise audits of the operations of the spot market and of the Market Operator (MO) to reinforce Trading Participants' confidence in the transparency and adequacy of the operation of the Wholesale Electricity Spot Market (WESM).³

In line with this mandate and under the supervision of the Department of Energy (DOE), the PAC oversaw the first audit of the spot market which covered the settlement of the markets administered by the MO, generation scheduling, dispatch, price calculation, and any procedures and working processes used by the MO in performing those functions in the WESM.

To ensure that the External Auditor possessed the sufficient and adequate expertise, the Philippine Electricity Market Corporation (PEMC) and PAC engaged the services of an independent team of experts for the Independent Operational Audit of the Systems and Procedures on Market Operations (Audit Project 2009-01).

III. Audit Objectives

The general objectives of the Audit Project are to⁴:

- a. Review and assess the procedures and working processes of the MO;
- b. Review and assess the usefulness and appropriateness of systems settlement system, data management and other procedures and working processes used by the MO to administer the WESM, in order to:
 - i. identify the appropriate steps and measures to help the MO effectively and efficiently perform its responsibilities in time and form in accordance with the WESM Rules;

¹ Within fifteen (15) days after an audit is finalized by the PEM Auditor or by a designated expert or expert team contracted to act as auditor(s), the PEM Auditor shall prepare and submit to the PEM Board an Audit Report which specifies details of the said report.

² Within five (5) business days after receiving from the PEM Board its review on the audit recommendations, the PEM Auditor shall prepare a revised Audit Report and publish it in the Market Information Website which specifies details of the publication.

³ WESM Rules, Clause 1.5 and PEM Audit Market Manual, Section 3.1

⁴ PEM Audit Market Manual, Section 7.2.2

- ii. assess if the MO practices and work processes ensure the necessary transparency, independence, predictability and non-discrimination, and are in compliance with the WESM Rules and best international practices; and
- iii. assess if the systems, calculations, information flows and data management protect the accuracy and quality of the data and results in generation scheduling, dispatch, prices and settlement, as well evaluate if internal controls exist and are sufficient to guarantee security and confidentiality where appropriate; and to propose recommendations to improve the: (1) procedures to collect and process the information and, (2) controls of quality and security of data in the WESM.
- c. Review and assess the usefulness and appropriateness of the interfaces and exchange of information among the MO, System Operator (SO), Metering Service Provider (MSP) and other service providers in relation to generation scheduling, constraints, dispatch, prices and settlement, and metering; and
- d. Review and assess the compliance by the MO with the WESM Rules and WESM Manuals.

IV. Audit Scope

The Audit Project covered and reviewed the MO's compliance with its procedures and the effectiveness and appropriateness of systems utilized in the operation of the spot market, which included but not limited to:

- a. Valid audit certificates for the current versions of all numeric software;
- b. The calculations and allocations performed by the metering and settlements systems;
- c. Billing and information systems;
- d. The scheduling and dispatch processes;
- e. The processes for software management; and
- f. The MO's compliance with the WESM Rules.⁵

The Audit Project covered the past two (2) years of the market operations and transactions, specifically from 1 July 2007 to 25 June 2009. Its coverage is shown in Figure 1.

FIGURE 1. SCOPE OF AUDIT WORK



Notes : The scope of audit work covered the processes enclosed in the box with dotted outline

⁵ PEM Audit Market Manual, Section 5.2.6.2

V. External Auditor

Deloitte was chosen as the External Auditor, after an open and competitive selection to conduct the audit, because of its extensive experience in the audit of the electricity market of other jurisdictions and its adequate and detailed work program for the audit process. Deloitte refers to one or more of Deloitte Touche Tohmatsu, a Swiss Verein, and its network of member firms, each of which is a legally separate and independent entity servicing clients in the areas of audit, assurance and advisory, taxation, corporate finance, and consulting.

Deloitte worked with the Manabat Delgado Amper and Co., a local member firm of Deloitte, and IES, an Australian company that provided advisory services and software solutions to organizations working with energy markets.

The quality-cost based selection process supervised by the DOE and conducted by the PAC, with the assistance of the WESM Audit TWG involved the publication of Expressions of Interest (EOI), short listing of received EOI, release of Requests for Proposals (RFP) to shortlisted firms, technical and preliminary bidding conferences, and technical and financial evaluation.

VI. Audit Process

The External Auditor reported to the PAC for the duration of the audit, which commenced on 18 August 2009. All audit activities were accordingly coordinated with the PAC, through the Market Assessment Group (MAG) which served as the linkage between the External Auditor and the MO, PEMC Management and other relevant parties.

The External Auditor conducted preparatory meetings with key representatives of PEMC and DOE as well with WESM Participants to discuss the approach of the audit and to determine operational and other issues related to the MO. Fieldwork was based on the following key areas:

- a. Scheduling and Pricing;
- b. Billing and Settlements; and
- c. Information Technology.

As identified by the External Auditor, the audit was conducted according to the following key areas:

1. Review and assessment of the MO's compliance with the WESM Rules and WESM Manuals.

This was performed by Deloitte in accordance with the International Standard on Assurance Engagements (ISAE) 3000 "Assurance engagements other than audits or reviews of historical information," issued by the International Auditing and Assurance Standards Board.

In performing the compliance assessment of the MO, audit testing involved the key controls implemented by the MO to meet the requirements of the WESM Rules, WESM Manuals and internal procedures. It was based on a random sample selection method, which is designed to provide limited assurance that the controls are operating effectively.

2. Certification of the audit software that supports the operations of the Market Operator by IES.

This was based on test cases that assessed the functionality of the software against the WESM Rule and Manuals using a 'black box' approach.

3. Broad identification of areas to achieve better international practice.

Better practice findings were identified during the course of the audit based on experience with international market operators.

Audit findings and recommendations were presented, for confirmation, to the MO and PEMC Management. Thereafter, the MO and PEMC Management furnished the External Auditor with Action Plans for each non-compliance and software certification finding, which were duly incorporated in the Deloitte Audit Report.

Additionally, Deloitte submitted a summary of findings from the Price Substitution Methodology (PSM) and the Net Settlement Surplus (NSS) component of the Audit Project to the ERC on 14 April 2010.

Monitoring of the MO and PEMC Action Plan addressing the Audit Project findings and recommendations is currently done by the MAG.

VII. Auditee Response and Actions Taken

With the areas of concern identified by the External Auditor, PEMC Management and the MO have been pro-active in resolving the findings and among the actions taken are the following:

- Upon being informed of the findings related to the Billing and Settlements and Information Technology, PEMC immediately instituted structural changes to ensure "check and balance", i.e. Billing, Settlements and Metering Department (BSMD) and IS/IT Management Department (IMD) were transferred from the MO to the Corporate Services Group (CSG) which was confirmed by the PEM Board.
- On findings related to logical and physical security controls, measures were implemented to ensure that all personnel adhere to PEMC security policies.
- Findings related to the MDOM were referred to ABB, Inc., for their comments and appropriate action.
- An Action Plan to address the findings and recommendations is being implemented.

VIII. Conclusion

The PAC fully accepted the findings and recommendations of the External Auditor which was subsequently approved by the PEM Board on 27 January 2010⁶ and submitted on 23 July 2010.⁷ Likewise, the PAC acknowledged PEMC's Action Plan to address the audit findings and recommendations.

IX. Next Steps

In view of the Audit Project results, the PAC undertakes to perform the following:

1. Oversee the monitoring of the MO's compliance to the Action Plan, in view of the PEM Board directive; and
2. Prepare and implement the following operational audits:
 - a. 2nd MO Audit, covering the period 26 June 2009 onwards;
 - b. As recommended by Deloitte, Audit of the System Operator, subject to the approval of the DOE; and
 - c. Metering Arrangements Audit, as required under the WESM Rules and Manual.⁸

⁶ Deloitte presentation of audit results to the PEM Board on 27 January 2010 is attached/hyperlinked

⁷ Deloitte Report entitled "Independent Spot Market Audit Report on the System and Procedures of Market Operations, for the period 1 July 2007 - 25 June 2009" dated July 2010.

⁸ WESM Rule, Clause 4.5.5.4 and PEM Audit Market Manual, Section 11.2.2