



Project ID No.: 2011-01

PROJECT BRIEF

2nd INDEPENDENT OPERATIONAL AUDIT OF THE SYSTEMS AND PROCEDURES OF THE MARKET OPERATIONS

I. BACKGROUND

The Electric Power Industry Reform Act of 2001 (EPIRA) mandates the establishment of the Wholesale Electricity Spot Market (WESM) that will facilitate a competitive market environment in the Philippine electricity industry. Section 30 of the EPIRA provides, among others, that the Department of Energy (DOE) will constitute an autonomous group, with equitable representation from electric power industry participants, to act as the market operator. In November 2003, the DOE constituted the Philippine Electricity Market Corporation (PEMC), a non-stock and non-profit organization, to operate the WESM.

Governed by the WESM Rules, the WESM is a venue for trading electricity as a commodity. It serves as a clearing house to reflect the economic value of electricity for a particular period, as indicated by the spot price. The wholesale electricity market uses the concept of a gross pool where all electricity output of the generators are centrally coordinated and are submitted to the spot market for scheduling and dispatch. Generators, as well as buyers of bulk electricity, compete for a share of this pool to be dispatched and scheduled to meet the electricity demand in real time.

The three key features of the operation of the spot market are the following:

1. A process for scheduling generation and balancing supply and demand at all times;
2. A price determination process which sets the marginal value of all electricity produced and consumed in real time at all nodes; and
3. A financial settlement process in which customers pay for electricity purchases and generators receive payments for electricity produced.

The Trading Operations Department (TOD) of PEMC operates the market and ensures the optimal dispatch of generation based on the submitted offers from generators and bids from customers, and from which a spot price for electricity throughout the grid is set. The Billing, Settlements and Metering Division, as well as the Finance Division, and its Accounts Management Section facilitate the settlement of financial accounts of the trading participants.

Regulatory oversight functions over the WESM are performed by the DOE and the Energy Regulatory Commission (ERC). The DOE formulates and enforces the country's overall energy policy, including evolution of WESM design. The ERC possesses authority extending from the enforcement of the rules and regulations of the EPIRA to investigative and quasi-judicial powers against any industry participant for violations of any law, rule or regulation. The ERC approves, among others, the market fees being collected by PEMC from the market participants to recover the cost of administering and operating the WESM.

The first Independent Operational Audit of the Systems and Procedures on Market Operations for the period 26 June 2007 to 25 June 2009 was conducted in 2009.

II. BASIS FOR THE MARKET AUDIT

The PEM Board established the PEM Audit Committee (PAC) under the WESM Rules, which is mandated, on its own or through appointment of external auditors, to conduct, coordinate and supervise effective and independent audits of the operations 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. This mandate is provided under Clause 1.5 of the WESM Rules, as amended, and under Section 3.1 of the PEM Audit Market Manual (Manual).

To ensure sufficient and adequate expertise, the PEMC and PAC will engage the services of independent persons, teams or companies who shall act as the External Auditor. Based on the direction of the PEM Board, this audit project will be undertaken under the supervision of the DOE.

In accordance with Section 7.2 of the Manual, the External Auditor shall conduct an audit of the spot market, including 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.

The requirement for a Market Audit is also set out in Section 5.2.6 of the WESM Rules. Specifically, a spot market audit shall be performed once each quarter, or such other period as determined by the PEM Auditor. The spot market audit shall cover and review compliance by the market operator with the WESM Rules and its procedures, such as the requirement of valid audit certificates for the current versions of all numeric software. Likewise, the market audit shall review the effectiveness and appropriateness of systems utilized in the operation of the spot market.

III. AUDIT OBJECTIVES

In accordance with Section 7.2.2 of the Manual, the general objectives of this audit are to:

1. Review and assess the procedures and working processes of the MO;
2. 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;
 - 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.
3. 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
4. Review and assess the compliance by the MO with the WESM Rules and WESM Manuals.

IV. SCOPE OF WORK

The market audit will cover the audit of the systems and procedures on market operations, and the billing and settlement, including the interface of the market operations systems, procedures, and other relevant data flowing to the billing and settlement systems.

The coverage of the audit is shown in Figure 1. The audit shall market operations and transactions for the period 26 June 2009 to 25 June 2011.

Figure 1. Scope of Audit Work



Notes: The scope of audit work shall cover the processes and related procedures and controls enclosed in the box with dotted outline
 : MMS – Market Management System

A. Materiality

The materiality levels for the tests of transactions and significant findings shall be set and disclosed to the PAC by the External Auditor.

Another threshold will be adopted for the reporting of significant issues identified during the course of the financial audit, although it is recognized there may be qualitative aspects in determining the significance of any issue. That is, the External Auditor shall report and evaluate the impact of the issues which come to its attention which exceed this significant issues threshold or which it believes to be significant for other reasons.

B. TASK 1: Audit of the Market Operator Systems and Procedures

Task 1 shall cover all market models (i.e. Market Network Model, Market Dispatch Optimization Model), systems, procedures, software, and interfaces with WESM Trading Participants and other relevant entities involved in the WESM, emanating from the submission of generation offers/bids up to the dispatching, and publication of market operations report and data.

This task shall likewise include relevant MO activities that are covered by the specific requirements in the WESM Rules, Manuals and other relevant Protocols, such as participant registration, forecasting, proxy bidding, market suspension, intervention, and price substitution methodology (PSM) during extreme network congestion.

The External Auditor shall:

- a. Identify the control objectives and specific controls involved in the systems and procedures on market operations that will provide reasonable assurance that the system achieves its objectives under the WESM Rules and WESM Manuals; and
- b. Perform the following tasks, in accordance with Section 7.2.3 of the Manual:
 - i. verify that each and all software of the MO has valid audit certificates;
 - ii. review and assess the calculations and allocations performed to determine energy for the settlement calculations in each trading point and for each Trading Participant;
 - iii. review and assess the procedures, processes and systems for generation scheduling and dispatch, including management of submission and validation of bids and offers as well as the adequacy and usefulness of the coordination arrangements and systems with the SO;
 - iv. review and assess the processes for software management and information security; and
 - v. review and assess that, in all the above matters, the MO is in compliance with the WESM Rules and propose enhancements in processes to achieve best international practices.
- c. Evaluate whether the Market Network Model (MNM) fairly represents the transmission network under the control of the SO, and such other aspects of the power system, which when connected, may be capable of materially affecting dispatch of scheduled generating units or pricing within the spot market.

C. TASK 2: Audit of the Billing and Settlement Systems and Procedures

The audit of the billing and settlement includes the output of the Market Infrastructure (Market Administration) Database and Meter Data Warehouse that serve as input to the billing and settlement system up to the issuance of invoices and Electronic Fund Transfer (EFT) instructions.

Specifically, the review and assessment of the billing and settlement systems and procedures shall cover the following activities:

- a. preparation and issuance of preliminary, final and revised settlement statements;
- b. preparation and issuance of invoices for energy transactions and market fees;
- c. monitoring of prudential deposits, margin call, and settlement accounts of the WESM Participants;

- d. calculation of line rental;
- e. settlement computation using the Administered Price Cap (APC);
- f. calculation of the Generation Price Index (GPI)
- g. calculation and allocation of net settlement surplus;
- h. validation and storage of metering data in the Meter Data Warehouse;
- i. incorporation of Bilateral Contract Quantity (BCQ) declaration by the WESM Participants; and
- j. calculation of applicable taxes.

The External Auditor shall:

- a. Identify the control objectives and specific controls involved in the billing and settlement systems and procedures that will provide reasonable assurance that the system achieves its objectives under the WESM Rules and WESM Manuals; and
- b. Perform the following tasks:
 - i. conduct tests to determine whether the output of the billing and settlement systems and procedures are consistent with the results of the application of the procedures described in Chapter 3 of the WESM Rules and the WESM Manual on Billing and Settlement, as amended;
 - ii. assess the efficiency and accuracy of the procedures, data, databases (i.e. POMAX), and interfaces among the MO, the Market participants, MSP, and other affected parties;
 - iii. assess the accuracy and efficiency of the billing issued to the Trading Participants which include:
 - 1. Trading Amount (Ex Post and Ex Ante);
 - 2. Settlement Quantity;
 - 3. Settlement Price;
 - 4. Meter Data;
 - 5. Settlement Timetable; and
 - 6. Other Settlement or Customer Data.
 - iv. review and assess the software and programs to determine if the algorithms are mathematically equivalent to the formulation described in the WESM Rules and WESM Manuals through the conduct of tests and validation of the algorithms used in the following software and programs:
 - 1. Lump Load Disaggregation Customization (LLDC) Program;
 - 2. Wholesale Billing and Settlement System (WBSS);
 - 3. MS Great Plains (Invoice Generation);
 - 4. Price Substitution Mechanism (PSM) software; and

5. In-house generated programs.

D. Task 3: General Assessment of the Systems and Procedures on Market Operations

In accordance with Section 7.1.3 of the Manual, the External Auditor shall give an assessment of the system and procedures of the Market Operator using the following criteria:

- a. Compliance with the WESM Rules;
- b. Degree to which processes are in alignment with the WESM Rules and its Market Manuals;
- c. Clear accountability for performance of MO functions and responsibilities;
- d. Adequacy, in terms of number and training of staff, to perform assigned tasks and systems used;
- e. Efficiency of processes (e.g. time response);
- f. Accuracy of tasks (e.g. numbers of errors in settlement statements); and
- g. Frequency and level of complaints and disputes.

E. Task 4: Audit of the Market Assessment System

In accordance with Section 8.1 of the Manual, the External Auditor shall audit the Market Assessment System (MAS) administered by the Market Assessment Group, and any procedures and working processes used by the Market Assessment Group in the collection, validation and processing of market monitoring data, and calculation of monitoring indices.

(Company Letter Head)

Letter of Interest

(Date)

Ms. Melinda L. Ocampo
President
Philippine Electricity Market Corporation
18/F Robinsons Equitable Tower
ADB Avenue, Ortigas Center
1600 Pasig City, Philippines

Attention : **Mr. Felixberto U. Bustos, Jr.**
Chairperson, PEM Audit Committee

Dear **Ms. Ocampo**:

We refer to the competitive selection process being conducted by the Philippine Electricity Market Corporation (PEMC)/PEM Audit Committee (PAC) in connection with the 2nd Independent Operational Audit of the Systems and Procedures of the Market Operations.

The [NAME OF INTERESTED PARTY/COMPANY] hereby confirms its interest to participate in the process, and accordingly submits the following documents for consideration:

1. Company Profile;
2. List of previous projects or engagements relative to electricity market audits or similar audits;
3. List of available resources (skills among staff and relevant software, etc.);
4. Certificate authorizing the representative to sign the Letter of Interest on behalf of the Company;
5. Affidavit of the authorized representative attesting to the authenticity of the submitted documents; and
6. Affidavit of the authorized representative attesting that no member of the company is related within the 4th degree of consanguinity or affinity to any employee of PEMC.

The [NAME OF INTERESTED PARTY/COMPANY] hereby understands the criteria to be considered in the selection process as stated in the Request for the Expression of Interest and agrees to be bound and fully abide by the decisions and directives of the PEMC/PAC.

Very truly yours,

For and on behalf of
[NAME OF INTERESTED PARTY/COMPANY]
Signature of Authorized Representative
Name of Authorized Representative
Designation

**REQUEST FOR EXPRESSIONS OF INTEREST
2nd INDEPENDENT OPERATIONAL AUDIT OF THE SYSTEMS AND PROCEDURES
OF THE MARKET OPERATIONS**

**Project ID No.: 2011-01
Expression of Interest**

The Philippine Electricity Market Corporation (PEMC), through the PEM Audit Committee (PAC), invites eligible auditing firms to indicate their interest in providing services that include audit of the systems and procedures on the Market Operations and Billing and Settlement. Interested auditing firms must submit a Letter of Interest together with the following documents indicating their qualification to perform the services:

1. Company Profile;
2. List of previous projects or engagements relative to electricity market audits or similar audits;
3. List of available resources (skills among staff and relevant software, etc.);
4. Certificate authorizing the representative to sign the Letter of Interest on behalf of the Company;
5. Affidavit of the authorized representative attesting to the authenticity of the submitted documents; and
6. Affidavit of the authorized representative attesting that no member of the company is related within the 4th degree of consanguinity or affinity to any employee of PEMC.

The auditing firms will be short-listed according, but not limited, to the following criteria:

1. Experience in electricity market audits or similar audits; and
2. List of available resources (skills among staff and relevant software, etc.).

Interested auditing firms may obtain further information on the description of the project, format of Letter of Interest, and operations of the Philippine Wholesale Electricity Spot Market (WESM) at www.wesm.ph and www.doe.gov.ph or you may contact Ms. Karen Abregana of the Market Assessment Group (MAG) through electronic mail: pac@wesm.ph or telephone number (632) 395-2704 starting 03 March until 10 March 2011.

Letters of Interest must be submitted following the prescribed format on or before 11 March 2011, 5:00 PM (Philippine time) to:

Ms. Melinda L. Ocampo
President
Philippine Electricity Market Corporation (PEMC)
18/F Robinsons Equitable Tower
ADB Avenue, Ortigas Center
1605 Pasig City, Philippines

Attention: Mr. Felixberto U. Bustos, Jr.
Chairperson, PAC

The PEMC/PAC reserves the right to reject any or all applications without recourse.