



Terms of Reference for the 9th Audit of the Market Operations

26 June 2022 to 25 December 2024

DECEMBER 2024

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

Document Information Classification: Public

The information contained in this document is based or lifted from the relevant Market Rules and Manuals, available System Design Documents and/or Requests for Change, and audit documents.

Table of Contents

1.	REQUIREMENT	2
2.	BACKGROUND	2
2.1	The WESM	2
2.2	Retail Competition and Open Access (RCOA) and Green Energy Option Program (GEOP).....	3
2.3	The Market Operator and the Governance Arm	4
2.4	Net Settlement Surplus (NSS) or Net Settlement Deficit (NSD)	5
2.5	Basis for the Audit.....	6
2.6	Objectives of the Audit.....	6
2.7	Applicable Rules.....	7
3.	AUDIT SCOPE	7
3.1	Period Covered	7
3.2	Auditees	7
3.3	Audit Criteria.....	8
3.4	Scope of Work.....	8
3.5	Exclusion.....	9
3.6	Materiality	9
4.	PROPOSED ARRANGEMENTS	10
4.1	Project Schedule.....	10
4.2	Deliverables	11
4.3	Qualifications of Independent Auditor/ Independent Audit Team Members	12
4.4	Interface among the Independent Auditor, the Auditees and PEM Audit Committee 13	
4.5	Confidentiality and Non-Disclosure Agreement (NDA) Requirements	13
4.6	Data Privacy	14
4.7	Intellectual Property Requirements	16
	ANNEX A – CHANGES TO MARKET SYSTEMS AND TOOLS DURING THE AUDIT PERIOD.	17
	ANNEX B – LIST OF MO-INITIATED MARKET INTERVENTION EVENTS	21
	ANNEX C – CHANGES TO RULES DURING THE AUDIT PERIOD	28

1. REQUIREMENT

Engagement of the services of an Independent Auditor to conduct the audit of the following:

- i. Wholesale Electricity Spot Market (WESM) operations and the Market Operator;
- ii. Retail Competition and Open Access (RCOA), Green Energy Option Program (GEOP) and the Central Registration Body (CRB); and
- iii. Net Settlement Surplus (NSS) or Net Settlement Deficit (NSD) in the WESM.

2. BACKGROUND

2.1 The WESM

- 2.1.1. 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. Pursuant to the EPIRA, the Department of Energy (DOE) and the electric power industry participants are mandated to jointly formulate the detailed rules governing the operations of the WESM. On 28 June 2002, the DOE, upon the joint endorsement of the electric power industry participants, promulgated the WESM Rules through DOE Department Circular No. 2002-06-003¹.
- 2.1.2. After several months of trial operations, the WESM commercial operations commenced in Luzon on 26 June 2006. Four years into the commercial operations in Luzon, the Visayas grid was integrated into the WESM and commenced commercial operations on 26 December 2010.
- 2.1.3. 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 as indicated by the spot price. The WESM uses the concept of a gross pool market where all electricity output of the generators is centrally coordinated 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 members of the WESM include Generation Companies, Customers, Trading Participants, Network Service Providers, and Metering Services Providers.
- 2.1.4. With respect to policy and regulatory oversight over the WESM, such functions are carried out by the DOE and the Energy Regulatory Commission (ERC). The functions of the DOE involve the formulation of the country's overall energy policy, the development and improvement of the WESM design, as well as the promulgation of the WESM Rules and Manuals, including changes thereto.

¹ [DC 2002-06-0003 Wholesale Electricity Spot Market Rules and Joint Endorsement of the Wholesale Electricity Spot Market Rules](#)

- 2.1.5. On the other hand, the ERC enforces the provisions of the EPIRA and its implementing rules and regulations, and has investigative and quasi-judicial powers over any market participant for violations of the EPIRA, its implementing rules and regulations, and the WESM Rules. The ERC also approves, among others, the market fees being collected by the Market Operator from the market participants to recover the cost of administering and operating the WESM.
- 2.1.6. On 25 June 2021, the DOE issued Department Circular No. 2021-06-0015² declaring the commercial operations of the enhanced WESM design and operations effective 26 June 2021 in Luzon and Visayas. The enhancements include removal of minimum stable load (Pmin) constraint in the Market Dispatch Optimization Model (MDOM), shorter trading and dispatch interval of five (5)-minute, ex-ante pricing only, and automated pricing corrections, among others.
- 2.1.7. On 26 January 2023, the Mindanao grid was eventually integrated into the WESM and commenced commercial operations following DOE's issuance of Department Circular No. DC2022-12-0039³.

2.2 Retail Competition and Open Access (RCOA) and Green Energy Option Program (GEOP)

- 2.2.1. Section 31 of the EPIRA mandates the implementation of RCOA not later than three (3) years upon the effectivity of the law. Following the certification by the ERC that the conditions for the implementation of RCOA as stated in the EPIRA have already been met, the RCOA operations started commercially on 26 June 2013.
- 2.2.2. Subsequently, the DOE issued Department Circular No. 2013-01-0002⁴ promulgating the Retail Rules for the Integration of RCOA in the WESM (Retail Rules).
- 2.2.3. On 19 June 2015, the DOE issued Department Circular No. DC2015-06-0010⁵ which provides for policies for the full implementation of the RCOA. To implement the DOE policy on RCOA, ERC adopted the 2016 Rules Governing the Issuance of Licenses to Retail Electricity Suppliers and Prescribing the Requirements and Conditions Therefor and the Revised Rules for Contestability in 2016.

² [Department Circular No. 2021-06-0015 Declaring the Commercial Operations of Enhanced Wholesale Electricity Spot Market \(WESM\) Design and Providing Further Policies](#)

³ [Circular No. DC2022-12-0039 Declaring the Commercial Operation of the Wholesale Electricity Spot Market \(WESM\) in the Mindanao Grid](#)

⁴ [Department Circular No. 2013-01-0002 Promulgating the Retail Rules for the Integration of Retail Competition and Open Access in the Wholesale Electricity Spot Market](#)

⁵ [Department Circular No. DC2015-06-0010 Providing Policies to Facilitate the Full Implementation of Retail Competition and Open Access \(RCOA\) in the Philippine Electric Power Industry](#)

- 2.2.4. Thereafter, the DOE issued Department Circular No. DC2017-12-0013⁶ and Department Circular No. DC2017-12-0014⁷ which superseded the DOE's earlier issuance, particularly Department Circular No. DC2015-06-0010. Among others, the latter issuances allowed the voluntary participation of end users that meet the threshold provided into the contestable market, and allowed distribution utilities to supply contestable customers within its franchise area.
- 2.2.5. Upon the issuance of Department Circular No. DC2019-07-0011⁸, the mandatory requirement for contestable customers in the WESM was lifted allowing their voluntary participation in the WESM. Two (2) years after, the DOE issued Department Circular No. DC2021-06-0012⁹ which approved amendments to the WESM Rules and its Market Manuals to promote participation in retail competition.
- 2.2.6. In 2018, the DOE introduced the Green Energy Option Program (GEOP) by promulgating the Department Circular DC2018-07-0019¹⁰. The ERC likewise issued its Resolution No. 08, Series of 2021, A Resolution Adopting the Rules for the Green Energy Option Program (GEOP). The GEOP registration effectively started in December 2021.
- 2.2.7. The GEOP is a voluntary policy mechanism under the Renewable Energy Act of 2008 that allows electricity end-users to choose Renewable Energy as their source of energy. It is a non-regulated activity that provides the option to end-users to contribute in the development and utilization of RE in a least-cost and sustainable manner. Eligible end-users for this program are entities with an average peak demand of 100 kW for the past 12 months.
- 2.2.8. In 2024, the DOE issued Department Circular No. DC2024-03-0009¹¹ declaring the commercial operations of RCOA and GEOP in Mindanao effective 26 March 2024.

2.3 The Market Operator and the Governance Arm

- 2.3.1. Section 30 of the EPIRA provides, among others, that the DOE will constitute an autonomous group, with equitable representation from electric power industry participants, to act as the Market Operator. On November 2003, the DOE constituted the Philippine

⁶ [Department Circular No. DC2017-12-0013 Providing Policies on the Implementation of Retail Competition and Open Access \(RCOA\) for Contestable Customers in the Philippines Electric Power Industry](#)

⁷ [Department Circular No. DC2017-12-0014 Providing Policies on the Implementation of Retail Competition and Open Access \(RCOA\) for Retail Electricity Suppliers \(RES\) in the Philippines Electric Power Industry](#)

⁸ [Department Circular No. DC2019-07-0011 Amending Various Issuances on the Implementation of the Retail Competition and Open Access \(RCOA\)](#)

⁹ [Department Circular No. DC2021-06-0012 Adopting Further Amendments to the Wholesale Electricity Spot Market \(WESM\) Rules, Retail Rules and Various Market Manuals for the Implementation of Enhancements to WESM Design and Operations \(Provisions to Promote Participation in the Retail Competition\)](#)

¹⁰ [Department Circular No. DC2018-07-0019 Promulgating the Rules and Guidelines Governing the Establishment of the Green Energy Option Program Pursuant to the Renewable Energy Act of 2008](#)

¹¹ [Department Circular No. DC2024-03-0009 Declaring the Commercial Operations Date of Retail Competition and Open Access \(RCOA\) and Green Energy Option program \(GEOP\) in Mindanao](#)

Electricity Market Corporation (PEMC), a non-stock and non-profit organization, to operate the WESM.

- 2.3.2. PEMC was designated as the Central Registration Body (CRB) and settlement agent for the RCOA implementation by virtue of DOE Department Circular No. 2012-02-0002¹² upon the recommendation of the RCOA Steering Committee¹³, which is headed by the DOE and composed of key industry players. Thereafter, the DOE issued its Department Circular No. 2019-07-011¹⁴ dated 29 July 2019 which designated the Independent Market Operator as the CRB, thus amending provisions of Department Circular No. 2012-02-0002 designating PEMC as the CRB¹⁵.
- 2.3.3. On 18 January 2018, the DOE issued the Department Circular No. 2018-01-0002¹⁶ which endorsed and set out the guidelines on the transition to an Independent Market Operator. The Independent Electricity Market Operator of the Philippines (IEMOP) assumed the market operations functions of the WESM on 26 September 2018 while PEMC retained its role as the WESM governing entity. The PEMC thereafter entered into an Operating Agreement with the IEMOP last 19 September 2018 which details the transfer of the market operator functions, among others. For purposes hereof, the PEMC and the IEMOP shall be hereinafter alternatively referred to as “Governance Arm” and “Market Operator”, respectively.
- 2.3.4. Upon assuming market operations on 26 September 2018, the IEMOP likewise assumed the functions of the CRB for the RCOA. As the CRB, IEMOP facilitated the commencement of the GEOP registration in Luzon and Visayas starting in December 2021 following the GEOP implementation.

2.4 Net Settlement Surplus (NSS) or Net Settlement Deficit (NSD)

- 2.4.1. The NSS or NSD is the surplus or deficit resulting from the locational marginal pricing design and differences between total trading amounts received and paid out in the WESM. Net surpluses are required to be passed back to applicable trading participants in accordance with the relevant WESM Rules.
- 2.4.2. The NSS/NSD is governed by ERC Resolution No. 07, Series of 2019 which mandates that the spot market audit required under clause 5.2.6 of the WESM Rules shall also include the actual calculation of NSS or NSD and its allocation, corresponding Value Added Tax (VAT) and interest amounts, as well as the actual billing and collection.

¹² [Department Circular No. DC2012-02-0002 Designating the Philippine Electricity Market Corporation \(PEMC\) as the Central Registration Body \(CRB\)](#)

¹³ RCOA Steering Committee Resolution No. 2012-02 dated 02 January 2012.

¹⁴ [Department Circular No. 2019-07-011 Amending Various Issuances on the Implementation of the Retail Competition and Open Access](#)

¹⁵ See Section 3 of DOE Circular No. 2019-07-011.

¹⁶ [Department Circular No. 2018-01-0002 Adopting Policies for the Effective and Efficient Transition of Independent Market Operator for the Wholesale Electricity Spot Market](#)

2.5 Basis for the Audit

- 2.5.1. The PEM Board established the PEM Audit Committee (PAC) under the WESM Rules, which is mandated, on its own or through appointment of Independent Auditors, to conduct, coordinate and supervise effective and independent audits of the operations of the market and of the Market Operator in order to reinforce Trading Participants' confidence in the transparency and adequacy of WESM operations. This mandate is provided under Clauses 1.5 and 5.2.6 of the WESM Rules, as amended, and under Section 3.1 of the PEM Audit Market Manual.
- 2.5.2. Article VII of the ERC Resolution No. 07, Series of 2019 mandates that the spot market audit required under clause 5.2.6 of the WESM Rules shall also include the actual calculation of NSS or NSD and its allocation, corresponding Value Added Tax (VAT) and interest amounts, as well as the actual billing and collection.
- 2.5.3. Under Retail Rules 1.4.3, the PEM Audit Committee is mandated to conduct the audit of the CRB and the systems, processes and procedures and other matters relevant to its operations and the performance of its functions as set forth in the Retail Rules and test and check any new items or new versions of market-related software used or provided by it for use by WESM members.
- 2.5.4. Under WESM Rules Clause 1.5.2.a, the PEM Audit Committee shall likewise conduct audit on any other procedures, persons, systems or other matters relevant to the spot market.
- 2.5.5. To ensure sufficient and adequate expertise, the services of independent persons, teams or companies, who shall act as the Independent Auditor, will be engaged for the said audit, in accordance with Section 3.2.2 of the PEM Audit Manual.

2.6 Objectives of the Audit

- a) Review and assess the compliance of the Market Operator/CRB with the WESM Rules, Retail Rules, Market Manuals and directives of the DOE or ERC through its communications, orders, and issuances;
- b) Review and assess adequacy of the procedures and working processes of the Market Operator/CRB;
- c) Review and assess the compliance and effectiveness of the market systems enhancements with the WESM Rules, Retail Rules and Market Manuals, and system design specifications (list of market systems enhancements is provided in Annex A);
- d) Review and assess the usefulness and appropriateness of settlement systems and data management used by the Market Operator/CRB to administer the WESM/RCOA;

- e) Review and assess the usefulness and appropriateness of the interfaces and exchange of information of the Market Operator with the System Operator (SO), Metering Service Provider (MSP) and other service providers in relation to generation scheduling, constraints, dispatch, prices and settlement, metering and registration;
- f) Review, assess and verify the effectiveness and compliance of the Market Operator/CRB's cybersecurity controls in protecting information assets from threats such as unauthorized access, data breaches, and cyberattacks.
- g) Review and assess the appropriateness of actions taken by the Market Operator to address previous audit findings;
- h) Review and assess Market Operator's performance in line with standards established by the DOE and recommend improvements in the said standards; and
- i) Identify room for improvement in the current systems and processes with the view to enhance the competitive level and further the efficiency in the operations of the WESM and implementing the RCOA.

2.7 Applicable Rules

The following shall guide the Independent Auditor in the conduct of the audit:

- a) WESM Rules and its Market Manuals;
- b) Retail Rules and its Market Manuals;
- c) Market Operations Performance Standards approved by the DOE;
- d) Relevant Circulars, Orders and other Issuances or directives of the DOE and ERC; and
- e) Market systems enhancements design documents and requests for change.

3. AUDIT SCOPE

3.1 Period Covered

This MO/CRB audit shall cover the period 26 June 2022 to 25 December 2024. The NSS/NSD audit shall cover the period 26 December 2023 to 25 December 2024.

3.2 Auditees

- a) Market Operator for WESM operations (including NSS/NSD); and
- b) CRB for RCOA and GEOP operations.

3.3 Audit Criteria

The PEM Audit Manual Section 5.2.3 provides the criteria that shall be used to assess the spot market and Market Operator, as follows:

- a) Clear accountability in the performance of Market Operator/CRB functions and responsibilities;
- b) Adequacy of trained staff to perform the assigned tasks and use the systems;
- c) Efficiency of processes (e.g. time response);
- d) Accuracy of tasks (e.g. number of errors);
- e) Compliance with the WESM Rules, Retail Rules and Market Manuals;
- f) Alignment of processes with the WESM Rules, Retail Rules and Market Manuals; and
- g) Quality of the service measured in terms of frequency and level of complaints.

3.4 Scope of Work

Task 1 – Market Software and Systems Review and Certification

This task shall cover the following:

- a) Review of the performance, capacity, and reliability of the market operations systems, tools and programs utilized and introduced or modified during the covered period.
- b) Review and assessment of the Market Dispatch Optimization Model for generation scheduling and pricing including the interconnections of the grid when calculating losses and congestion;
- c) Evaluating the conformance of changes to market software and systems to the Information and Communications Technology Change Management Process (ICMP) of the Market Operator, and adequacy and reliability of the communication link and interfaces of the Market Operator with the SO, MSP and other service providers in relation to registration, generation scheduling, constraints, dispatch, prices and settlement, and metering.
- d) Review of incident management and IT problem management processes, the maturity or the comprehensiveness of risk registry in the management of the Market Management System (MMS) as well as the protocol of MO for cybersecurity attack.

Refer to “**Annex A**” of this document for the list of changes to market software and systems.

Task 2.1 – Process and Compliance Review

This task covers the following:

- a) Review of the Market Operator's/CRB's compliance with its obligations in the WESM Rules, Retail Rules, Market Manuals, relevant Circulars, Orders and other Issuances of the DOE and

ERC and existing Internal Business Procedures (IBP). This includes, among others, the evaluation of 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 scheduling and pricing; and

- b) Review consistency of the corresponding Market Operator's/CRB's IBP with the relevant WESM Rules, Retail Rules, Market Manuals, relevant Circulars, Orders and other Issuances of the DOE and ERC.

Task 2.2 – NSS/NSD Review

This task will cover the audit of the actual calculation of NSS/NSD and its proper implementation of the allocation, corresponding VAT and interest amount, as well as the actual billing and collection.

Task 3 – Bid-to-Bill Analysis

This task includes the conduct of chronological testing of the market processes from the trading participants' registration, submission of offers up to invoicing and payment by the Market Operator. The number of sample trading intervals shall be agreed upon by the PEM Audit Committee and the Independent Auditor.

This task shall likewise include other relevant Market Operator activities that are covered by the specific requirements under the WESM Rules, Market Manuals and other relevant Protocols, such as participant suspension and de-registration, market suspension, intervention, pricing error, price substitution methodology (PSM) implementation for congestion and application of secondary price.

Refer to “**Annex B**” of this document for the list of market interventions and “**Annex C**” for the list of rules changes during the audit period.

3.5 Exclusion

The following areas shall be excluded in the scope of work:

- a) Legal process; and
- b) Budget and planning.

Further, the work papers of the Auditor of the Market Operator for ISO 27001 and ISO 9001 surveillance or recertification, cannot be made available to the Independent Auditor. Hence, the Independent Auditor shall formulate its own audit approach to review the quality management and information security posture of the Market Operator.

3.6 Materiality

- 3.6.1. The materiality levels for the tests of transactions and significant findings shall be set and disclosed by the Independent Auditor, for comments of the Auditee and subject to review and approval of the PEM Audit Committee.
- 3.6.2. Upon the discretion of the Independent Auditor and review of the PEM Audit Committee, other thresholds may be adopted for the reporting of significant issues identified during the course of the review, although it is recognized that there may be qualitative aspects in determining the significance of any issue. The Independent Auditor shall report and evaluate the impact of the issues that come to its attention that exceed these significant issues threshold, or that it believes to be significant for other reason/s.

4. PROPOSED ARRANGEMENTS

4.1 Project Schedule

- 4.1.1. The audit is expected to commence upon receipt by the Independent Auditor of the Notice to Proceed issued by the Governance Arm. It is deemed completed upon the issuance of the Certificate of Completion.
- 4.1.2. The Independent Auditor shall review all documentation and consult relevant parties to be able to deliver the project deliverables as scheduled.
- 4.1.3. Below are the details of the activities to be conducted by the Independent Auditor for the completion of the audit with the corresponding tentative schedules.

No.	Activity	Tentative Schedule
1	Kickoff Meeting (projected to be conducted immediately upon issuance of Notice to Proceed)	Week 4 of March 2025
2	Consultation and/or Coordination Meetings with the Parties to be audited	Week 1 – 2 of April 2025
3	Submission of Inception Report and Start of the Audit	Week 4 of April 2025
4	Submission of Progress Reports	Every month from the start of audit proper
5	Submission of Significant Issues Report/s	As needed, to be submitted through email within 5 calendar days upon discovery
6	Submission of Draft Audit Reports and Software Certificates <i>Note: Separate quarterly report for Task 2.2 NSS/NSD review</i>	August 2025

No.	Activity	Tentative Schedule
7	Submission of Final Audit Reports and Software Certificates <i>Note: Separate quarterly report for Task 2.2 NSS/NSD review</i>	September 2025
8	Reporting to the PAC, PEM Board and other relevant agencies as may be required	November 2025
9	Meetings with the PEM Audit Committee and/or concerned process owners	As needed

4.2 Deliverables

4.2.1. The Independent Auditor shall submit one (1) soft copy files of the reports which include the following:

- a) **Inception Report** – It shall contain the Independent Auditor’s Audit Plan, Methodology and Work Program. This shall confirm the audit scope and outline the audit approach, including the audit process, schedule of proposed client interaction during the duration of audit work, among others, which shall be finalized together with the Independent Auditor and PEM Audit Committee, in consultation with the parties to be audited.

The Independent Auditor shall also conduct a workshop on the audit process and audit approach.

- b) **Progress Report** – It shall highlight the status and relevant developments of the audit activities.

The Progress Report shall provide the following:

- i. Initial findings for the period covered by the Progress Report, including the recommendation and the target date that the responsible audited party will address the finding;
- ii. Updates on the initial findings reported in the prior Progress Report; and
- iii. Status of Audit Activities.

- c) **Significant Issues Report** – It shall include findings that have material impact to the market and/or findings that need to be addressed immediately, if any. The Independent Auditor shall provide best practice recommendations based on other competitive electricity markets to address the significant issue.

- d) **Draft Audit Report** – It shall contain the details of the findings, recommendations and action plans with corresponding timetables, the details of which shall be discussed by the Independent Auditor with the PEM Audit Committee, concerned Auditees and other relevant entities as determined by the PEM Audit Committee.

Before the Draft Audit Report is finalized, the Independent Auditor shall give the concerned Auditees the opportunity to comment on the Draft Audit Report. Where appropriate, the Independent Auditor shall incorporate the comments and/or responses of the Auditees into the Final Report.

- e) **Final Audit Reports** – A final report for each of the work areas shall be submitted, containing the following:
- i. Audit methodology;
 - ii. Main findings, including, but not limited to audit results of the specific tasks conducted under the scope of work; and identified non-compliance to the WESM Rules, Retail Rules, Market Manuals and other applicable rules including the level of materiality as set by the Independent Auditor; and
 - iii. Recommendations, such as possible ways to improve the WESM and Retail Rules, operating procedures, control objectives, specific controls, practices and processes in order to address non-compliance or provide best practices.

Software Certificates – For Task 1 – Market Software and Systems Review, the Independent Auditor shall issue Audit Certificate/s, as applicable, which will confirm that all programs and software, including in-house developed, are compliant with the WESM Rules, Retail Rules, Market Manuals, and relevant documentation.

The Final Audit Report shall have public version which does not contain any confidential data and shall be published in the Market Information Website.

One (1) softcopy of the Final Audit Report and Software Certificate/s shall be submitted by the Independent Auditor.

- 4.2.2. The Independent Auditor shall present its findings to the PEM Audit Committee, PEM Board and if requested, to the ERC and DOE. The Final Audit Report will be made available to the PEM Audit Committee, PEM Board, ERC, DOE and to the Auditees, as deemed appropriate by the PEM Audit Committee.

4.3 Qualifications of Independent Auditor/ Independent Audit Team Members

- 4.3.1. The Audit Team shall be composed of competent audit professionals that have adequate experience and capability of understanding the business, information technology (IT), controls

and processes that are adopted by similar electricity markets which are applicable to the WESM, RCOA and Market Governance.

4.3.2. The team shall have the following qualifications:

- a) The Team Leader (Key Auditor) shall have project management skills;
- b) The members of the Audit Team shall include, but are not limited to, the following:
 - i. Audit expert (operations and financial);
 - ii. Information and communications technology expert;
 - iii. Electricity market operations expert;
 - iv. Regulatory expert (Legal, Finance, Economics);
- c) At least one of the members of the Audit Team shall have at least one of the following qualifications, or their equivalent:
 - i. Certified Information Systems Auditor (CISA);
 - ii. Certified Information Systems Security Professional (CISSP);
 - iii. ISO 27001 Auditor Certification for Information Security Management Systems (ISMS); and
 - iv. Certified Internal Auditor (CIA);
- d) The audit project is open to local and foreign auditing firms. Joint venture partnership is allowed.

4.4 Interface among the Independent Auditor, the Auditees and PEM Audit Committee

- 4.4.1. The Independent Auditor shall conduct the audit under the supervision of the PEM Audit Committee and shall report to the PEM Audit Committee for the duration of the audit.
- 4.4.2. Audit activities shall be done through hybrid arrangements or subject to other arrangements to be agreed among the PEM Audit Committee, Auditee and the Independent Auditor.
- 4.4.3. All activities of the Independent Auditor shall be accordingly coordinated with the PEM Audit Committee, through the PAC Secretariat. The PAC Secretariat shall extend all reasonable support to the Independent Auditor for the duration of its services, which support shall include, among others:
 - a) Facilitate technical assistance of Auditees;
 - b) Provide necessary office space, internet access, access pass, etc.;
 - c) Facilitate access to all data and information for the implementation of the audit, including the access to the use of Auditees' software; and
 - d) Arrange meetings with the PEM Audit Committee and Auditees to discuss issues and concerns pertaining to the conduct of the review, if any.

4.5 Confidentiality and Non-Disclosure Agreement (NDA) Requirements

- 4.5.1. The Independent Auditor shall ensure the removal of all confidential data used during the audit process upon the conclusion of the audit. The Governance Arm will send a formal request for confirmation of data deletion, and the Independent Auditor must provide written acknowledgment of compliance with this requirement.
- 4.5.2. The Independent Auditor shall be required to execute a Non-Disclosure Agreement (NDA) in favor of the Market Operator as owner of the confidential data, and will be separate from an NDA it may execute in favor of PEMC/PEM Audit Committee. The NDA shall outline the Independent Auditor's obligations to maintain strict confidentiality throughout and after the audit process. The delivery of the duly executed NDA to the Market Operator is a pre-requisite to the data provision under the audit. This requirement will be further discussed during the audit Kickoff meeting to ensure full understanding and compliance.
- 4.5.3. An evaluation of the engaged Independent Auditor's performance shall be conducted upon the conclusion of the audit. The Independent Auditor is evaluated in terms of quality of service, effectiveness of communication, and impartiality and professionalism. The evaluation also solicits comments on the audit process and improvement of the criteria being used in the evaluation.

4.6 Data Privacy

- 4.6.1 The Independent Auditor acknowledges and agrees that, in the course of providing the Services, it may receive or have access to Personal Information of PEMC's directors, officers, employees, market participants, governance committee members and authorized representatives. The "Personal Information" shall have the meaning ascribed to it under Republic Act No. 10173, and its implementing rules and regulations, as may be amended from time to time (the "Data Privacy Act").
- 4.6.2 The Independent Auditor represents and warrants that its collection, access, use, storage, disposal, and disclosure of any Personal Information shall at all times comply with the Data Privacy Act and all other applicable data privacy and data protection laws and regulations.
- 4.6.3 In the event that the Independent Auditor will act as a Personal Information Processor, the Independent Auditor shall:
 - i. Process the personal data including transfers of personal data to another country or an international organization, only upon the document instructions of PEMC;
 - ii. Ensure that an obligation of confidentiality is imposed on persons authorized to process the personal data;
 - iii. Implement appropriate security measures and comply with the Data Privacy Act and other relevant issuances of the National Privacy Commission ("NPC");
 - iv. Not engage another Personal Information Processor without prior instruction from PEMC; Provided, that for any such arrangement authorized by PEMC, the Independent Auditor shall ensure that the same obligations for data protection are implemented, taking into account the nature of the processing;

- v. Assist PEMC, by appropriate technical and organizational measures and to the extent possible, fulfill the obligation to respond to requests by data subjects relative to the exercise of their rights;
- vi. Assist PEMC in ensuring compliance with the Data Privacy Act, other relevant laws, and other issuances of the NPC, taking into account the nature of processing and the information available to the Independent Auditor;
- vii. At the option of PEMC, delete or return all personal data to PEMC after the end of the provision of services relating to the processing; Provided that this shall include deleting exiting copies unless storage is authorized by the Data Privacy Act or other relevant laws;
- viii. Make available to PEMC all information necessary to demonstrate compliance with the obligations laid down in the Data Privacy Act, and allow for and contribute to audits, including inspections, conducted by PEMC or another auditor mandated by the latter; and
- ix. Immediately inform PEMC if, in its opinion, an instruction infringes the Data Privacy Act, or any other applicable issuance of the NPC.

4.7 Intellectual Property Requirements

- 4.7.1 Subject to section 4.7.2 and 4.7.3, all reports, data, documents and work product, created, used or produced by the Independent Auditor in performing the Services (hereafter, the “Work Product”) shall be or remain the sole property of PEMC or the Auditees, as the case may be.
- 4.7.2 To the extent that such Work Product includes other pre-existing materials of the Independent Auditor or modifications and improvements made thereto, the Independent Auditor shall retain ownership of materials but grants PEMC a perpetual, royalty-free, non-exclusive right and license to use such materials in connection with PEMC’s use of such Work Product and such grant expressly includes PEMC’s right to release such Work Product.
- 4.7.3 To the extent that such Work Product includes third party materials, software or intellectual property that PEMC must license separately, the Independent Auditor shall inform PEMC of such license requirement and if requested by PEMC, assist PEMC in obtaining the appropriate license. The Independent Auditor warrants that all systems and equipment used from the Services, and all of the works created from the Services do not violate or infringe on any intellectual property right or any third-party claim. The Independent Auditor shall indemnify PEMC from and against any and all claims that may be asserted PEMC by reason of any infringement or alleged infringement of intellectual property rights in carrying out the Services.
- 4.7.4 This provision shall not be construed to limit the Independent Auditor’s right to use for any purpose the residuals resulting from the performance of the Services for PEMC. As used herein, “residuals” shall mean technical information in non-tangible form, which may be developed or retained by persons who have provided Services or have had access to PEMC’s or Auditees information or systems, including ideas, concepts, know-how and techniques contained therein.

ANNEX A – CHANGES TO MARKET SYSTEMS AND TOOLS DURING THE AUDIT PERIOD

No	IT System Name.	Description	Basis for Change	Effective/Deployment Date	Change Impact/Details
1.	External Tool: For Interim SSLA Calculation Integration - Revision of Transformer Loss Calculation	<ul style="list-style-type: none"> Revision of the Excel Input file used by the current Interim SSLA tool to comply with the latest Transformer Loss Table for SSLA of cases specified in Issue 15 of the WESM Manual on Metering Standards and Procedures Will only require a revision to the input to the Interim SSLA Tool and not a modification of the tool itself 	RFC-2211-012	Per PAC Audit Assessment Report Q2 2024, UAT in progress and target completion is Q3 2024	<ol style="list-style-type: none"> Template: <ul style="list-style-type: none"> Modify the Excel Template to include a column for the Total Transformer Loss; CRSS Database: <ul style="list-style-type: none"> Add another field (e.g. tot_transformer_loss) for each table below to represent the Total Transformer Loss <ol style="list-style-type: none"> meterprocess.txn_meter_ssla_mq_daily for daily data; meterprocess.txn_meter_ssla_mq_monthly for monthly data SSLA Interim Tool: <ul style="list-style-type: none"> Store the rated kVA and location per line ID; Interpolate the % losses present in the table; Calculate the Transformer Losses per line ID Monthly MQ Rep <ul style="list-style-type: none"> Insert additional column (after column for 'Copper Loss') in the Monthly MQ Report for Total Transformer Loss

No	IT System Name.	Description	Basis for Change	Effective/Deployment Date	Change Impact/Details
2.	Market Management System (MMS): Implementation of Reserve Price Cap	As per ERC Notice of Resolution on the PDM dated 26 July 2024, Reserve Prices should be capped to P32,000/MWH <ul style="list-style-type: none"> Implement in data published in Public Website Implement in Electricity Market Database (EMDB) Interface for CRSS 	RFC-2408-016	Commercial deployment: 04 August 2024	<ul style="list-style-type: none"> The tools that publish reserve prices in the public website and the CRSS should ensure reserve prices are capped The MMS- Dispatch Interval Pricing Calculation (DIPC) market run should have modifiable parameters for the primary price cap for all commodities (i.e., energy and all reserve types). The same should be applied for the EPS Tool The price cap for all reserve types should be configurable in all market runs
3.	External Tool: For Administered Pricing in Reserve Market	Implement Administered Pricing methodology in the PDM as per ERC Notice of Resolution on the PDM dated 26 July 2024	RFC-2408-018	Commercial Deployment: 04 August 2024	<ul style="list-style-type: none"> The internally developed tool outside of the MMS should determine administered reserve prices The MMS-DIPC market run should be enhanced to determine administered reserve prices
4.	Ancillary Service Input Tool	Currently, the Market Operator uses the following two inputs related to reserve capacities that are determined outside of the MMS to be used for WESM settlement: <ol style="list-style-type: none"> Ancillary Service Incidental Energy (ASIE) 	RFC-2409-022	Commercial Deployment: 25 August 2024	<ul style="list-style-type: none"> ASIE Feature <ul style="list-style-type: none"> Logging of user actions Different Options for determination of ASIE, which is either using reserve market data or using central scheduling of reserves data. RBCQ Feature

No	IT System Name.	Description	Basis for Change	Effective/Deployment Date	Change Impact/Details
		<ul style="list-style-type: none"> • It is noted in Section 10.3 of the WESM Billing and Settlement Manual Issue 15.0 that any dispatch related to ancillary services, or the ancillary service incidental energy should be netted out from the total quantity that should be eligible for additional compensation. • Currently, IEMOP determines the ASIE via use of simple ORACLE PL/SQL scripts from existing database tables. • A tool is proposed to be used to replace this process to ensure efficiency in processing and logging of user actions. <p>2. Reserve Bilateral Contract Quantities (RBCQ)</p> <ul style="list-style-type: none"> • A tool is proposed to manage all the RBCQ files sent by the System Operator prior to being used for settlement in the Central Registration and Settlement System (CRSS). 			<ul style="list-style-type: none"> ○ Consider only the latest file submitted per trading day per region ○ Consider only the reserve types "REG", "CON", and "DIS" ○ For REG, it should be split in half: half is for RU (Regulation Up), the other half is RD (Regulation Down) ○ Consider the Real-Time Dispatch (RTD) Reserve Schedules

No	IT System Name.	Description	Basis for Change	Effective/Deployment Date	Change Impact/Details
		<ul style="list-style-type: none">It shall also consider the conditions set forth in the ERC Notice of Resolution (NOR) on the PDM dated 26 July 2024, and the Guidelines provided in the DOE Advisory 2024-08-001-SEC.			

ANNEX B – LIST OF MO-INITIATED MARKET INTERVENTION EVENTS

Date	Interval	No. of Interval/s	Regions	Classification	Reason
June 30, 2022	2215H	1	LVM	Force Majeure	due to Workflow Error
July 2, 2022	0025H	1	LVM	Force Majeure	due to erroneous market results, subject to further investigation
July 23, 2022	2200H-2205H	2	LVM	Force Majeure	Unable to generate RTD results due to non-responsive Market Applications Database
August 13, 2022	0050H-1240H	143	LVM	Force Majeure	Inaccessibility of the MMS due to the unavailability of both communication links that were affected by burnt fiber cables
August 24, 2022	1635H-1645H	3	LVM	Force Majeure	Inaccessibility of the MMS as a result of the unavailability of communication link on account of the IT network fault at the ISP communication link facility
September 6, 2022	1915H - 1920H	2	LVM	Force Majeure	due to incomplete offers transferred
September 9, 2022	0700H - 0705H	2	LVM	Force Majeure	due to erroneous results caused by incomplete offers transferred to RTD
September 20, 2022	1000H - 1015H	3	LVM	Force Majeure	due to erroneous data transfer of load forecast to RTD market run
September 20, 2022	1400H - 1425H 1745H	7	LVM	Conduct of Disaster Recovery	Disaster recovery procedure simulation

Date	Interval	No. of Interval/s	Regions	Classification	Reason
				Procedure (DRP) Simulation	
October 6, 2022	0135H	1	LVM	Force Majeure	Error in Data Transfer of Load Forecast to RTD Market Run
November 6, 2022	0615H	1	LVM	Force Majeure	Encountered RTD Power Flow Solution Error Due To Incomplete Update of Power Flow Model
January 13, 2023	1120H	1	LVM	Force Majeure	No RTD generated due to database-related error experienced during the implementation of database configuration changes
February 18, 2023	1540H	1	LVM	Force Majeure	RTD Market Run failed due to Market Participant Interface (MPI) transfer data error
May 16, 2023	0255h	1	L-V-M	Force Majeure	Inability of the MMS to produce RTD results on account of the failure of MDOM solver software.
August 4, 2023	1605h - 1645h	9	L-V-M	Force Majeure	Failure of publication of Market Results in the MO Archive Repository (MOAR)
October 29, 2023	0005h - 0010h	2	L-V-M	Force Majeure	MPI Failure Stoppage of RTD Run arising from the software failure of the Bid Transfer Program to provide complete input data to the MDOM

Date	Interval	No. of Interval/s	Regions	Classification	Reason
February 3, 2024	1925h	1	L-V-M	Force Majeure	Due to infeasible solution brought about by the Supervisory Control and Data Acquisition (SCADA) bad data that resulted from the intermittent OFFLINE and ONLINE status of the communication line between System Operator – Mindanao Regional Control Center (SO-MRCC) and Agus 6 Remote Terminal Units (RTUs) located in Lanao, Mindanao
March 26, 2024	1930h - 1940h	3	L-V-M	Force Majeure	Due to the failure of the MMS to generate a solution, leading to the failure of RTD market run to publish results
March 27, 2024	2135h	1	L-V-M	Force Majeure	Similar with 26 March 2024 MI Event
March 28, 2024	1635h	1	L-V-M	Force Majeure	Due to the failure of RTD run to publish results brought about by incomplete analog and digital Energy Management System (EMS) telemetry data input of the Market Dispatch Optimization Model.

Date	Interval	No. of Interval/s	Regions	Classification	Reason
April 20, 2024	0905h - 0920h	4	L-V-M	Force Majeure	<p>No RTD results due to incomplete outage of necessary breakers as a result of erroneous real-time data</p> <p>Due to the unavailable MMS Scheduling and Pricing results brought about by the incomplete outage of necessary breakers arising from erroneous real-time data when the Market Dispatch Optimization Model (MDOM) recognized isolation in Panay. At that time, Buenavista Substation in Guimaras Island was separated from the rest of the Visayas sub-grid.</p>
May 13, 2024	1810h - 1840h	7	L-V-M	Force Majeure	<p>Due to unavailable MMS Scheduling and Pricing results arising from the loss of connection between the MMS servers and IEMOP's Main Network backbone brought about by MMS Ethernet distribution switch device failure</p>

Date	Interval	No. of Interval/s	Regions	Classification	Reason
May 18, 2024	0540h	1	L-V-M	Force Majeure	The Market Operator initiated Market Intervention for the dispatch interval 0540H of 18 May 2024 due to the loss of EMS telemetry data input brought about by data retrieval of the MMS programs from a restarting database software.
May 21, 2024	1735h	1	L-V-M	Force Majeure	No RTD results due to the failure of MDOM to provide solution brought about by incomplete outage of necessary breakers amidst isolation of Cagayan region arising from multiple line tripping
June 11, 2024	1755h - 1800h	2	L-V-M	Force Majeure	NO RTD results generated due to slow and lagging Spectrum 7 Basic Signaling Window user interface
June 29, 2024	0430h - 0455h	6	L-V-M	Force Majeure	No RTD results generated due to the error in the pre-processing step
August 15, 2024	1150h-1200h	3	LVM	Force Majeure	No RTD results generated due to the failure to of the MMS to transfer RTD results to the SO server during the deployment of MMS enhancements

Date	Interval	No. of Interval/s	Regions	Classification	Reason
August 17, 2024	1150h-1200h	1	LVM	Force Majeure	No RTD results generated due to the isolation of the Calbayog substation
October 10, 2024	1015h-1055h	9	LVM	Force Majeure	Shutdown of Market Systems due to failure of UPS to engage during power fluctuation in IEMOP Market Operator Center

ANNEX C – CHANGES TO RULES DURING THE AUDIT PERIOD

Change / Approving Document	Effectivity	Affected Documents
Requiring Trading Participants to accurately reflect the available capacity of their generating units in their market offers. / DOE DC2024-01-0003 (12 Jan 2024)	13 Feb 2024	WESM Rules, WESM-DP, WESM-PM, WESM_RSDCP, WESM-MNMCP, WESM-PCSD, WESM-PDM
Provisions of Preferential Dispatch of Renewable Energy Generating Units in view of DOE DC2022-10-0031 / DOE DC 2024-01-0004 (12 Jan 2024)	13 Feb 2024	WESM Rules, WESM_RSDCP
Amendments relating to enforcement proceedings and actions / DOE DC 2024-01-0005 (12 Jan 2024)	13 Feb 2024	WESM Rules, WESM-FASMD
Scope of arbitrable disputes under the Retail Rules / DOE DC 2024-01-0002 (12 Jan 2024)	13 Feb 2024	WESM-DRM
Establish and set out the following: a) Roles and Responsibilities of Market Operator, System Operator, Governance Arm, and Ancillary Services Providers; b) Reserve Conformance Standards and Reserve Offer Capacity Compliance Rule that will apply to Ancillary Services Providers; c) Ancillary Services compliance monitoring and assessment procedures; and d) Applicable enforcement actions for breach of the compliance rules.	09 July 2024	WESM Rules, WESM-ASM, WESM-DP

Change / Approving Document	Effectivity	Affected Documents
<p>Urgent amendments related to the following:</p> <ol style="list-style-type: none"> 1.) The criteria and formulas relating to compliance with the Reserve Conformance Standards (RCS); 2.) Basis of the Ancillary Service Providers in submitting the Request for Reassessment with Notice of Claim; 3.) Responsibilities of the Market Operator, the WESM Governance Arm, and the System Operator regarding the data provision, flagging, determination, and reporting of breach; and 4.) Timeline of the completion, consolidation, and submission of reports/results. 	30 August 2024	WESM-ASM