

Proposed Amendments to the WESM Manuals for the Implementation of Enhancements to WESM Design and Operations

Philippine Electricity Market Corporation

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I. SUMMARY OF THE PROPOSED RULES CHANGE

Further to the proposed amendments to the Wholesale Electricity Spot Market (WESM) Rules for the implementation of enhancements to the WESM design and operations¹, this proposal provides amendments on the pricing and settlements of energy and reserves under the following Market Manuals:

- A. Price Determination Methodology (PDM) dated 23 January 2006
- B. Procedure for Determining Ex-Post Nodal Energy Prices (EPNEP), Issue 2
- C. Methodology for Determining Pricing Errors and Price Substitution Due to Congestion for Energy Transactions in the WESM (PSM), Issue 4
- D. Administered Price Determination Methodology (APDM), Issue 5
- E. Segregation of Line Rental Trading Amounts (SLRTA), Issue 1
- F. Management Net Settlement Surplus, Issue 2
- G. Management of Must-run and Must-stop Units (MRU Manual), Issue 6
- H. Constraint Violation Coefficient (CVC), Issue 4
- I. Criteria and Guidelines for the Issuance of Pricing Error Notices and Conduct of Market Re-Run (PEN-MRR), Issue 1

II. BACKGROUND

On 01 December 2015, the Philippine Electricity Market Corporation (PEMC) submitted to the Rules Change Committee (RCC) proposed amendments to the WESM Rules in accordance with the policies for further enhancement of the WESM design and operations as provided under the Department of Energy (DOE) Circular 2015-010-0015 dated 23 October 2015.

On 02 December 2015, PEMC presented to the RCC, the overview of the said proposed rules changes and requested approval for the publication of the same in the Market website to solicit comments from Market Participants. The RCC was also requested to approve the posting of the succeeding proposed amendment to the associated Market Manuals that will be affected by the WESM Rules proposal by way of email instead of deferring the approval in the next meeting.

The proposed rules changes was published on 03 December 2015, with the period for the submission of comments ending on 20 February 2016. On 02 and 03 March 2016, the RCC deliberated and approved the proposal, as amended, and endorsed the same to the PEM Board for approval during the Board meeting on 31 March 2016.

III. THE PROPOSED RULES CHANGE

Consistent with the above-mentioned proposed rules changes and said DOE Circular, the proposed amendments to each Market Manual are aligned with the following market features:

1. Five (5) minute dispatch interval;

¹ ORCP-WR-15-22, December 2015

2. Ex-ante pricing only for energy and reserves for every 5-minute dispatch interval;
3. One (1) hour settlement interval for settlement purposes based on weighted average of the 5-minute ex-ante prices;
4. Automatic pricing corrections;
5. Removal of Pmin constraint in the Market Dispatch Optimization Model (MDOM); and
6. Changing the values and priorities of some of the Constraint Violation Coefficients (CVCs) including the corresponding values thereof taking into consideration the imminent implementation of the WESM Reserve Market.

III.A Price Determination Methodology Manual

Proposed amendments to the PDM², include the consolidation of all pricing-related provisions and equations under the PDM and, consequently, the abolition of the following WESM Manuals:

1. Procedure for Determining Ex-Post Nodal Energy Prices (EPNEP), Issue 2
2. Methodology for Determining Pricing Errors and Price Substitution Due to Congestion for Energy Transactions in the WESM (PSM), Issue 4
3. Administered Price Determination Methodology (APDM), Issue 5
4. Segregation of Line Rental Trading Amounts (SLRTA), Issue 1
5. Management Net Settlement Surplus, Issue 2
6. Management of Must-run and Must-stop Units (MRU Manual), Issue 6

The summary of pricing and settlements-related changes under the PDM is provided below:

Market Feature	Current Design/Rules/Implementation	Proposed Changes	Affected Manuals	Rationale
Pricing	Ex-ante and ex-post	Ex-ante pricing only. No ex-post price	EPNEP, PSM, APDM, MRU	Ex-ante dispatch and pricing will be updated more frequently (i.e. every 5 minutes), reducing the need for ex-post pricing
	PENs for CVCs	Automatic pricing re-runs address CVCs. Shortage pricing at the offer price cap for under-generation and excess pricing at the offer price floor for over-generation.	PDM, CVC	To provide timely pricing signals.
Price substitution during extreme price separation	Trigger factor threshold is set at 1.2	Trigger factor threshold is set at 1.4.	PSM	To update the trigger factor threshold based on historical market data.

² Baseline document: PDM as approved by the ERC on 20 June 2006 under ERC Decision on Case No. 2006-007 RC

Market Feature	Current Design/Rules/ Implementation	Proposed Changes	Affected Manuals	Rationale
due to congestion				The review of the PSM trigger factor is provided under Section 4.3.1 of the current PSM.
	Trigger factor formulation based on highest market clearing price (MCP).	Trigger factor formulation based on weighted average price of all resources	PSM	To consider the integration of reserves into the WESM, wherein market results are based on a co-optimized solution.
	Generation energy prices are based on market clearing prices. Estimated load prices are computed based on the allocation of total generator ex-ante and ex-post trading amounts.	Generation and customer energy prices are computed based on generation weighted average price (GWAP) and are calculated near real-time. Also includes PSM pricing for reserves based on marginal reserve offers and opportunity cost based on the unconstrained solution for the affected dispatch interval.	PSM	To produce market prices immediately after the dispatch interval. Also, consistent with the reduction of dispatch intervals to 5-minutes and ex-ante only pricing.
	Regional settlement where price substitution is applied only to the generators in the region where the congestion occurs	Regional settlement is only applied when the HVDC is on outage or there is no interconnection between the Luzon, Visayas, and Mindanao regions.	PSM	To provide market pricing signals and mitigate the impact of congestion to the congestion affected region/s.
Administered Prices during Market Intervention and Market Suspension	Generation energy AP is computed based on ex-post price and metered quantity.	Generation energy AP is computed based on nodal energy dispatch prices and schedules. Added formula for determining AP when node is newly modelled based on GWAP of other generators. Also includes AP for reserves based on the schedule weighted average of the reserve prices for each reserve category of the 4 most recent similar trading day and similar dispatch intervals that have not	APDM	<ul style="list-style-type: none"> Timely provision of administered prices. Formula for new nodes is in compliance with the ERC's direction during the APDM hearing

Market Feature	Current Design/Rules/ Implementation	Proposed Changes	Affected Manuals	Rationale
		been administered.		
	Customer settlement amounts are based on the allocation of total generation payments for intervals under market suspension or intervention.	Customer energy AP is computed based on nodal energy dispatch prices and schedules.	APDM	Same as above.
Compensation of Must-run Units	MRUs are paid based on the Generation Price Index (GPI) and, subject to approval, are able to claim additional compensation.	MRUs, including constrained-on generators, are price-takers and, subject to approval, are able to claim additional compensation.	MRU	To ensure that units are compensated for providing energy to ensure system security and reliability.
	MRU quantity is based on total metered quantity of that generating unit minus the higher between the Ex-ante Quantity and the bilateral contract quantity (BCQ) declared for that unit	MRU quantity is based on total metered quantity of that generating unit minus the BCQ declared for that unit	MRU	Consistent with the reduction of dispatch intervals to 5-minutes.
Settlement Amounts	Calculation of settlement amount every hour (trading interval) based on ex-ante and ex-post prices.	Calculation of settlement amount every hour (settlement interval) based on the weighted-MW (RTD) average of the 5-minute nodal dispatch prices.	PDM	Consistent with the ex-ante only pricing.
	Settlements include line rental amounts for bilateral contract quantities	Formulas do not include calculation of line rental	PDM	To reflect the actual cost of electricity purchased and sold in the WESM by netting out the equivalent settlement amount of bilateral contracts based on the agreed reference market price from the gross settlement amount of each trading participant.
	Formula for determining total trading and	Added formula in Market Manual for determining total trading and	PDM	For transparency and clarity

Market Feature	Current Design/Rules/Implementation	Proposed Changes	Affected Manuals	Rationale
	settlement amounts are implied in the PDM and documented in internal business procedures.	settlement amounts (concept not changed)		
Net settlement surplus	Allocation does not consider contract declarations.	Allocation considers contract declarations and is referenced to the minimum loss and congestion payments	NSS	To shift the allocation of NSS to trading participants that paid more due to congestion.

III.B Constraint Violation Coefficients Manual

The proposed amendments to the CVC Manual cover the proposed changes to the CVC hierarchy, implementation of automatic pricing re-runs and the conduct of market pricing re-runs upon the issuance of pricing error notices.

In this regard, the abolition of the WESM Manual on the Criteria and Guidelines for the Issuance of Pricing Error Notices and Conduct of Market Re-Run (PEN-MRR), Issue 1, is also being proposed.

The summary of proposed changes related to CVCs and market pricing re-runs is provided below:

Market Feature	Current Design/Rules/Implementation	Proposed Changes	Affected Manuals	Rationale
Constraint Violation Coefficients	Current title of Market Manual: Constraint Violation Coefficients	Proposed new title of Market Manual: Constraint Violation Coefficients and Pricing Re-Runs	CVC	To include the processes for automatic pricing re-runs and manual pricing re-runs
	Provides values and priorities of CVCs	Provides changes in the values and priorities of CVCs.	CVC	Considers the modelling of DU networks in the MNM and the imminent implementation of the WESM Reserve Market
Pricing Errors and Market Re-runs	Constraint violations results to pricing errors; manual market re-runs PEN-MRR process is provided under the PEN-MRR Manual.	Automatic management of constraint violations and market re-runs. PENs and manual re-runs are only for instances of bad input-data. Provisions for manual pricing re-runs are provided under the CVC Manual, as revised. Abolition of the PEN-MRR	PDM, CVC, PEN-MRR	<ul style="list-style-type: none"> To produce prices in real-time based on relaxation of constraints with non-zero violation variables, reducing the high frequency of pricing errors Consolidate rules for pricing re-runs in one Market Manual

Market Feature	Current Design/Rules/ Implementation	Proposed Changes	Affected Manuals	Rationale
		Manual.		

IV. BACKGROUND AND DESCRIPTION OF THE PROPONENT

The Philippine Electricity Market Corporation (PEMC), constituted by the Department of Energy in November 2003, is a non-stock non-profit private organization, administers and governs the operation of the WESM.

The following are the Officers of PEMC:

Melinda L. Ocampo – President

Criselda S. Martin-Funelas – Chief of Staff, Office of the President / VP, Legal

Rachel Angela P. Anosan – VP, Enforcement and Compliance Office

Carlito C. Claudio – VP, Trading Operations

Robinson P. Descanzo – VP, Corporate Planning and Communications

Chrysanthus S. Heruela – VP, Market Assessment Group

Salvador D. Subaran – VP, Information Systems and Technology

Claudette G. Ubaldo-Dema – VP, Office of the Corporate Secretary

V. CONCLUSIONS AND RECOMMENDATIONS

To address the design and implementation issues in the WESM as cited in the MO Audits and WDS, the aforementioned proposed amendments to the WESM Manuals are recommended for approval.

VI. REFERENCES

1. WESM Design Study, Intelligent Energy Systems
 - a. [Phase 1 Final Report, 29 November 2013](#)
 - b. [Phase 2 Final Report, 02 December 2013](#)
2. Independent Spot Market Audit Report on the Systems and Procedures of Market Operations
 - a. [Deloitte Touche Tohmatsu, July 2010 \(For the period 1 July 2007 to 25 June 2009\)](#)
 - b. [PA Consulting Group Ltd, 30 September 2011 \(For the period 26 June 2009 to 25 June 2011\)](#)
3. [RCC Resolution No. 2016-05 dated 03 March 2016 on the Proposed Changes to the WESM Rules for the Implementation of Enhancements to Market Design and Operations](#)