



Republic of the Philippines
DEPARTMENT OF ENERGY

DEPARTMENT CIRCULAR NO. DC 2018-04-0012 *18*

**ADOPTING FURTHER AMENDMENTS TO THE WHOLESALE ELECTRICITY
SPOT MARKET (WESM) MARKET MANUALS ON PRICE DETERMINATION
METHODOLOGY AND CONSTRAINT VIOLATION COEFFICIENTS AND PRICING
RE-RUN FOR THE IMPLEMENTATION OF ENHANCEMENTS TO WESM DESIGN
AND OPERATIONS**

WHEREAS, Sections 30 and 37(f) of the Electric Power Industry Reform Act (EPIRA) provides that the DOE, jointly with the electric power industry participants, shall establish the Wholesale Electricity Spot Market (WESM) and formulate the detailed rules governing the operations thereof;

WHEREAS, on 28 June 2002, the DOE, with the endorsement of the electric power industry participants, promulgated the WESM Rules through Department Circular No. DC2002-06-003;

WHEREAS, any changes, amendments, and modifications to the WESM Rules including its Market Manuals shall be undertaken in accordance with the provisions of Chapter 8 thereof;

WHEREAS, on 11 April 2017, the Philippine Electricity Market Corporation (PEMC) submitted to the Rules Change Committee (RCC) the Proposed Amendments to the WESM Market Manuals on Price Determination Methodology (PDM) and the Constraint Violation Coefficients and Pricing Re-run (CVC-PR) for the implementation of enhancements to WESM design and operations;

WHEREAS, the PEMC's proposed amendments to the PDM Manual primarily aims to correct the calculation of price adjustments for customers during market intervention or suspension, and to clarify provisions on additional compensation for Must-Run Units and constrained-on generating units;

WHEREAS, the PEMC's proposed amendments to the CVC-PR Manual primarily aims to provide details and additional constraints on transmission equipment, revise the order and nomenclature of the CVCs for consistency with the newly amended Philippine Grid Code;

WHEREAS, during the 128th RCC Meeting on 11 April 2017, discussed the said proposed amendments to the PDM and CVC-PR Market Manuals, which thereafter approved the publication of the proposal in the WESM website to solicit comments from market participants and other interested parties;

WHEREAS, on 09 June 2017, the RCC during its 130th RCC Meeting, further deliberated on and finalized the proposal, which thereafter approved its endorsement to the PEM Board;

WHEREAS, on 18 September 2017, after due evaluation and deliberation, the PEM Board during its 127th PEM Board Meeting approved for endorsement to the DOE the above stated RCC proposal;

WHEREAS, on 02 October 2017, the above stated PEM Board-approved amendments to the PDM and CVC-PR Market Manuals were submitted to the DOE for final approval, in compliance with Chapter 8 of the WESM Rules;

WHEREAS, the DOE reviewed the said PEM Board-approved proposal, and deemed it consistent with the objectives of the WESM and the DOE policies on the enhancements of WESM design and operations;

NOW THEREFORE, pursuant to its authority under the EPIRA and the WESM Rules, the DOE hereby adopts, issues, and promulgates the following amendments to the WESM Market Manuals for the implementation of enhancements to WESM design and operations:

Section 1. Amendments to the Price Determination Methodology Manual. The following provisions in the Price Determination Methodology Manual promulgated by the DOE for the enhancements to WESM design and operations through Department Circular No. DC2016-10-0014 are hereby amended;

(a) Section 7.1.2 under Scope of Administered Prices is amended to read as -

"7.1.2 The administered price shall be established by the Market Operator in accordance with the following guiding principles:

xxx xxx xxx

e. The administered price shall be applied in the region where the market suspension or market intervention is declared. For this purpose, the regions are Luzon, Visayas and Mindanao.

f. The administered price will apply only to transactions above the declared bilateral contract quantities."

(b) Section 7.3.4 under Customer Energy Administered Price is amended to read as -

"7.3.4 In case only one region is under market suspension or market intervention and the said region is exporting power to the other region and the nodal energy dispatch prices in the region that is not under market suspension or market intervention were determined in accordance with WESM Rules Clause 3.6, the nodal energy dispatch prices for the customer resources within the region that is not under market suspension or market intervention shall be adjusted by adding the following:

$$NARAPA_{b-NAR,i} = \frac{SQ_{ITC,i} * (GWAEAP_i - GWAP_{NAR,i})}{\sum_{b \in B-NAR,i} EDS_{b-NAR,i}}$$

Where:

$NARAPA_{b-NAR,i}$	refers to the non-administered region administered price adjustment for a customer resource within the non-administered region for dispatch interval i
$SQ_{ITC,i}$	refers to the snapshot quantity of the interconnection for dispatch interval i
$GWAP_{NAR,i}$	refers to the generator weighted average price at the non-administered region using energy dispatch schedule for dispatch interval i
$GWAEAP_i$	refers to the generator weighted average energy administered price using snapshot quantity for dispatch interval i
$EDS_{b-NAR,i}$	refers to the energy dispatch schedule of customer resource b within the non-administered region for dispatch interval i
$B-NAR_i$	refers to the set of all customer resources within the non-administered region for dispatch interval i
$b-NAR$	refers to a customer resource within the non-administered region"

(c) Section 8.3.1 under Additional Compensation is amended to read as -

"8.3.1 A Trading Participant may be entitled to additional compensation when the costs incurred in complying with dispatch instructions are not sufficiently covered by the trading amounts related to settlement intervals with dispatch intervals under any of the following conditions:

- Market suspension or market intervention and was paid at the administered price in accordance with Section 7; or
- When the same Trading Participant was designated as must-run unit or constrain-on generating unit and was paid at the WESM price in accordance with Section 4.12."

Section 2. Amendments to the Constraint Violation Coefficients and Pricing Re-runs Manual. The following provisions in the Constraint Violation Coefficients and Pricing Re-runs Manual are hereby amended:

(a) Section 2.1.2 under Definitions is amended to read as -

"2.1.2 The following terms as used in this *Market Manual* shall have the following meaning -

a. *Soft Constraints. Constraints which are allowed to be violated in the market dispatch optimization model such that the optimization process will produce a solution.*

b. *Branch Group. A group of lines and/or transformers."*

(b) Section 4.2 under Constraint Violation Coefficient is amended to read as -

"4.2 Soft Constraints

The following *soft constraints* may be relaxed in the *market dispatch optimization model* and shall have an associated *constraint violation coefficient*.

xxx xxx xxx

d. *Thermal Base Case Constraint, where the power flow through a transmission equipment should be within its normal (base case) limit.*

e. *System Energy Balance Constraint, where the total generation scheduled should meet the demand requirement.*

f. *Nodal VoLL or Nodal Energy Balance Constraint, where the power going into a node should be equal to the power going outside of the same node. This constraint also refers to the nodal energy balance constraint, which may vary from node to node, and/or be set so as to reflect load shedding priorities."*

(c) Section 4.3.1 under Order of Constraint Violation Coefficients is amended to read as -

"4.3.1 The order of relaxing *soft constraints* shall be set such that *constraints* resulting in the lowest reduction in the capability of the *network, load or generating units* shall be allowed to occur first, as follows:

- a. *Tertiary Reserve Requirement Constraint*
- b. *Primary Reserve Requirement Constraint*
- c. *Nodal VoLL or Nodal Energy Balance Constraint*
- d. *System Energy Balance Constraint*
- e. *Self-scheduled Generation Constraint*
- f. *Thermal Contingency Constraint – Transformer*
- g. *Thermal Contingency Constraint – Line*
- h. *Thermal Contingency Constraint – Branch Group*
- i. *Secondary Reserve Requirement Constraint*
- j. *Thermal Base Case Constraint – Transformer*
- k. *Thermal Base Case Constraint – Line*
- l. *Thermal Base Case Constraint – Branch Group"*

(d) Section 4.3.4 under Order of Constraint Violation Coefficients is amended to read as -

*4.3.4 The following table provides the *constraint violation coefficients*, which is reflective of the order of relaxing *soft constraints* established in Section 4.3.1 of this *Market Manual*, and the corresponding action by the *System Operator*:

Order	Constraint Violation Coefficient Name	CVC	SO Action
1	Tertiary Reserve Requirement	100,000	None
2	Primary Reserve Requirement	200,000	None
3	Nodal Value of Lost Load or Nodal Energy Balance Constraint	800,000	Re-dispatch generation and/or drop load as necessary.
4	System Energy Balance Constraint	1,300,000	For over-generation, identify generating units to be shut down to eliminate excess capacity. For under-generation, identify must-run units that can be dispatched or drop load as necessary.
5	Self-Scheduled Generation Constraint	1,400,000	The projected output or schedule of loading level of the relevant generating unit(s) shall be curtailed.
6	Thermal Contingency Constraint - Transformer	1,500,000	Re-dispatch generation and/or drop load as necessary.
7	Thermal Contingency Constraint - Line	1,500,000	
8	Thermal Contingency Constraint - Branch Group	2,000,000	
9	Secondary Reserve Requirement	3,500,000	Re-dispatch generation and/or drop load as necessary.
10	Thermal Base Case Constraint - Transformer	4,000,000	Re-dispatch generation and/or drop load as necessary.
11	Thermal Base Case Constraint - Line	4,000,000	
12	Thermal Base Case Constraint - Branch Group	4,500,000	

Table 1. Order of Constraint Violation Coefficients *

(e) Section 5.3.1 under Automatic Pricing Re-Run Parameters is amended to read as -

*5.3.1 The corresponding constraint relaxation formulas for the *constraint violation coefficients* during pricing re-runs shall be as provided in Table 2 below:

Order	Constraint Violation Coefficient Name	CVC	Violation Variable Value	Delta	Constraint Relaxation during Pricing Re-Run	Re-run Price ¹¹
1	Tertiary Reserve Requirement	100,000	x	0.1	x + delta	EDP AND RP
2	Primary Reserve Requirement	200,000	x	0.1	x + delta	EDP AND RP
3	Nodal Energy Balance Constraint	800,000	x	0.1	x + delta	EDP AND RP
4	System Energy Balance Constraint	1,300,000	x	0	delta	Excess Price for over-generation Shortage Price for under-generation
5	Self-Scheduled Generation Constraint	1,400,000	x	0.1	x + delta	EDP AND RP
6	Thermal Contingency Constraint - Transformer	1,500,000	x	0.1	x + delta	EDP AND RP
7	Thermal Contingency Constraint - Line	1,500,000	x	0.1	x + delta	EDP AND RP
8	Thermal Contingency Constraint - Branch Group	2,000,000	x	0.1	x + delta	EDP AND RP
9	Secondary Reserve Requirement	3,500,000	x	0.1	x + delta	EDP AND RP
10	Thermal Base Case Constraint - Transformer	4,000,000	x	0.1	x + delta	EDP AND RP
11	Thermal Base	4,000,000	x	0.1	x + delta	EDP AND

Order	Constraint Violation Coefficient Name	CVC	Violation Variable Value	Delta	Constraint Relaxation during Pricing Re-Run	Re-run Price ¹¹
	Case Constraint – Line					RP
12	Thermal Base Case Constraint – Branch Group	4,500,000	x	0.1	x + delta	EDP AND RP

Table 2. Automatic Pricing Re-Run Parameters

¹¹ EDP refers to *nodal energy dispatch price*; and RP refers to *reserve price*”

Section 3. Price Determination Methodology of the WESM. The Philippine Electricity Market Corporation (PEMC), as the Market Operator, is hereby directed to submit supplemental application and manifestation with the Energy Regulatory Commission (ERC) in relation to abovementioned changes in the Price Determination Methodology (PDM) as adopted in this Circular.

For this purpose, PEMC shall periodically provide updates and reports to the DOE and PEM Board on the ERC's approval of the said PDM. It shall likewise continuously assess the effectiveness of the adopted methodology for administered prices, and provide recommendations to the DOE.

Section 4. Regulatory Support. For efficient implementation of the policies set herein and implementation of enhancements to WESM design and operations, the ERC is hereby enjoined to prioritize the review and promulgation of the WESM's amended PDM.

Section 5. Transitory Provisions. These amended Market Manuals shall be initially used for the development of the WESM's New Market Management System (NMMS) and provide guidance for the stakeholders and WESM participants on the implementation of the enhancements to WESM design and operations. For clarity, the current WESM Rules and its Market Manuals shall remain valid and effective for the commercial operation of the integrated WESM and Retail Market using the present MMS.

Section 6. Separability Clause. If for any reason, any section or provision of this Circular is declared unconstitutional or invalid, such parts not affected shall remain valid and subsisting.

Section 7. Effectivity. This Circular shall take effect upon its publication in at least two (2) newspapers of general circulation and shall remain in effect until otherwise revoked.

Issued this ____ February 2018 at the DOE, Energy Center, Rizal Drive, Bonifacio Global City, Taguig City, Metro Manila.


ALFONSO G. CUSI
Secretary



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