



Republic of the Philippines
DEPARTMENT OF ENERGY

DEPARTMENT CIRCULAR NO. DC 2021-03-0004 *pn*

**ADOPTING FURTHER AMENDMENTS TO THE WHOLESALE ELECTRICITY
SPOT MARKET (WESM) RULES AND MARKET MANUAL ON PROCEDURES
FOR THE MONITORING OF FORECAST ACCURACY STANDARDS FOR MUST
DISPATCH GENERATING UNITS 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, on 20 March 2017, the DOE promulgated the amended various WESM Market Manuals for the implementation of Must Dispatch and Priority Dispatch Generating Units in the WESM through Department Circular No. DC2017-03-0002;

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

WHEREAS, on 11 April 2019, the Philippine Electricity Market Corporation (PEMC) submitted to the Rules Change Committee (RCC) its proposed amendments to the Market Manual on Procedures for the Monitoring of Forecast Accuracy Standards for Must Dispatch Generating Units;

WHEREAS, the proposal aims to mainly align the provisions of the abovementioned Market Manual with the forthcoming operation of the new Market Management System and to provide a more appropriate calculation for the forecast percentage error;

WHEREAS, on 12 April 2019, the RCC during its 151st RCC Regular Meeting discussed with PEMC the proposed amendments, and thereafter approved the publication of the proposed amendments in the PEMC information website to solicit comments from market participants and other interested parties;

WHEREAS, on 21 June 2019, the RCC during its 153rd RCC Regular Meeting deliberated on the proposal giving due course to the comments received from market participants, Technical Committee and the DOE, and thereafter finalized and approved for endorsement to the PEM Board;

WHEREAS, on 31 July 2019, after due evaluation and deliberation, the PEM Board during its 14th Regular PEM Board Meeting, approved the above stated RCC-approved proposal;

WHEREAS, on 19 August 2019, the PEM Board-approved amendments to the Market Manual on Procedures for the Monitoring of Forecast Accuracy Standards for Must Dispatch Generating Units were submitted to the DOE for final approval, in compliance with Chapter 8 of the WESM Rules;

WHEREAS, on 07 November 2019, the DOE posted the proposed amendments in the DOE website to solicit further comments from the market participants and other interested parties;

WHEREAS, on 12, 14 and 19 November 2019, the DOE conducted various public consultations on the said proposed amendments to solicit inputs and consider comments of stakeholders in the finalization of the amendments;

WHEREAS, the DOE reviewed the said PEM Board-approved proposal, made revisions on the proposed amendments for consistency 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 Market Manual:

Section 1. Amendments to the WESM Rules. The following provisions in the WESM Rules are hereby amended:

a. Clause 3.5.5.9 under Generation Offers and Data is amended to read as –

“3.5.5.9 The *Enforcement and Compliance Office* shall evaluate annually the forecast accuracy standards complied with by *must dispatch generating units* in accordance with Clause 3.5.5.8.”

b. Clause 3.5.5.11 under Generation Offers and Data is amended to read as –

“3.5.5.11 The *Enforcement and Compliance Office* shall report to the *PEM Board* and the *DOE* the monthly and annual compliance of each *must dispatch generating unit* to the forecast accuracy standards with respect to its *projected outputs*.”

Section 2. Amendments to the WESM Market Manual on the Procedures for the Monitoring of Forecast Accuracy Standards for Must Dispatch Generating Units. The following provisions in the WESM Market Manual on the Procedures for the Monitoring of Forecast Accuracy Standards for Must Dispatch Generating Units Issue 1.0 are hereby amended:

a. Section 1.1 (Background) under Introduction is amended to read as –

“1.1 BACKGROUND

1.1.1 The *WESM Rules* require *generation companies* to submit to the *Market Operator* *projected outputs* in respect of their *must dispatch generating units* for each *dispatch interval*.

xxx xxx xxx

1.1.4 Moreover, the *Enforcement and Compliance Office* is required by the *WESM Rules* to report to the *PEM Board* and the *DOE* the annual compliance of each *must dispatch generating unit* to the forecast accuracy standards with respect to its *projected outputs*.”

b. Section 2.1.2 (Glossary) under Definitions is amended to read as:

“2.1.2 Glossary

- (a) Forecast percentage error. Error (in %) of the *projected output* submitted by a *must dispatch generating unit* with respect to its maximum *metered quantity* over a *billing period* as dependable capacity and calculated in accordance with Section 4.2.3.
- (b) Initial loading. Loading (in MW) for the beginning of the *dispatch interval* assumed in, or estimated by, the *dispatch optimization* performed prior to the beginning of that *dispatch interval*.
- (c) MAPE. xxx xxx
- (d) Mean absolute percentage error. xxx xxx
- (e) Must dispatch generating unit. xxx xxxx
- (f) Perc95. xxx xxx
- (g) Percentile 95 of the forecasting error. xxx xxx
- (h) Projected quantity. Estimated *generation* of a *must dispatch generating unit* over a *dispatch interval* based on its submitted *projected output* assuming linear ramping calculated in accordance with Section 4.2.4.
- (i) Transition Period. xxx”

c. Section 3.1 (Market Operator) and its Subsections under Responsibilities is amended to read as:

“3.1 Enforcement and Compliance Office

3.1.1 The *Enforcement and Compliance Office* shall evaluate annually the compliance of each *must dispatch generating unit* to the forecast accuracy standards in this *Market Manual*.

3.1.2 The *Enforcement and Compliance Office* shall report to the *PEM Board* and the *DOE* its evaluation on the annual compliance of each *must*

dispatch generating unit to the forecast accuracy standards with respect to each must dispatch generating unit's *projected outputs*."

d. Section 3.4.2 under Generation Companies is amended to read as:

"3.4.2 *Generation Companies* shall immediately advise the *System Operator* and *Market Operator* of any circumstances which threaten a significant probability of material adverse change in the state of their facilities in any *dispatch interval* of any *trading day* in the current *week-ahead market horizon*. After the occurrence of the significant event referred to above, the *Generation Company* shall submit a written report to the *Market Operator* with supporting data immediately within the following *trading day*."

e. New Section 3.5 under Responsibilities is added to read as:

"3.5 *Market Operator*

3.5.1 The *Market Operator* shall advise the *must dispatch generating units* of their *real-time dispatch schedules*, and any output restrictions imposed as a result of the dispatch scheduling process or by the *System Operator*."

f. Section 4.1 (Standards) under Forecast Accuracy Standards and Procedures is amended to read as:

"4.1 Standards

4.1.1 Each *must dispatch generating unit* shall comply with the following standards with respect to its *mean absolute percentage error (MAPE)* and *percentile 95 of the forecasting error (Perc95)* determined in accordance with Section 4.2 and calculated over the period specified in Section 4.1.2:

Technology	Standards	
	MAPE	Perc95
Solar	< 18%	< 30%
Wind		
Run of River Hydro	< 9%	< 30%

4.1.2 The *MAPE* and *Perc95* of each *must dispatch generating unit* shall be calculated over the period starting on the 26th of December of a year and ending on the 25th of December of the succeeding year.

4.1.3 Subject to Section 4.5 of this *Market Manual*, *must dispatch generating units* who fail to meet the requisite forecast accuracy standards set out in Section 4.1.1 of this *Market Manual* may be liable for sanctions imposed under Clause 7.2 of the *WESM Rules*, and in accordance with the *WESM Penalty Manual*.”

g. Section 4.2 (Calculations) under Forecast Accuracy Standards and Procedures is amended to read as:

“4.2 Calculations

4.2.1 The *MAPE* of a *must dispatch generating unit* for a period shall be calculated using the following formula:

xxx xxx xxx

Where,

$MAPE_{i,p}$ *mean absolute percentage error* (in %) of *must dispatch generating unit i* for period *p*

n_p number of *dispatch intervals* within period *p* wherein *forecast percentage errors* were calculated

$FPE_{i,t}$ *forecast percentage error* (in %) of *must dispatch generating unit i* for *dispatch interval t* calculated in accordance with Section 4.2.3

xxx xxx xxx

4.2.3 The *forecast percentage error* for a *dispatch interval* of a *must dispatch generating unit* shall be calculated using the following formula:

$$FPE_{i,t} = \left| \frac{PQ_{i,t} - MQ_{i,t}}{MQ_{\max,i,bp,t}} \right| \times 100\%$$

Where,

$FPE_{i,t}$ *forecast percentage error* (in %) of *must dispatch generating unit i* for *dispatch interval t*

$PQ_{i,t}$ *projected quantity* (in MWh) of *must dispatch generating unit i* for *dispatch interval t* calculated in accordance with Section 4.2.4

$MQ_{i,t}$ *metered quantity* (in MWh) of *must dispatch generating unit i* for *dispatch interval t* as provided by the *Metering Services Provider*

$MQ_{\max,i,bp,t}$ *maximum metered quantity* (in MWh) of *must dispatch generating unit i* during billing period *bp* where *dispatch interval t* belongs as provided by the *Metering Services Provider*

- 4.2.4 The *projected quantity* for each *dispatch interval* of a *must dispatch generating unit* shall be calculated using the following formula:

$$PQ_{i,t} = \frac{1}{n} \times \frac{IL_{i,t} + PO_{i,t}}{2}$$

Where,

$PQ_{i,t}$ *projected quantity* (in MWh) of *must dispatch generating unit i* for *dispatch interval t*

$IL_{i,t}$ *initial loading* (in MW) of *must dispatch generating unit i* for each *dispatch interval t* used in the scheduling process

$PO_{i,t}$ *projected output* (in MW) of *must dispatch generating unit i* for each *dispatch interval t* used in during the scheduling process

n number of *dispatch interval(s)* within an hour

- 4.2.5 A one hundred (100) percent FPE shall be imposed to a *must dispatch generating unit* on a particular *dispatch interval* where its *maximum metered quantity* is equal to zero (0) and a *projected quantity* is not equal to zero (0).
- 4.2.6 A one hundred (100) percent FPE shall be imposed to a *must dispatch generating unit* for non-submission of projected output.
- 4.2.7 A zero (0) percent FPE shall be imposed to a *must dispatch generating unit* on a particular *dispatch interval* where its *projected quantity* and *maximum metered quantity* are equal to zero (0)."
- h. Section 4.3 (Exclusions) under Forecast Accuracy Standards and Procedures is amended to read as:
- "4.3.1 *Forecast percentage errors* occurring on the following conditions shall be excluded from the calculation of the *MAPE* and *Perc95* of *must dispatch generating units*:

- (a) the *dispatch target* of the *must dispatch generating unit* was restricted below its *projected output*;
 - (b) the output of the *must dispatch generating unit* was restricted by the *System Operator* as indicated in the *System Operator's report* submitted to the *Market Operator* in accordance with the *WESM Rules*;
 - (c) a *market suspension* or *market intervention* was declared for the *dispatch interval*;
 - (d) an *outage* resulted in its derating; or
 - (e) a natural calamity (e.g., typhoon, landslide) affected the ability of the *must dispatch generating unit* to forecast accurately."
- i. Section 4.4 (Monitoring, Reporting and Review) under Forecast Accuracy Standards and Procedures is amended to read as:
 - "4.4.1 The *Enforcement and Compliance Office* shall report to the *PEM Board* and the *DOE* the annual compliance of each *must dispatch generating unit* to the forecast accuracy standards with respect to its *projected outputs* within two (2) calendar months after the end of the period specified in Section 4.1.2.
 - 4.4.2 The *Enforcement and Compliance Office* shall report to the *PEM Board* and the *DOE* the status of the compliance of each *must dispatch generating unit* to the *forecast accuracy standards* as of the most recent *Billing Period* with a *final statement* on a monthly basis.
 - 4.4.3 The *Market Operator* shall review annually the forecast accuracy standards set in Section 4.1, and shall provide recommendation to the *PEM Board* and the *DOE*."
- j. Section 4.5 (Transition Period) under Forecast Accuracy Standards and Procedures is amended to read as:
 - "4.5 Transition Period
 - 4.5.1 A *transition period* covering the period specified by the *DOE* shall be implemented. The sanction on the non-compliance with the forecast accuracy standards shall be implemented upon the commercial operation of the enhanced *WESM* design and operations.
 - 4.5.2 During the *transition period*, *must dispatch generating units* who fail to meet the requisite *forecast accuracy standards* set out in Section 4.1.1 of this *Market Manual* shall not be liable for sanctions imposed under this *Market Manual*.
 - 4.5.3 Before the end of the *transition period*, the *Market Operator* shall submit to the *DOE* and other concerned government agencies a report

on the compliance of *must dispatch generating units* to the forecast accuracy standards, and it shall inform the *must dispatch generating units* on their performance with respect to the forecast accuracy standards.

xxx xxx xxx”

- k. Section 5.2 (Publication) under Amendment, Publication and Effectivity is amended to read as:

“5.2 Publication

5.2.1 This *Market Manual*, as it may be amended from time to time, shall be published in the *WESM market information website*.”

- l. Appendix A (NIST Method for Calculating Percentiles) is amended to read as:

“Appendix A NIST Method for Calculating Percentiles

xxx xxx xxx

Sample list: $Y_{[k]} = \{5\%, 12\%, 3\%, 20\%, 15\%\}; N = 5$

Sample ordered data: $Y_{[k]} = \{3\%, 5\%, 12\%, 15\%, 20\%\}; N = 5$

xxx xxx xxx”

Section 3. 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 4. Effectivity. This Circular shall take effect fifteen (15) days following its complete publication in at least two (2) newspapers of general circulation. Copies thereof shall be filed with the University of the Philippines Law Center – Office of National Administrative Register (UPLC-ONAR).

Issued this MAR 16 2020 at the DOE, Energy Center, Rizal Drive, Bonifacio Global City, Taguig City, Metro Manila.


ALFONSO G. CUSI
Secretary



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