

 WESM-WM-(Manual)-CN - \_\_\_\_\_\_

**REQUEST FOR AMENDMENTS OR CHANGES TO THE WESM MANUALS**

Proposals made only under this prescribed form shall be accepted and considered as submitted:

This request for amendments to the WESM Manual on Procedures for the Monitoring of Forecast Accuracy Standards for Must Dispatch Generating Units can be submitted to:

**Rules Change Committee**

Attention: **PEM Committee Secretariat**

Philippine Electricity Market Corporation

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1. **Proposer’s Information**

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1. **WESM Manual Amendments Information**

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| Title of WESM Manual being commented:Procedures for the Monitoring of Forecast Accuracy Standards for Must Dispatch Generating Units Issue 1.0 Nature of Request (please indicate with **x**) [x]  Addition [x]  Alteration [ ]  Deletion [ ]  Clarification [x]  Clerical Correction |

1. **Proposed Amendment**

| **Title** | **Section** | **Provision** | **Proposed Amendment** | **Rationale** |
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| 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* on an hourly basis. | 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***. | For consistency with the implementation of 5-minute dispatch interval and the WESM Rule Clause 3.5.5.5 as amended by DOE DC No. 2016-10-0014 dated 14 October 2016. |
| Background | 1.1.4 | Moreover, the *Market Operator* is required by the *WESM Rules* report to the *PEM Board* and *DOE* the annual compliance of each *must dispatch generating unit* to the forecast accuracy standards with respect to its *projected outputs.* | Moreover, the *~~Market Operator~~* ***Enforcement and Compliance Office (ECO)* of the *Philippine Electricity Market Corporation (PEMC)*** is required by the *WESM Rules* **to** report to the *PEM Board* and *DOE* the annual compliance of each *must dispatch generating unit* to the forecast accuracy standards with respect to its *projected outputs.* | * To transfer the responsibility of monitoring the Trading Participants’ compliance to the forecast accuracy standards from the Market Operator to PEMC, as the WESM governing body.
* Clerical.
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| Glossary | 2.1.2(a) | Forecast percentage error. Error (in %) of the *projected output* submitted by a *must dispatch generating unit* with respect to its *installed capacity* calculated in accordance with Section 4.2.3. | Forecast percentage error. Error (in %) of the *projected output* submitted by a *must dispatch generating unit* with respect to its ***projected output* over a dispatch interval***~~installed~~**~~capacity~~*calculated in accordance with Section 4.2.3 | For consistency with the proposed amendments to Section 4.2.3 (Forecast percentage error calculation) |
| Glossary | 2.1.2(b) | Initial loading. Loading (in MW) assumed for the beginning of the *trading interval* assumed in, or estimated by, the *dispatch optimization* performed prior to the beginning of that *trading interval* as indicated in Clause 3.13.5.1 of the *WESM Rules.* | Initial loading. Loading (in MW) ~~assumed~~ for the beginning of the *~~trading~~* ***dispatch*** *interval* assumed in, or estimated by, the *dispatch optimization* performed prior to the beginning of that ***dispatch*** *interval* ~~as indicated in Clause 3.13.5.1 of the~~ *~~WESM Rules~~.* | For consistency with the implementation of 5-minute dispatch interval.Clause 3.13.5.1, which provided the Gross Ex-ante Energy Settlement Quantity in consideration of the initial loading and RTD schedule, has been deleted from the WESM Rules under DOE DC 2016-10-0014 (Adopting Further Amendments to the WESM Rules – Enhancements to WESM Design and Operations, dated 14 October 2016). |
| Glossary | 2.1.2(c) | (c) Installed capacity. Refers to the *Nameplate Rating* of a *generating unit* | ~~(c)~~ ~~Installed capacity. Refers to the~~ *~~Nameplate Rating~~* ~~of a~~ *~~generating unit~~* | Removed definition of installed capacity and installed capacity quantity since it is not used in the manual. Renumbering. |
| Glossary | 2.1.2(d) | (d) Installed capacity quantity**.** *Generation* by a *generating unit* at its *installed capacity* for a *trading interval* calculated in accordance with Section 4.2.3(e) xxx(f) xxx(g) xxx(h) xxx(i) xxx | ~~(d) Installed capacity quantity~~**~~.~~***~~Generation~~* ~~by a~~ *~~generating unit~~* ~~at its~~ *~~installed capacity~~* ~~for a~~ *~~trading interval~~* ~~calculated in accordance with Section 4.2.3~~**(c)**~~(e)~~ xxx**(d)**~~(f)~~ xxx**(e)**~~(g)~~ xxx**(f)**~~(h)~~ xxx**(g)**~~(i)~~ xxx |
| Glossary | 2.1.2(j) | (j) Projected quantity. Estimated *generation* of a *must dispatch generating unit* over a *trading interval* based on its submitted *projected output* assuming linear ramping calculated in accordance with Section 4.2.4(k) xxx | ~~(j)~~ **(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~~(k)~~ **(j)** xxx | For consistency with the implementation of 5-minute dispatch interval.Renumbering. |
| Responsibilities | 3.1 | Market Operator | ~~Market Operator~~ **PEMC** | To transfer the responsibility of monitoring the Trading Participants’ compliance to the forecast accuracy standards from the Market Operator to PEMC, as the WESM governing body. |
| Responsibilities | 3.1.1 | The *Market Operator* shall review annually the forecast accuracy standards in this Market Manual. | ~~The~~ *~~Market Operator~~* ***PEMC*** shall review annually the forecast accuracy standards in this Market Manual. |
| Responsibilities | 3.1.2 | The *Market Operator* 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*. | The*~~Market Operator~~* **ECO** 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*. |
| Responsibilities – Generation Companies | 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 *trading 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*. | *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*. | For consistency with the implementation of 5-minute dispatch interval. |
|  |  | NEW | **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 on them by the *Market Management System* or the *System Operator*.** | To clearly state the responsibilities of the Market Operator in providing information to Trading participants regarding the real-time dispatch schedules and output restrictions imposed on their must dispatch generating units.  |
| 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: | 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: | Standards for run-of-river hydro are already provided under Table 8.3 of the latest version of the Grid Code. |
|  | 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. | 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. **For this purpose, the ECO shall develop the necessary procedures and guidelines for monitoring the compliance with the forecast accuracy standards including the procedure for the review by the Market Surveillance Committee of the results of the monitoring, and the approval and imposition of appropriate penalty by the PEM Board.**  | To ensure that there are clear procedures in the: (a) conduct of compliance monitoring of forecast accuracy standards, (b) review by MSC of the results of compliance monitoring, and (c) approval of penalties by the PEM Board.  |
| Calculations | 4.2.1 | The *MAPE* of a *must dispatch generating unit* for a period shall be calculated using the following formula: $$MAPE\_{i,p}=\frac{\sum\_{t=1}^{n\_{p}}FPE\_{i,t}}{n\_{p}}$$Where, MAPEi,p *mean absolute percentage error* (in %) of *must dispatch generating unit* i for period pnp number of *trading intervals* within period p wherein *forecast percentage errors* were calculatedFPEi,t *forecast percentage error* (in %) of *must dispatch generating unit* i for *trading interval* t calculated in accordance with Section 4.2.3 | The *MAPE* of a *must dispatch generating unit* for a period shall be calculated using the following formula: $$MAPE\_{i,p}=\frac{\sum\_{t=1}^{n\_{p}}FPE\_{i,t}}{n\_{p}}$$Where, MAPEi,p *mean absolute percentage error* (in %) of *must dispatch generating unit* i for period pnp number of *trading intervals* within period p wherein *forecast percentage errors* were calculatedFPEi,t *forecast percentage error* (in %) of *must dispatch generating unit* i for ***dispatch*** *interval* t calculated in accordance with Section 4.2.3 | For consistency with the implementation of 5-minute dispatch interval. |
| Calculations | 4.2.3 | The *forecast percentage error* for a *trading interval* of a *must dispatch generating unit* shall be calculated using the following formula:$$FPE\_{i,t}=\left|\frac{PQ\_{i,t}-MQ\_{i,t}}{ICQ\_{i}}\right|×100\%$$Where,FPEi,t *forecast percentage error* (in %) of *must dispatch generating unit* i for *trading interval* tPQi,t *projected quantity* (in MWh) of *must dispatch generating unit* i for *trading interval* t calculated in accordance with Section 4.2.4MQi,t *metered quantity* (in MWh) of *must dispatch generating unit* i for *trading interval* t as provided by the *Metering Services Provider*ICQi *installed capacity* *quantity* (in MWh) of *must dispatch generating unit* i calculated by multiplying the *installed capacity* (in MW) of *must dispatch generating unit* i provided during registration in the *WESM* by the duration of a *trading interval* (in hours) | The *forecast percentage error* for a ***dispatch*** *interval* of a *must dispatch generating unit* shall be calculated using the following formula:$$FPE\_{i,t}=\left|\frac{PQ\_{i,t}-MQ\_{i,t}}{ICPQ\_{i,t}\_{}}\right|×100\%$$Where,FPEi,t *forecast percentage error* (in %) of *must dispatch generating unit* i for ***dispatch*** *interval* tPQi,t *projected quantity* (in MWh) of *must dispatch generating unit* i for ***dispatch*** *interval* t calculated in accordance with Section 4.2.4MQi,t *metered quantity* (in MWh) of *must dispatch generating unit* i for ***dispatch*** *interval* t as provided by the *Metering Services Provider*~~ICQ~~~~i~~*~~installed capacity~~**~~quantity~~* ~~(in MWh) of~~ *~~must dispatch generating unit~~* ~~i calculated by multiplying the~~ *~~installed capacity~~* ~~(in MW) of~~ *~~must dispatch generating unit~~* ~~i provided during registration in the~~ *~~WESM~~* ~~by the duration of a~~ *~~trading interval~~* ~~(in hours)~~ | For consistency with the implementation of 5-minute dispatch interval.Revised formula to consider a more appropriate calculation of the FPE as a factor of its maximum “projected quantity” over a billing period for a VRE generation plant. The original formula, as provided in the PGC 2016 Edition and the WESM Manual on Forecast Accuracy Standards, gives VRE resources with higher installed/dependable capacity an avenue to have a lower result of MAPE. This would then be a disadvantage for those plants with low installed/dependable capacity. |
| Calculations | 4.2.4 | The *projected quantity* for each *trading interval* of a *must dispatch generating unit* shall be calculated using the following formula:$$PQ\_{i,t}=\frac{IL\_{i,t}+PO\_{i,t}}{2}$$Where,PQi,t *projected quantity* (in MWh) of *must dispatch generating unit* i for *trading interval* tILi,t *initial loading* (in MW) of *must dispatch generating unit* i used during the scheduling process for *trading interval* tPOi,t *projected output* (in MW) of *must dispatch generating unit* i used during the scheduling process for *trading interval* t | The *projected quantity* for each ***dispatch*** *interval* of a *must dispatch generating unit* shall be calculated using the following formula:$$PQ\_{i,t}=\frac{IL\_{i,t}+PO\_{i,t}}{2}x \frac{1}{n}$$Where,PQi,t *projected quantity* (in MWh) of *must dispatch generating unit* i for *trading interval* tILi,t *initial loading* (in MW) of *must dispatch generating unit* i used during the scheduling process for ***dispatch*** *interval* tPOi,t *projected output* (in MW) of *must dispatch generating unit* i used during the scheduling process for ***dispatch*** *interval* t**n number of dispatch interval(s) within a *trading interval*** | For consistency with the implementation of 5-minute dispatch interval. |
| Calculations | NEW |  | **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 *Projected Quantity* is equal to zero (0) and a metered quantity has been recorded in its metering data.** | To provide the basis for imposition of 100 percent FPE value to instances when FPE shall become incalculable caused by projected quantity having zero (0) value. |
| Exclusions | 4.3.1 | (b) xxx *footnote 13 - Clause 3.8.3.4, WESM Rules* | (b) xxx *footnote 13 - Clause ~~3.8.3.4~~* ***3.8.3.5****, WESM Rules* | For consistency with the WESM Rules as amended by DOE DC No. 2016-10-0014 dated 14 October 2016. |
|  | 4.3.1 | (c) a *market suspension* or *market intervention* was declared for the *trading interval*;(d) xxx; or(e) xxx. | (c) a *market suspension* or *market intervention* was declared for the ***dispatch*** *interval*;(d) xxx; or(e) xxx**; or** | For consistency with the implementation of 5-minute dispatch interval. |
|  | NEW |  | **4.3.1 (f) the projected quantity and the metered quantity both reflect zero (0) MWh.** | If a must dispatch generating unit has no nomination and has no actual output (via the metered quantity), then that generating unit did not have any effect in the determination of prices and schedules in the WESM. Thus, these are recommended to be excluded. It shall also cover solar generating units that do not project any output during night time. |
| Monitoring, Reporting, and Review | 4.4.1 | The *Market Operator* shall report to the *PEM Board* and *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. | The *~~Market Operator~~* ***ECO*** shall report to the *PEM Board* and *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. | To transfer the responsibility of monitoring the Trading Participants’ compliance to the forecast accuracy standards from the Market Operator to PEMC, as the WESM governing body. |
| Monitoring, Reporting, and Review | 4.4.2 | The *Market Operator* shall report to the *PEM Board* and *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. | The *~~Market Operator~~* ***ECO*** shall report to the *PEM Board* and *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. |
| Monitoring, Reporting, and Review | 4.4.3 | The *Market Operator* shall review annually the forecast accuracy standards set in Section 4.1. | ~~The~~ *~~Market Operator~~* **PEMC** shall **periodically** review ~~annually~~ the forecast accuracy standards set in Section 4.1. | To transfer the responsibility of reviewing the forecast accuracy standards from the Market Operator to PEMC, as the WESM governing body. |
| Publication  | 5.2 | This *Market Manual*, as it may be amended from time to time, shall be published in the *market information website* maintained by the *Market Operator.* | This *Market Manual*, as it may be amended from time to time, shall be published ~~in the~~ *~~market information website~~* ~~maintained~~ by **PEMC** ~~the~~ *~~Market Operator~~.* |
| NIST Method for Calculating Percentiles | Appendix A | Sample list: Y[k] = {3%, 5%, 12%, 15%, 20%}; N = 5 | Sample list: Y[k] = {**5**~~3~~%, **12**~~5~~%, **3**~~12~~%, **20**~~15~~%, **15**~~20~~%}; N = 5**Sample ordered data: Y[k] = {3%, 5%, 12%, 15%, 20%}; N = 5** | To show the method in ordering the data. |

 Note: For convenience, please underline and put in bold letters the proposed changes to the WESM Manual.

1. **Proposed Scheme to Monitor the Effectiveness of the Proposed Changes to the WESM Manual**

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1. **Referral**

 MAG Date Received: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Proposed Amendment: [ ]  Urgent [ ]  Minor [ ]  General

1. **For Urgent Amendment (For the use of PEMC President only)**

|  |  |
| --- | --- |
| Date Referred to PEMC President | **[ ]** Yes [ ]  No |
| Certifies as urgent | **[ ]** Yes [ ]  No |
| Convene the RCC within 48 hrs. |  |
| Remarks: |

1. **For Minor and General Amendment (For the use of RCC only)**

|  |  |
| --- | --- |
| Date Referred to RCC:  |  |
| Remarks: |
| Action taken:  |
| Request for comments: | [ ]  Yes [ ]  No |
|  | Request written comments from:[ ]  DRG [ ]  MSC [ ]  PA [ ]  MO[ ]  ECO [ ]  RCC [ ]  TC [ ]  Other PEM Board Committees [ ]  Other Interested Parties  |
| For further review of the Technical Sub-Committee:  | [ ]  Yes Assigned to:[ ]  SO Sub-Committee[ ]  MO Sub-Committee[ ]  Metering Sub-Committee[ ]  Billing and Settlement Sub-Committee[ ]  Legal and Regulatory Sub-Committee  |
| [ ]  No  |
| For public consultation:  | [ ]  Yes [ ]  No  |
| RCC Resolution: | [ ]  Approved [ ]  Disapproved |
| RCC Resolution No.: |  |
| Date of Resolution: |  |
| RCC Meeting No. |  |
| Date of endorsement to the PEM Board: |  |