



**WHOLESALE ELECTRICITY SPOT MARKET  
RULES CHANGE COMMITTEE**

**RESOLUTION NO. 2015-11**

**Proposed Amendments to the Manual on the Management of MRU-MSU  
on the Settlement by MSUs of Displaced Generators**

**WHEREAS**, during the 97<sup>th</sup> RCC Meeting held on 04 February 2015, a presentation was made by the Philippine Electricity Market Corporation (PEMC) regarding the detailed formulation in relation to the settlement by Must-Stop units (MSU) of Displaced Generators (DG), which was not included in the amendments previously endorsed by the RCC, and which the PEM Board and the Department of Energy approved on 29 September and 24 October 2014, respectively;

**WHEREAS**, the intent of the PEMC's presentation is to get the RCC's confirmation on said detailed formulation for the settlement by MSUs of the DGs, which will be included as annex to PEMC's filing with the Energy Regulatory Commission (ERC), for the latter's approval;

**WHEREAS**, in the course of discussions, the RCC commented that when it comes to the monitoring of violations, the deviation of a Generator tagged as MSU within the  $\pm 3\%$  should not be counted as a violation; but in terms of payment, the MSU should not be paid for any generation that is not in accordance with the System Operator's (SO) dispatch instructions;

**WHEREAS**, in view of the foregoing, the RCC recommended revising the formulation on the payment to MSUs to remove the +3% deviation for the MSU;

**WHEREAS**, in the same meeting the RCC representative from the Generation Sector inquired on how to account for the station use of Generators in the settlement to avoid double payment to Generators, and how the Market Operator accounts for the Ex-Ante Quantity (EAQ) when the meter and remote terminal unit (RTU) are in different locations;

**WHEREAS**, in view of the Generators' inquiry, the RCC requested PEMC to determine and present to the RCC a logical and fair way of computing the EAQ in consideration of the house load of Generators located at the gross meter;

**WHEREAS**, during the 98<sup>th</sup> RCC meeting held on 04 March 2015, PEMC made another presentation in view of the RCC's previous request to account for the house load of Generators, as well as the difference between the Generator RTU and meter location in the settlement of MSUs and DG;

**WHEREAS**, in essence, the proposed solution to account for the difference in the location of the meter and the RTU is to introduce a factor (named as factor "b") that will be multiplied with the metered quantity of the Generator, which factor "b" is always a positive value;

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**WHEREAS**, the RCC further suggested establishing a look-up table indicating the historical metered quantity (MQ) and EAQ of Generators and the location of their RTU and meter;

**WHEREAS**, on 08 April 2015 during the 99<sup>th</sup> RCC meeting, in view of the RCC's request and in consideration of the RCC's suggestion, PEMC made a follow-up presentation of the revised formula for the DG settlement by the MSU ;

**WHEREAS**, thereafter, the RCC agreed to carry as its own proposal the settlement formulation drafted by PEMC, which essentially incorporates major revisions to the MRU-MSU Manual;

**WHEREAS**, in the same meeting, the RCC approved the posting of the Proposal for Amendments to the MRU-MSU Manual incorporating the detailed formulation on the settlement by MSUs of DGs, to solicit comments of Participants and interested parties;

**WHEREAS**, the Proposal for Amendments to the MRU-MSU Manual was published in the WESM market information website on 25 May 2015, with notice to participants sent the following day;

**WHEREAS**, in response to the RCC's comments, written submission of their comments were received from the Generators, specifically, from the Philippine Independent Power Producers Association (PIPPA), Aboitiz Power Corporation (APC), and SN Aboitiz Power (SNAP);

**WHEREAS**, the RCC deliberated upon the proposal and gave due course on the comments during the 102<sup>nd</sup> RCC meeting held on 01 July 2015;

**WHEREAS**, in consideration of the comments during the discussions, the RCC incorporated revisions to the Proposed Amendment to the MRU-MSU Manual on the settlement by MSUs of DGs;

**WHEREAS**, in the course of discussions, the Manila Electric Company (MERALCO) representative raised the issue regarding the uncontrollable injection of power to the grid by variable renewable energy (VRE) sources, adding that these types of energy sources are enjoying the benefits of being must-dispatch and priority-dispatch Generators, and as such, may cause some Generators to be displaced;

**WHEREAS**, in view of the foregoing, MERALCO representative suggested the deferment of the RCC's decision on the proposed Section 10.2 of the MRU-MSU Manual, expressing that the formula specified under that Section needs major revisions to consider the injection of power by VREs that may cause some Generators to be displaced;

**WHEREAS**, the MERALCO representative further suggested that in order to address the imbalance between the MSU and Displaced Generator Amount, the settlement between them be coursed through the Net Settlement Surplus (NSS);

**WHEREAS**, the RCC agreed to defer its decision on the proposed Section 10.2 of the MRU-MSU Manual, but with request from MERALCO representative to explain his proposal in more details the following RCC meeting;

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**WHEREAS**, during the 103<sup>rd</sup> RCC meeting, the MERALCO representative presented his proposed formula for the settlement of DGs, which essentially proposes that a DG be paid for its displaced amount, even if the VRE is the cause for it being displaced;

**WHEREAS**, the MERALCO representative further suggested that in order to address the imbalance between the MSU and DG amount, the settlement between them be coursed through the Net Settlement Surplus (NSS);

**WHEREAS**, the RCC, in general, disagreed on the foregoing proposal, emphasizing that the reason for incorporating the settlement mechanism for the MSUs and DGs in the Rules and the Manual is primarily to impose discipline among Generators—so they will strictly comply with their real-time dispatch schedule—and not merely to ensure DG are paid for their opportunity loss;

**WHEREAS**, in relation to the above, the RCC recognized that there will be instances that DGs will not get compensated or their displaced amount will not be equal to their compensation during settlement, in consideration of many factors, including among others, the effect of giving priority to the VREs as provided for under the RE law, and the need for the SO to ensure system security by calling some Generators to constrain-on or constrain-off at times;

**WHEREAS**, in relation to MERALCO's proposal to course through the NSS settlement between the MSUs and DGs, PEMC expressed that this may not be feasible since the NSS is shared both by the Generators and the Customers;

**WHEREAS**, in view of the discussions, the RCC rejected MERALCO's proposal and agreed to retain the RCC-proposed Section 10.2 of the MRU-MSU Manual;

**WHEREAS**, the RCC approved the Proposed Amendment to the MRU-MSU Manual regarding the Settlement by Must-Stop Units of DGs, as revised, in consideration of the RCC's discussions, and agreed on the endorsement of the revised Proposal to the PEM Board, for the latter's approval on the same;

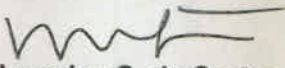
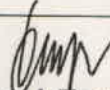
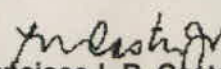
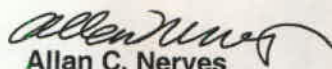


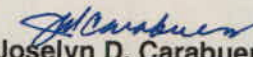

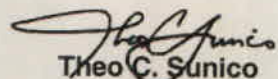
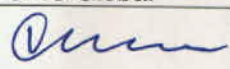
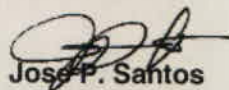

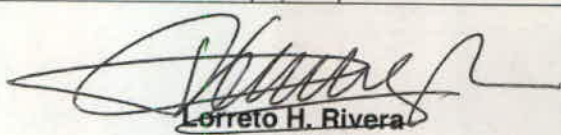
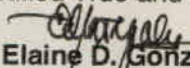
**NOW THEREFORE**, we, the undersigned and in behalf of the sector we represent, hereby resolve as follows:

**RESOLVED**, that the Proposed Amendment to the MRU-MSU Manual regarding the Settlement by MSUs of Displaced Generators (ANNEX A), is hereby adopted and approved by the RCC;

**RESOLVED FURTHER**, that the attached Proposed Amendment to the MRU-MSU Manual regarding the Settlement by MSUs of Displaced Generators is hereby endorsed to the PEM Board for approval and endorsement to the DOE.

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Done this 05 August 2015, Pasig City.

<p>Approved by:</p> <p><b>RULES CHANGE COMMITTEE</b></p>  <p><b>Maila Lourdes G. de Castro</b> Chairperson Independent</p>	
Members:	
 <p><b>Concepcion I. Tanglao</b> Independent</p>	 <p><b>Francisco L.R. Castro, Jr.</b> Independent</p>
 <p><b>Allan C. Nerves</b> Independent</p>	 <p><b>Isidro E. Cacho, Jr.</b> Market Operator Philippine Electricity Market Corporation (PEMC)</p>
 <p><b>Ambrocio R. Rosales</b> Transmission Sector National Grid Corporation of the Philippines (NGCP)</p>	 <p><b>Joselyn D. Carabuena</b> Generation Sector Power Sector Assets and Liabilities Management Corporation (PSALM)</p>
 <p><b>Jose Ferlino P. Raymundo</b> Generation Sector SMC Global</p>	 <p><b>Theo C. Sunico</b> Generation Sector Vivant Corporation</p>
 <p><b>Ciprinilo C. Meneses</b> Distribution Sector (PDU) Manila Electric Company (MERALCO)</p>	 <p><b>Jose P. Santos</b> Distribution Sector (EC) Ilocos Norte Electric Cooperative, Inc. (INEC)</p>
<p><b>Gilbert A. Pagobo</b> Distribution Sector Mactan Electric Company (MECO)</p>	 <p><b>Ludovico D. Lim</b> Distribution Sector Antique Electric Cooperative, Inc. (ANTECO)</p>
 <p><b>Lorreto H. Rivera</b> Supply Sector TeaM (Philippines) Energy Corporation (TPEC)</p>	<p>Certified True and Correct:</p>  <p><b>Elaine D. Gonzales</b> RCC Secretary PEMC</p>





**ANNEX A**  
**Proposed Amendment on MRU-MSU Manual on the Settlement by MSUs of Displaced Generators**

Title	Section	Provision	Proposed Amendment	Rationale
Calculation of Amounts due to Displaced Generator/s	10.1	<p>The difference between the scheduled ex-ante quantity and the actual quantity, multiplied by the ex-post price.</p> <p>Displaced Generator Amount = <math>((EAQ - MQ) - (0.03EAQ)) * EPP</math></p> <p>EPP, EAQ and MQ of the Displaced Generator/s</p> <p>Displaced Generator Amount is equal to zero when <math>(EAQ - MQ)</math> is less than 3% of EAQ.</p>	<p><del>The difference between the scheduled ex-ante quantity and the actual quantity, multiplied by the ex-post price.</del></p> <p><del>Displaced Generator Amount = <math>((EAQ - MQ) - (0.03EAQ)) * EPP</math></del></p> <p>EPP, EAQ and MQ of the Displaced Generator/s</p> <p><del>Displaced Generator Amount is equal to zero when <math>(EAQ - MQ)</math> is less than 3% of EAQ.</del></p> <p><u>The payment shall be made to the Displaced Generator, through the WESM's settlement processes, equivalent to the difference between the Ex-Ante Quantity and the Metered Quantity (considering the meter's location with respect to the Remote Terminal Unit) of the Displaced Generator for the trading interval net of the approved dispatch tolerance in accordance with the WESM Rules multiplied by the ex-post price, provided ex-post price is positive. If the ex-post price is negative, there will be no settlement due to the Displaced Generators and correspondingly, no amount will be collected from the Must Stop Units</u></p> <p><u>Furthermore, there will be no payment to the Displaced Generator if the difference between the Ex-Ante Quantity and the adjusted Metered Quantity is less than the approved dispatch tolerance, in accordance with the WESM Rules, of its Ex-ante Quantity.</u></p> <p><u>In formula:</u></p> $DG_{TA_i} = \begin{cases} [(EAQ_i - b_i * MQ_i) - t * (EAQ_i)] * EPP_i, & \text{if } EAQ_i - b_i * MQ_i > t * EAQ_i \\ 0, & \text{if } EAQ_i - b_i * MQ_i \leq t * EAQ_i \end{cases}$ <p>where,</p> <p><math>DG_{TA_i}</math> Total amount that will be received by the Displaced Generator <math>i</math></p> <p><math>EAQ_i</math> Ex-Ante Quantity of the Displaced Generator <math>i</math></p>	<p>To clearly state the formula that will be implemented and to introduce a factor "b" that will be multiplied to the metered quantity to have a more accurate comparison with the Ex-Ante Quantity</p>

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			$MQ_i$ Metered Quantity of the Displaced Generator $i$ $EPP_i$ Ex-Post Price at the node of the Displaced Generator $i$ $t$ Dispatch Tolerance $b_i$ is the factor multiplied to the metered quantity of the Generator $i$ to account the difference between location of RTU and Meter.	
Settlement of Amounts due to Displaced Generators	10.2	MSUs will pay the displaced Generators, on a pro-rata basis with respect to EAQ-MQ.	<p><b>Must Stop Units (MSUs) will pay the displaced Generators, on a pro-rata basis with respect to EAQ-MQ, the quantity of energy they displaced considering their Meter and RTU locations.</b></p> <p><u>In formula:</u></p> $MSU_{TA_j} = \begin{cases} \frac{MSU_{Q_j}}{\sum_{j=1}^n MSU_{Q_j}} \sum_{i=1}^m DG_{TA_i}, & \text{if } \sum_{j=1}^n MSU_{Q_j} \neq 0 \\ \frac{b_j * MQ_j}{\sum_{j=1}^n (b_j * MQ_j)} \sum_{i=1}^m DG_{TA_i}, & \text{if } \sum_{j=1}^n MSU_{Q_j} = 0 \end{cases}$ $MSU_{Q_j} = \begin{cases} b_j * MQ_j - EAQ_j, & \text{if } b_j * MQ_j - EAQ_j \geq 0 \\ 0, & \text{if } b_j * MQ_j - EAQ_j < 0 \end{cases}$ <p>where</p> <p><math>MSU_{TA_j}</math> Total amount to be paid by the Must Stop Unit <math>j</math></p> <p><math>EAQ_j</math> Ex-Ante Quantity of the Must Stop Unit <math>j</math></p> <p><math>MQ_j</math> Metered Quantity of the Must Stop Unit <math>j</math></p> <p><math>MSU_{Q_j}</math> The energy displaced of the Must Stop Unit <math>j</math> or Must Stop Unit Quantity</p>	To clearly state the formula that will be implemented and to introduce a factor "b" that will be multiplied to the metered quantity to have a more accurate comparison with the Ex-Ante Quantity



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			$n$ Number of Must Stop Units $m$ Number of Displaced Generators $\sum_{i=1}^m DG_{TA_i}$ Grand total of the amounts that will be paid to the Displaced Generators $b_j$ is the factor multiplied to the metered quantity of the Generator $j$ to account the difference between location of its RTU and Meter.	
Calculation of the factor "b"	10.3	New Section	<p><b><u>To account for the difference of the location of RTU and Meter, the factor "b" is multiplied to the Metered Quantity of the generator. This shall be calculated as the average ratio between the interpolated RTU readings and metered quantities of the generator for one year when it is generating power or with positive values for both RTU and Meter. For new generators without one year historical data, its factor "b" in the interim shall be equal to 1.00.</u></b></p> <p><b><u>In formula,</u></b></p> $b_j = \frac{\text{Average Interpolated RTU Reading}}{\text{Average Metered Quantity}}$ <p>where,</p> <p><math>b_j</math> is the factor multiplied to the metered quantity of the Generator <math>j</math> to account the difference between location of its RTU and Meter.</p> <p>Average Interpolated RTU Readings is the average of the positive interpolated RTU readings or snapshots of the generator for one year</p> <p>Average Metered Quantity is the average of the positive Metered Quantity (MQ) of the generator for one year</p>	<p>In actual configuration, the RTU and Meter are not located in the same spot. Either the RTU or Meter is measuring the gross and/or net energy injection/withdrawal. Also, there are cases that there is no one to one correspondence between the RTU and meter. To account for these differences, the factor "b" is introduced so that the comparison between the Ex- Ante Quantity and Meter Quantity is more accurately reflected considering that the differences will be used in the settlement of Displaced Generator and Must Stop Units.</p>