

**WHOLESALE ELECTRICITY SPOT MARKET
RULES CHANGE COMMITTEE**

RESOLUTION NO. 2015-07

**Disapproval of Proposed Amendments to the Dispatch Protocol Manual
in relation to Dispatch Tolerance**

WHEREAS, on 23 February 2015, the SN Aboitiz Power (SNAP) submitted to the Rules Change Committee (RCC) its Proposal for Amendments to the Dispatch Protocol Manual;

WHEREAS, the Proposal is essentially an addendum to the definition of *Dispatch Tolerance* under the Glossary of Terms and Abbreviations of the WESM Dispatch Protocol Manual Issue 11.0;

WHEREAS, the Proposal seeks to address the difficulty of power plants to comply with the dispatch tolerance limit (DTL) of $\pm 3\%$ given the technical limitations of power plants and other external factors;

WHEREAS, during the 98th RCC Meeting held on 04 March 2015, SNAP discussed its proposed amendments with the RCC;

WHEREAS, in the same meeting, the RCC gave its initial comments on the Proposal, including the concern on whether or not the proposal is applicable only to renewable sources of energy, as indicated in SNAP's proposed amendments, and if such, what the applicable dispatch tolerances for the other types of plants would be;

WHEREAS, noting the RCC's comments on the Proposal, the RCC approved the publication in the WESM market information website of the SNAP's proposed amendments to the Dispatch Protocol Manual, to solicit comments of participants and interested parties;

WHEREAS, on 06 March 2015, the Proposal was published for comments, with notice to participants issued on the same day;

WHEREAS, in response to the RCC's call for comments, written submissions were received from the Market Surveillance Committee (MSC) and the Philippine Electricity Market Corporation (PEMC);

WHEREAS, during the 99th RCC meeting held on 08 April 2015, the RCC gave due course on the Proposal, including the comments from PEMC and MSC received relative thereto;

WHEREAS, the comments of the MSC can be summarized as follows:

- i. The Proposal is unclear as it did not specify what type of renewable energy is being referred to in the Proposal;

- ii. The Proponent did not provide a justification for the proposed *dispatch tolerance limit* for renewable resources, which is the **max of the derived values of the +/-3% of RTD, or the minimum (+/-10% of the interconnection facilities, +/-0.1% of the peak demand)**);
- iii. The proposed formula is not justified on the basis of the claim that the DTL should have considered technical constraints, such as meter accuracy, frequency fluctuations, etc, as the proposed formula did not at all consider the technical constraints as mentioned by the Proponent;
- iv. The Proposal provided a description of the DTL for Renewables (REs) only, without specifying what is applicable for non-REs, and whether or not the +/-3% will be maintained for the latter; and
- v. There is inconsistency between the proposed formula and the narrative description of said formulation;

WHEREAS, PEMC's comments, in summary, are as follows:

- i. The WESM Rules provision requiring the setting of dispatch tolerance standards for each type of plant and location should be implemented;
- ii. The applicability of the current DTL setting of +/- 3% may already be up for review having observed that some power plants' MW deviations are fairly consistent regardless of schedule, but the % deviation widely vary depending on the schedule;
- iii. Instead of SNAP's Proposal to amend the Dispatch Protocol Manual, the power plant can instead request for a ruling on the appropriate dispatch tolerance from the System Operator, as provided under the WESM Rules provisions; and
- iv. The proposal is not justified on the basis of meter inaccuracy as mentioned by SNAP.

WHEREAS, in a related Memorandum from the Technical Committee to the RCC in relation to the clarifications being sought by the former on the RCC's request for study on the +/-3% deviation, the Technical Committee referred to the WESM Rules provision that *the System Operator shall develop the Dispatch Tolerance Standards for each type of plant and location*;

WHEREAS, in the same meeting, based on the RCC's recommendation, the SNAP representative expressed that it will submit an alternative proposal to incorporate in the Rules and applicable manuals the exemption of deviations of 10 MW in the monitoring of non-compliances to the dispatch tolerance limits;

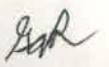
WHEREAS, on the part of the RCC, it agreed to conduct its own review of the dispatch tolerance limit for each plant type and location, though the SO and the MO;

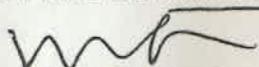
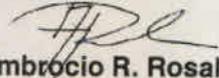
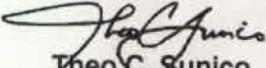
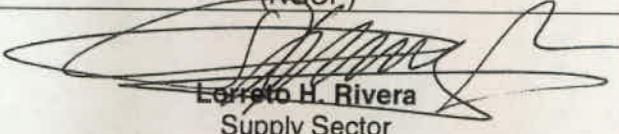
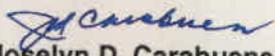
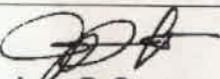
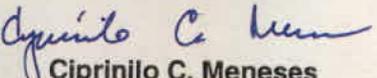
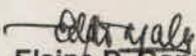
NOW THEREFORE, we, the undersigned and in behalf of the sector we represent, hereby resolve as follows:

RESOLVED, that SNAP's Proposal for Amendments to the Dispatch Protocol Manual (ANNEX A), is hereby disapproved by the RCC for lack of clarity and sufficient justification;

RESOLVED FURTHER, that the RCC's action on the SNAP's Proposed Amendments to the Dispatch Protocol Manual is being reported to the PEM Board, for information.

Done this 08 April 2015, Pasig City.



Approved by: RULES CHANGE COMMITTEE  Mailla Lourdes G. de Castro Acting Chairperson Independent	
Members:	
 Concepcion I. Tanglao Independent	Francisco L.R. Castro, Jr. Independent Tensaiken Consulting
 Isidro E. Cacho, Jr. Market Operator Philippine Electricity Market Corporation (PEMC)	 Ambrocio R. Rosales Transmission Sector National Grid Corporation of the Philippines (NGCP)
 Theo C. Sunico Generation Sector 1590 Energy Corporation	 Lorrato H. Rivera Supply Sector Team (Philippines) Energy Corporation
 Jose Ferlino P. Raymundo Generation Sector SMC Global	 Joselyn D. Carabuena Generation Sector Power Sector Assets and Liabilities Management Corporation (PSALM)
 Jose P. Santos Distribution Sector (EC) Ilocos Norte Electric Cooperative, Inc. (INEC)	 Ciprinilo C. Meneses Distribution Sector (PDU) Manila Electric Company (MERALCO)
Gilbert A. Pagobo Distribution Sector Mactan Electric Company (MECO)	
	Certified True and Correct:  Elaine D. Gonzales RCC Secretary PEMC

ELR



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 Rules can be submitted to:

PEM Board
 Attention: **PEM Committee Secretariat**
 Philippine Electricity Market Corporation
 18/F Robinsons Equitable Tower
 ADB Avenue, Ortigas Center
 Pasig City, 1605 Philippines
 Email address: rcc@wesm.ph
 Fax Number: (+632) 395-2704

I. Proposer's Information

Name	Jose Alfonso C. Miras
Designation	Manager and Head of Production Planning
Signature	
Company	SN Aboitiz Power - Magat, Inc / SN Aboitiz Power -Benguet, Inc
Company Address	10 th floor, NAC Tower, 32 nd St., Bonifacio Global, Taguig City
Telephone No.	02-8189101 local 804
Fax. No.	02-918-36-32
Email Address	Jose.miras@snaboitiz.com

II. WESM Manual Amendments Information

Title of WESM Manual being commented: Dispatch Targets (WESM Dispatch Protocol Issue 9.0)
Nature of Request (please indicate with x) <input checked="" type="checkbox"/> Addition <input type="checkbox"/> Alteration <input type="checkbox"/> Deletion <input checked="" type="checkbox"/> Clarification <input type="checkbox"/> Clerical Correction

III. Proposed Amendment

Title	Section	Provision	Proposed Amendment	Rationale
<p>Dispatch Tolerance (WESM Dispatch Protocol Issue 11)</p>	<p>GLOSSARY OF TERMS & ABBREVIATIONS</p>	<p>Limits on the extent to which Trading Participants may deviate from dispatch targets determined by the System Operator in accordance with clause 3.8.7 of the WESM Rules</p> <p><i>(Further to this, PEM Board Resolution No. 2005-15 sets the dispatch tolerance limit to the WESM at +/-3%)</i></p>	<p>Limits on the extent to which Trading Participants may deviate from dispatch targets determined by the System Operator in accordance with clause 3.8.7 of the WESM Rules</p> <p><u>The dispatch tolerance limit for renewable resources shall be the maximum of the +/-3% of the Real Time Dispatch Schedule; and the smallest value between 10% of the capacity of interconnection facilities and 0.1% of the peak demand of the Grid¹. To illustrate:</u></p> <p><u>Dispatch Tolerance Limit = max(+/-3% of RTD, min(+/-10% of the interconnection facilities, +/-0.1% of the peak demand))</u></p>	<p>Operationally, the +/-3% dispatch tolerance limit is very hard to comply at low generator loading considering the imperfect accuracy of meters, system frequency variation, and fluctuation of fuel supply. For example, at an RTD of 10 MW, a +/-3% of just 0.3 MW deviation would be technically difficult to comply considering the external factors.</p> <p>Considering that WESM Rules allow non-scheduled generation to run without being scheduled in the WESM, a generating unit should be allowed to deviate to the level of maximum load allowable for non-schedule generators or less than one tenth of one percent (<0.1%) of the peak load in a particular reserve region, or less than ten percent (<10%) of the size of the interconnection</p>

¹ WESM Rules Section 2.3.1.4 "A generating unit or a group of generating units connected at a common connection point with a nameplate rating and a combined nameplate rating of less than one tenth of one percent (< 0.1%) of the peak load in a particular reserve region, or less than ten percent (< 10%) of the size of interconnection facilities, whichever is lower, shall be classified as a non-scheduled generating unit, but may at its option be classified as a scheduled generating unit."

				<p>facilities, whichever is lower, as per the Philippine Grid Code (PGC).</p> <p>For reference, Luzon Grid peak demand in 2014 is 8,717 MW, thus (0.1% of 8,717 MW is 8.7 MW.</p>
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Note: For convenience, please underline and put in bold letters the proposed changes to the WESM Manual.

IV. Proposed Scheme to Monitor the Effectiveness of the Proposed Changes to the WESM Manual

V. Referral

MAG Date Received: _____

Proposed Amendment: Urgent Minor General

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

Date Referred to PEMC President	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Certifies as urgent	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Convene the RCC within 48 hrs.		
Remarks:		

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

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

Amendments On The Maximum Dispatch Tolerance Limits

Jose Alfonso C. Miras

23 February 2015

I. SUMMARY OF THE PROPOSED RULES CHANGE

Operationally, the +/-3% dispatch tolerance limit is very hard to comply at low generator loading considering the imperfect accuracy of meters, system frequency variation, and fluctuation of fuel supply. For example, at an RTD of 10 MW, a +/-3% of just 0.3 MW deviation would be technically difficult to comply considering the external factors.

II. BACKGROUND

Section 3.8.7.2 of the WESM Rules states that;

"The Market Operator shall maintain and publish dispatch tolerances standards developed by the System operator for each type of plant, and location, in accordance with the Grid Code and Distribution Code."

Further to this, PEM Board Resolution No. 2005-15 sets the dispatch tolerance limit to the WESM at +/-3%. The +/- 3% dispatch tolerance limit, however, is a single value and does not consider the inherent technical limitation of some power plants to comply with that limit.

III. THE PROPOSED RULES CHANGE

A. Meter Accuracy, Frequency Fluctuation and Other Factors.

Power plant operators rely on the RTU display of the unit to confirm that the actual generation of the plant is equal to the RTD.

The accuracy of the MW displayed of the RTU, however, depends on the accuracy of the instrument transformers (CT and PT). Instrument transformers for RTU have lower accuracy than instrument transformers for revenue metering. Revenue meters as per the PGC, should have an accuracy class of 0.3 using IEEE standard. However, even revenue meter that has an accuracy of class 0.3 does not guarantee a "good" accuracy at load current of less than 10%. The accuracy at low load is, thus, worse for RTU meters.

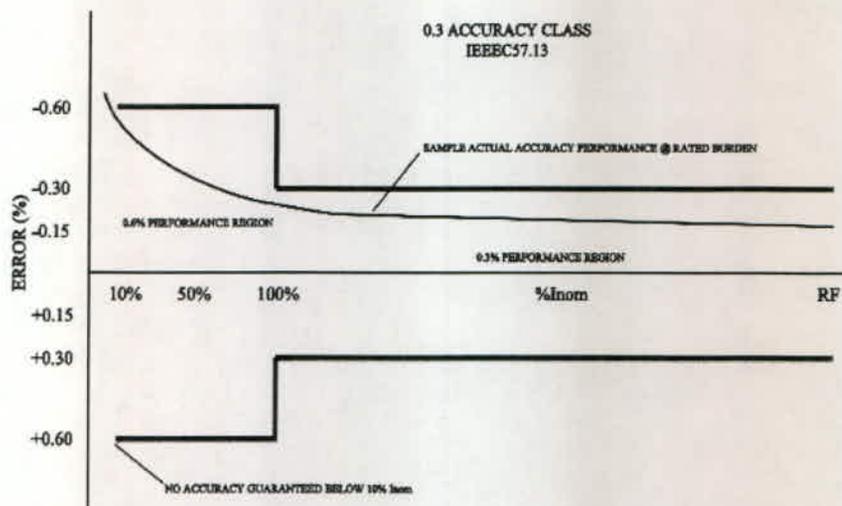


Figure 1. Shows a graphical representation of the 0.3 class with a sample actual accuracy measurement at rated burden plotted within the limits of the class. As the current drops below 10% I_{nom} (nominal current), the accuracy performance falls off exponentially¹.

Moreover, the fluctuation of the system frequency and fuel supply (including change in ambient temperature for thermal plants) results to fluctuation of the generator load. This fluctuation of load is significant if measured in percentage at low dispatch level. This adds to the argument that low generation level cannot be accurately set and technically difficult to comply with the +/-3% dispatch tolerance limit.

Considering the abovementioned limitation and external factors, dispatch tolerance limit of +/-3% of the RTD should not apply in all situations, especially for small generating unit and low RTD. Instead, a generating unit should be allowed to deviate to the level of maximum load allowable for non-schedule generators or less than one tenth of one percent (<0.1%) of the peak load in a particular reserve region, or less than ten percent (<10%) of the size of the interconnection facilities, whichever is lower, as per the Philippine Grid Code (PGC). Besides, the WESM Rules allow non-scheduled generation to run without being scheduled in the WESM.

For reference, Luzon Grid peak demand in 2014 is 8,717 MW, thus (0.1% of 8,717 MW is 8.7 MW.

B. Load Discrepancy Between 59th Minute and End of The Hour

As per the WESM rules, the target dispatch should be measured at the end of the trading interval, however, in reality, WESM measurement is at 1 minute before the end of the interval, see Figure 2. Therefore, naturally, there will be dispatch discrepancy between the 59th minute and end of the hour load.

¹ Ritz Instrument Transformers, Inc. "Applying 600V High-Accuracy Current Transformers for Revenue Metering Applications - Technical Bulletin # 103"

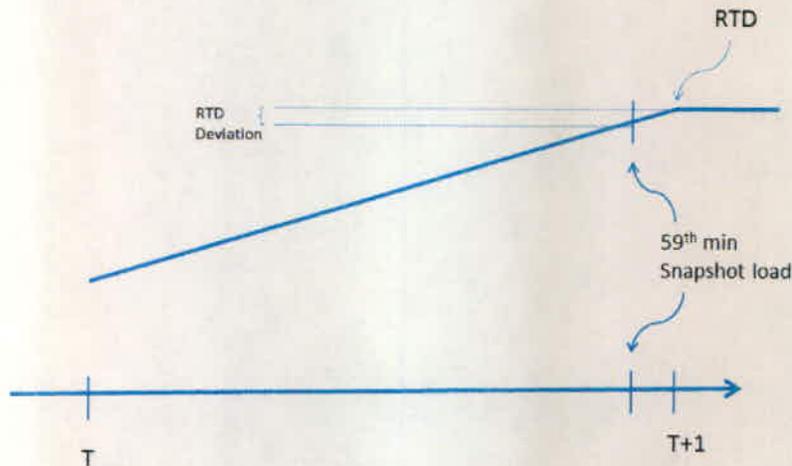


Figure 2

IV. BACKGROUND AND DESCRIPTION OF THE PROPONENT

Mr. Jose Alfonso C. Miras is the Head of Production Planning Section of SN Aboitiz Power - Magat Inc., (SNAP-M) and SN Aboitiz Power – Benguet Inc., (SNAP-BI).

SN Aboitiz Power-Magat, Inc. owns and operates the 380-megawatt (MW) Magat Hydroelectric Power Plant (HEPP) located at the border of Ramon, Isabela and Alfonso Lista, Ifugao.

SN Aboitiz Power-Benguet, Inc. owns and operates the 105-MW Ambuklao HEPP in Bokod and the 132-MW Binga HEPP in Itogon, both located in Benguet.

V. CONCLUSIONS AND RECOMMENDATIONS

Considering the technical limitation of power plants and some external factors, it is difficult to comply with the dispatch tolerance limit of +/-3% at low RTD. The following is being proposed as addendum to the definition of Dispatch Tolerance under the GLOSSARY OF TERMS & ABBREVIATIONS of the WESM Dispatch Protocol Issue 11;

The dispatch tolerance limit for renewable resources shall be the maximum of the +/-3% of the Real Time Dispatch Schedule and the smallest value between 10% of the capacity of interconnection facilities and 0.1% of the peak demand of the Grid². To illustrate:

² WESM Rules Section 2.3.1.4 "A generating unit or a group of generating units connected at a common connection point with a nameplate rating and a combined nameplate rating of less than one tenth of one percent (< 0.1%) of the peak load in a particular reserve region, or less than ten percent (< 10%) of the size of interconnection facilities, whichever is lower, shall be classified as a non-scheduled generating unit, but may at its option be classified as a scheduled generating unit."

Dispatch Tolerance Limit = max(+/-3% of RTD, min(+/-10% of the interconnection facilities, +/-0.1% of the peak demand))

For reference, Luzon Grid peak demand in 2014 is 8,717 MW, thus (0.1% of 8,717 MW is 8.7 MW.

VI. REFERENCES

IEEE C57.13