

MINUTES OF THE 91st MEETING OF THE RULES CHANGE COMMITTEE Regular Meeting No. 2014-10	
<b>Meeting Date&amp; Time:</b>	3 September 2014
<b>Meeting Venue:</b>	9th Floor PEMC Training Rooms 2&3
Attendance List	
In-Attendance	Not In-Attendance
<b>Committee Members:</b> Rowena Cristina L. Guevara --Chairperson/ Independent Maila Lourdes G. De Castro --Independent Ambrocio R. Rosales --System Operator --NGCP Joselyn D. Carabuena --Generation -- PSALM Jose Ferlino P. Raymundo --Generation -- SMC Global Theo Cruz Sunico -- Generation -- 1590 EC Jose P. Santos --Distribution --INEC Isidro E. Cacho, Jr. -- Market Operator --PEMC Ciprinilo C. Meneses --Distribution, MERALCO Sulpicio C. Lagarde, Jr. --Distribution --CENECO Francisco L. R. Castro, Jr. --Independent Concepcion I. Tanglao --Independent Gilbert A. Pagobo -- Distribution --MECO Lorreto H. Rivera --Supply --TPEC  <b>Alternate Members:</b> Erwil R. Bugaoisan - System Operator--NGCP	
<b>PEMC – Market Assessment Group (MAG):</b> Chrysanthus S. Heruela Elaine D. Gonzales Ma. Delia B. Arenos Geraldine A. Rodriguez Romellen C. Salazar Rheinhardt O. Banogon Donna C. Cabanban	
<b>Others: (MO/ SO/ DOE/ ERC Representatives):</b> Gloria Victoria Yap-Taruc - Commissioner - ERC Nelson G. Canlas - ERC Ferdinand B. Binondo - DOE Caryl Miriam Y. Lopez-Mateo - PEMC-Legal Peter Lee U - Market Surveillance Committee	

There being a quorum, Chairperson Dr. Rowena Cristina L. Guevara called the meeting to order at around 9:00 AM.

1 **I. AGENDA:**

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3 The Proposed Agenda for the 91st RCC Meeting was approved as amended.  
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6 **II. REVIEW, CORRECTION AND APPROVAL OF THE MINUTES OF THE 90TH RCC**  
7 **MEETING**

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9 The RCC reviewed and approved the Minutes of the 90th RCC Meeting, as amended, with  
10 the following corrections:

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12 • On page 14 - CVC Table: CVC Price, P/MWh Value  
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15 **III. BUSINESS ARISING FROM THE PREVIOUS MEETING**

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18 **1. Proposed Amendments to the WESM Rules and Various Market Manuals**  
19 **relative to the Management of Must-Run Units (MRU)--Comments from PIPPA,**  
20 **APC, SNAP and PEMC**

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22 ✓ **Proposed Amendments to the WESM Manual on the Management of Must-**  
23 **Run Units**

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25 The RCC once again deliberated upon the Proposed Amendments to the WESM  
26 Manual on the Management of Must-Run Units, giving due course to the comments  
27 received on said proposal. Below are the discussions and agreements made by the  
28 RCC relative to the proposal.  
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<p>Title:</p> <p>Manual on Management of Must Run Units</p>	<p>Title:</p> <p>Manual on Management of Must <b>Run and Must Stop</b> Units</p>	<p>Reflect change in title to include reference to Must Stop Units</p>
<p><b>1.0 Introduction</b></p> <p>In Section 6.6.1 of the WESM Rules, the System Operator was mandated to develop and periodically update the system security and reliability guidelines in consultation with WESM participants and Market Operator. Part of this guideline is the introduction of Must-Run Units (MRUs). Nomination of MRUs by System Operator shall be pre-qualified for dispatch to address the system security aspect of the grid. This document discusses the criteria and additional considerations used in designating MRUs, and their treatment during scheduling and dispatch. It also discusses the manner of settlement or compensation of MRUs.</p> <p>WESM Rules clause 3.5.13.1, as amended, permits the System Operator to direct the Market Operator to impose constraints on the power flow, demand, energy generation of a specific facility in the Grid to address, among other things, the need to dispatch generating units to comply with systems, regulatory and commercial test requirements. Relaxation of constraints on power flows, demand, energy generation and reserves may also be implemented if the Market Operator is unable to generate a feasible dispatch schedule. For this purpose, the System Operator, in consultation with the Market Operator, is directed to develop the criteria and procedures for dispatch of generating units that are required to run as a result of the imposition or relaxation of constraints.</p>	<p><b>1.0 Introduction</b></p> <p>In Section 6.6.1 of the WESM Rules, the System Operator was mandated to develop and periodically update the system security and reliability guidelines in consultation with WESM participants and <u>the</u> Market Operator. Part of this guideline is the introduction of Must-Run Units (MRUs), <u>and</u> <del>a</del>Nomination of MRUs by System Operator <u>whether scheduled or on real-time basis shall be pre-qualified for dispatch</u> to address the system security aspect of the grid. <u>Likewise, to address system security and reliability of the grid, the use of Must Stop Units (MSU) was also introduced to tag a certain generator/s for the non-conformity to dispatch instructions as issued by the System Operator.</u> This document discusses the criteria <del>and</del> <b>additional considerations</b> used in designating MRUs, <del>and their treatment</del> during scheduling and dispatch. It also discusses the manner of settlement or compensation of MRUs.</p> <p>WESM Rules clause 3.5.13.1, as amended, permits the System Operator, <u>to direct in coordination with the Market Operator,</u> to impose constraints on the power flow, <del>demand,</del> energy generation of a specific facility in the Grid to address <u>system security and reliability of the Grid,</u> <del>among other things, the need to dispatch generating units to comply with systems, regulatory and commercial test requirements.</del> <u>On the other hand,</u> Relaxation of constraints on power flows, <del>demand,</del> energy</p>	<p>PEMC commented that while the System Operator is the one that imposes the constraints, then it should also be the one to relax such constraints and not the Market Operator. The System Operator responded that it does not relax constraints. On the basis of Mr. Rosales' argument, the RCC retained its proposal on the relaxation of constraints by the MO.</p>

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	generation and reserves may also be implemented <b>if by</b> the Market Operator <del>is-if it is</del> unable to generate a feasible dispatch schedule. For this purpose, <b>the System Operator, in consultation with</b> the Market Operator, in consultation with the System Operator, is directed to develop the criteria and procedures for dispatch of generating units that are required to run as a result of the imposition or relaxation of constraints.	
<b>2.0 Objective</b>  This document is intended to -  2.1. Establish the criteria for designating Must-Run Units and define the procedures for their treatment during scheduling and dispatch.  2.2. Establish the methodology to be used for the settlement and compensation of Must Run Units.	<b>2.0 Objective</b>  This document is intended to -  2.1. <del>Establish</del> <b>Provide</b> the criteria for designating Must-Run Units and define the procedures for their treatment during scheduling and dispatch.  2.2. <del>Establish</del> <b>Provide</b> the methodology to be used for the settlement and compensation of Must Run Units.  <b>2.3 Introduce the concept of Must-Stop Units and Displaced Generators and the procedures for their treatment and settlement.</b>	The RCC agreed to revise Section 2.3 to insert "Displaced Generator."
3.0 The procedures set out in this document shall be enforced in the preparation of the Dispatch Schedules for Luzon, Visayas and Mindanao Power Systems, and in the settlement of generation units designated as MRUs following the criteria and procedures in this manual.	<del>These procedures Manual sets out in this document shall be enforced in the procedures of the System Operator and the Market Operator for</del> the preparation of the Dispatch Schedules for Luzon, Visayas and Mindanao Power Systems, and <del>in for</del> the settlement of generation units designated as MRUs following the criteria and procedures in this manual.	The RCC agreed to accept PEMC's proposed amendment, in compliance with PA's recommendation so as to make accountabilities clear.
<b>4.0 Definition of Terms</b>	<b>4.0 Definition of Terms</b>	
New provision	<b>4.1 Constrain-on. In respect of a generating unit, the output of that generating unit is re-</b>	The RCC agreed to further clarify its definition of constrain on.



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	<u>dispatched by the System Operator above its Real-Time Dispatch schedule in accordance with the WESM Merit Order Table (WMOT).</u>	
New provision	<u>4.2 Constrain-off. In respect of a generating unit the output of that generating unit is re-dispatched by the System Operator below its Real-Time Dispatch schedule in accordance with the WESM Merit Order Table.</u>	The RCC agreed to further clarify its definition of constrain off.
New provision	<u>4.3 Constraint. A limitation on the capability of any combination of network elements, loads, generating units or Ancillary Service Providers such that it is, or is deemed by the System Operator to be unacceptable to adopt the pattern of transfer, consumption, generation or production of electrical power or other services that would be most desirable if the limitation were removed.</u>	
New provision	<u>4.4 Displaced Generator- a generating unit identified and instructed by the SO in an out of merit dispatch to reduce the provision of energy specified in its RTD instruction exclusively caused by excess generation due to non-compliance of generators to dispatch instructions and use of reactive support reserve.</u>	It was agreed by the RCC that the previous DOE definition of MSU will now be referred to as the <i>Displaced</i> Generator in the RCC proposal, based on the re-definition of the terms MRU and MSU.
<b>4.1 Must-Run Unit</b> –a generating unit identified by the System Operator to be on-line on a particular Trading Interval to address System Security requirements and other considerations as provided in this manual.	<u><b>4.5 1 Must-Run Unit (MRU)</b> – a generating unit identified and instructed, on real time or scheduled basis, by the System Operator to either be a) come on-line, or b) provide additional energy on a particular Trading Interval but the dispatch of which is said to be Out of Merit, to address System Security requirements. and other considerations as provided in this manual. For clarity, MRUs shall be utilized only after the System Operator has exhausted all available Ancillary Services. MRUs are</u>	The RCC agreed to revise the definition taking into consideration the comments received, that MRUs may also refer to a generating unit that are already online and were asked to provide additional energy.

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	<p><u>classified as follows:</u></p> <p><b>4.5.1 Scheduled MRU – MRU designated by the System Operator before the trading interval and included in the RTD schedule through the imposition of Security Limit as defined in the WESM Dispatch Protocol Manual.</b></p> <p><b>4.5.2 Real Time MRU – MRU designated by the System Operator during the trading interval.</b></p> <p><b><u>A Non-Exhaustive List of Criteria for the Designation of MRUs is listed in Appendix A.</u></b></p>	
	<b>4.6 Must-Stop Unit (MSU) – a generating unit identified and instructed by the System Operator to reduce the provision of energy due to its non-compliance of the Dispatch Schedule to address or prevent possible threat to the System Security requirements of the Grid.</b>	
	<b>4.7 Out of Merit Dispatch- <u>Dispatch instructions issued by the System Operator that is not in accordance with the WMOT to address System Security.</u></b>	The RCC agreed to include a definition of Out of Merit Order.
<b>4.2 System Security</b> – the safe scheduling, operation and control of the power system on a continuous basis in accordance with the system security and reliability guidelines established under the Grid Code.	<b>4.82 System Security</b> – the safe scheduling, operation and control of the power system on a continuous basis in accordance with the system security and reliability guidelines established under the Grid Code.	
<b>4.3 System Security and Reliability Guidelines</b> – the standards governing system security and reliability of the power system, which may include but are not limited to standards for the frequency of the power system in operation and ancillary	<b>4.93 System Security and Reliability Guidelines</b> – the standards governing system security and reliability of the power system, which may include but are not limited to standards for the frequency of the power system in operation and ancillary services	

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services (including guidelines for assessing requirements and utilization), developed by the Market Operator and System Operator in accordance with the Grid Code.	(including guidelines for assessing requirements and utilization), developed by the Market Operator and System Operator in accordance with the Grid Code.	
<b>4.4 System Test</b> – the set of tests which involve simulating conditions or the controlled application of unusual or extreme conditions that may have an impact on the Grid or the User System.	<b>4.104 System Test</b> – the set of tests which involve simulating conditions or the controlled application of unusual or extreme conditions that may have an impact on the Grid or the User System.	
New provision	<b>4.11 WESM Merit Order Table (WMOT) – for purposes of dispatch protocol under the WESM, defined based on the Grid Code with an addition of unscheduled generating units arranged based on price offers; the WMOT is based on a single market.</b>	The RCC also agreed to define WESM Merit Order Table in the Manual and the WESM Rules.
<b>5.0 Responsibilities</b>  <b>5.1</b> The Market Operator shall prepare hour-ahead, day-ahead and week- ahead Dispatch Schedule based on net load forecast, current system condition, accepted plant/unit bid nomination for MRU/s and either/both Ancillary Services and Energy (as applicable), and required spinning and contingency reserve level.	<b>5.0 Responsibilities</b>  <b>5.1</b> The Market Operator shall prepare hour-ahead, day-ahead and week- ahead Dispatch Schedule based on net load forecast, current system condition, accepted plant/unit bid nomination for MRU/s and either/both Ancillary Services and Energy (as applicable), and required <b>spinning and contingency</b> -reserve level.	
<b>5.2</b> The System Operator shall dispatch MRU/s based on the submitted hour-ahead generation schedule by the Market Operator.	<b>5.2</b> The System Operator (SO) shall <u>issue</u> dispatch <del>MRU/s – based on the submitted hour-ahead generation schedule by the Market Operator</del> <u>instructions to Must Run Unit/s (MRUs) to a) come on-line or b) provide additional energy, on real-time or scheduled basis on a particular Trading Interval whenever all applicable Ancillary Services are exhausted in order to maintain system security requirements of the Grid.</u>	The RCC realigned the provision as a result of the changes adopted on the definition of MRU
<b>5.3</b> Re-dispatch shall be in accordance with the contingency plan prepared by System Operator.	<b>5.3 The System Operator shall issue re-dispatch instructions to generators to constrain-on (i.e. increase the output in excess of RTD or from</b>	The RCC agreed to retain the RCC Proposal subject to review of the

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	<b><u>shutdown to be on-line or) or to constrain-off (i.e. decrease the output to Pmin or from on-line to be shutdown) with due consideration to power quality, reliability and security of the grid. Re-dispatch shall be in accordance with the contingency plan prepared by System Operator.</u></b>	provisions in the Billing and Settlement Manual on the use of constrain-off.
5.5 The System Operator shall be responsible for monitoring and submitting necessary information to determine the settlement amounts for MRUs.	<p>5.5 The System Operator shall be responsible for monitoring and submitting the necessary information <b><u>in the Dispatch Discrepancy Report</u></b> to the Market Operator for purposes of the settlement of MRUs <b><u>and Displaced Generators. The Market Operator shall publish the same information in the WESM website after one week.</u></b></p> <p><b><u>All information related to the use and designation of MRUs and MSUs are contained in the Dispatch Discrepancy Report which shall contain the following information as the minimum:</u></b></p> <ul style="list-style-type: none"> <li>• <b><u>Trading Date and interval concerned</u></b></li> <li>• <b><u>Criteria used for the designation of the MRU/MSU</u></b></li> <li>• <b><u>Short description of the issue being addressed (e.g. frequency breached x Hz)</u></b></li> <li>• <b><u>Loading of scheduled Ancillary Services</u></b></li> </ul>	<p>The SO presented samples of its Dispatch Discrepancy Report containing the information relative to the use of MRU.</p> <p>The RCC agreed to adopt the proposed provisions of SNAP, enumerating the information that need to be published, with minor revisions.</p>
5.6 The Market Operator shall be responsible for implementing the procedures on the settlement of MRUs.	5.6 The Market Operator shall be responsible for implementing the procedures on the settlement of MRUs, <b><u>and Displaced Generators.</u></b>	
<b>6.0 Must-Run Unit Criteria</b>	<p><b>6.0 Must-Run Unit Criteria</b></p> <p><b><u>This section defines the general criteria used by the System Operator to designate MRUs.</u></b></p>	The RCC agreed to adopt the PEMC suggestion for an introductory paragraph.
<b>6.1 System Security</b>	<b>6.1 System Security</b>	RCC proposal was retained.

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<p>The criteria for designating Must-Run Units evolving on the System Security are as follows:</p> <p>6.1.1 <b>System Voltage Requirement</b> - this refers to the required voltage control and reactive power which the System Operator may need to take into account for the reliability of the Grid.</p> <p>6.1.2 <b>Thermal Limits of Transmission Line and Power Equipment</b> - this refers to the dispatch limitations of generators affected by the actual condition of the transmission lines and/or power equipment.</p> <p>6.1.3 <b>Systems Tests of TransCo Facilities/ Equipment</b> - these are tests undertaken to certain substation equipment that may have impact on the Grid if not addressed by the dispatch of MRUs.</p> <p>6.1.4 <b>Insufficient offers from generators</b> to meet the demands for the real-time dispatch of energy.</p> <p>6.1.5 <b>Inadequate levels of reserve</b> to meet the security and reliability requirements of the Grid.</p>	<p><u>In an event where all available Ancillary Services have been exhausted to address the threat in system security, the System Operator shall make use of the MRUs to ensure the reliability and security of the grid. The following operating criteria shall be observed for designating Must-Run Units evolving on the System Security are as follows:</u></p> <p>6.1.1 <b>System Voltage Requirement</b> - this refers to the required voltage control and reactive power which the System Operator may need to take into account for the reliability of the Grid.</p> <p>6.1.2 <b>Thermal Limits of Transmission Line and Power Equipment</b> - this refers to the dispatch limitations of generators affected by the actual condition of the transmission lines and/or power equipment.</p> <p>6.1.3 <b>Real-power Balancing and Frequency Control</b> - <u>this refers to the energy requirement to maintain supply-demand balance.</u> <del>Systems Tests of TransCo Facilities/ Equipment - these are tests undertaken to certain substation equipment that may have impact on the Grid if not addressed by the dispatch of MRUs.</del></p> <p><del>6.1.4 Insufficient offers from generators to meet the demands for the real-time dispatch of energy.</del></p> <p><del>6.1.5 Inadequate levels of reserve to meet the security and reliability requirements of the Grid.</del></p>	
<p><b>6.2 Additional Considerations</b></p> <p>Generating units may also be designated as MRUs based on the following considerations:</p>	<p><b>6.2 Additional Considerations</b></p> <p><del>Generating units may also be designated as MRUs based on the following considerations:</del></p>	<p>The RCC agreed as follows:</p> <ul style="list-style-type: none"> <li>• security-related should be part of MRU Manual</li> <li>• non-security related should be part</li> </ul>

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6.2.1 <b>Regulatory Requirements</b> . these are unit tests imposed by the government (i.e., boiler tests, emission tests, other environmental tests, etc.)		<del>Regulatory Requirements . these are unit tests imposed by the government (i.e., boiler tests, emission tests, other environmental tests, etc.)</del>		<ul style="list-style-type: none"><li>Plants on Commercial testing should be price-takers, but settlement of which should be clearly defined and incorporated in the WESM Manuals</li><li>Propose rules changes on the duration of testing of plants</li></ul>
6.2.2 <b>Commercial Operation Requirements</b> . these are unit tests imposed by the System Operator or as required in the Philippine Grid Code (i.e., performance, commissioning, fuel stack sampling, Ancillary Service, etc.)		<del>Commercial Operation Requirements . these are unit tests imposed by the System Operator or as required in the Philippine Grid Code (i.e., performance, commissioning, fuel stack sampling, Ancillary Service, etc.)</del>		
6.2.3 <b>Local Calamities and Emergencies</b> . these are short-term incidents (i.e., flooding, etc.) that would require designation of generators as MRUs to avert or minimize damage to infrastructure and security of people living in affected localities.		<del>6.2.3 Local Calamities and Emergencies . these are short-term incidents (i.e., flooding, etc.) that would require designation of generators as MRUs to avert or minimize damage to infrastructure and security of people living in affected localities.</del>		
7. <b>Considerations and Criteria for Selection of Must Run Units</b>		Considerations and Criteria for Selection of Must-Run Units and Tagging of Must-Stop Units 7.		Adopted revisions to include tagging of Must Stop Units
7.1 The System Operator shall select and designate the generating unit that will run as an MRU for any relevant trading interval, in accordance with the criteria set forth in this Manual. The dispatch of the selected MRU/s shall be based on the hour-ahead generation schedule generated by the Market Operator.		7.1. The System Operator shall select and designate the generating unit that will run as an MRU <del>or will be tagged as MSU</del> for any relevant trading interval, in accordance with the criteria set forth in this Manual. <del>The dispatch of the selected MRU/s shall be based on the hour-ahead generation schedule generated by the Market Operator.</del>		
7.2 The criteria and considerations for selection of an MRU will depend on the reason for the designation of the MRU, as detailed in the table below.		7.2. The criteria and considerations for selection of an MRU will depend on the reason for the designation of the MRU, as detailed in the table below.		The RCC agreed to retain bullet on reactive support ("power plants with reactive power generation/ absorption capability) under System Voltage Requirement while the reserve market is not yet implemented
Conditions Criteria	Considerations for Selection/ Qualification of Units	Conditions Criteria for MRU	Considerations for Selection/ Qualification of Units	
		System Voltage	<ul style="list-style-type: none"><li>Generating unit/s run</li></ul>	



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<b>System Voltage Requirement</b> - refers to the required voltage control and reactive power which the System Operator may need to take into account for the reliability of the Grid	<ul style="list-style-type: none"> <li>Power plants with reactive power generation/ absorption capability.</li> <li>Strategically located in the Grid to control under-/over-voltage in the vicinity.</li> </ul>	<b>Requirement – this</b> refers to the required voltage control and reactive power which the System Operator may need to take into account for the reliability of the Grid.	<p><u>as MRU shall provide/absorb reactive power support in accordance with its corresponding reactive power capability curve to address under/over voltage problem.</u></p> <ul style="list-style-type: none"> <li><u>Power plants with reactive power generation/ absorption capability.</u></li> <li><u>The use of MRU shall be based on the location where voltage problem exists.</u></li> <li><u>Strategically located in the Grid to control under-/over-voltage in the vicinity.</u></li> </ul>	
<b>Thermal Limits of Transmission Line and Power Equipment</b> - refers to the dispatch limitations of generators affected by the actual condition of the transmission lines and/or power equipment.	<ul style="list-style-type: none"> <li>consider resulting limits of the transmission lines or the requirements of the power equipment</li> </ul>			
<b>Systems Tests of TransCo Facilities/Equipment</b> - are tests undertaken to certain substation equipment that may have impact on the Grid if not addressed by the dispatch of MRUs.	<ul style="list-style-type: none"> <li>consider resulting limits in the requirements of Transco facilities or equipment undergoing tests</li> </ul>	<b>Thermal Limits of Transmission Line and Power Equipment - this</b> refers to the dispatch limitations of generators affected by the actual condition of the transmission lines and/or power equipment.	<ul style="list-style-type: none"> <li><u>consider resulting limits of the transmission lines or the requirements of the power equipment</u> <u>Generating unit/s called to run as MRU to ensure the security and reliability of the grid.</u></li> </ul>	
		<b>Systems Tests of TransCo Facilities/Equipment -</b>	<ul style="list-style-type: none"> <li><u>consider resulting limits in the requirements of</u></li> </ul>	

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<b>Insufficient offers from generators</b> – to meet the demands for real-time dispatch of energy	<ul style="list-style-type: none"> <li>power plants with available energy capable of running during trading intervals with under-generation</li> <li>power plants with fast start capability</li> </ul>	<u>are tests undertaken to certain substation equipment that may have impact on the Grid if not addressed by the dispatch of MRUs.</u>	Transco facilities or equipment undergoing tests	
<b>Inadequate reserve levels</b> – to meet security and reliability requirements of the Grid	<ul style="list-style-type: none"> <li>power plants certified as ancillary services providers</li> <li>power plants to be selected based on balance of required reserve level</li> </ul>	<u>Insufficient offers from generators – to meet the demands for real-time dispatch of energy</u>	<ul style="list-style-type: none"> <li>power plants with available energy capable of running during trading intervals with under-generation</li> <li>power plants with fast start capability</li> </ul>	
<b>Regulatory Requirements</b> - are unit tests imposed by the government (i.e., boiler tests, emission tests, other environmental tests, etc.)	<ul style="list-style-type: none"> <li>power plants required to undergo tests will be run as MRU, provided there are no line constraints</li> </ul>	<u>Inadequate reserve levels – to meet security and reliability requirements of the Grid</u>	<ul style="list-style-type: none"> <li>power plants certified as ancillary services providers</li> <li>power plants to be selected based on balance of required reserve level</li> </ul>	
<b>Commercial Operation Requirements</b> - are unit tests imposed by the System Operator or as required in the Philippine Grid Code (i.e., performance, commissioning, fuel stack sampling, Ancillary Service, etc.)	<ul style="list-style-type: none"> <li>power plants required to undergo tests will be run as MRU, provided there are no line constraints</li> </ul>	<u>Regulatory Requirements – are unit tests imposed by the government (i.e., boiler tests, emission tests, other environmental tests, etc.)</u>	<ul style="list-style-type: none"> <li>power plants required to undergo tests will be run as MRU, provided there are no line constraints</li> </ul>	
		<u>Commercial Operation Requirements – are unit tests imposed by the System Operator or as required in the Philippine Grid Code (i.e., performance, commissioning, fuel stack sampling, Ancillary Service, etc.)</u>	<ul style="list-style-type: none"> <li>power plants required to undergo tests will be run as MRU, provided there are no line constraints</li> </ul>	
		<u>Local Calamities and</u>	<ul style="list-style-type: none"> <li>consider requested</li> </ul>	

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<b>Local Calamities and Emergencies</b> - are short-term incidents (i.e., flooding, etc.) that would require designation of generators as MRUs to avert or minimize damage to infrastructure and security of people living in affected localities	<ul style="list-style-type: none"><li>consider requested quantities and pre-defined contingency plans</li></ul>	<b><u>Emergencies – are short-term incidents (i.e., flooding, etc.) that would require designation of generators as MRUs to avert or minimize damage to infrastructure and security of people living in affected localities</u></b>	<b>quantities and pre-defined contingency plans</b>	
		<b><u>Real-power Balancing and Frequency Control – this refers to the energy requirement to maintain supply-demand balance.</u></b>	<ul style="list-style-type: none"><li><b><u>The System Operator deviates from the WMOT and issues dispatch instruction to the Generating unit/s with fast ramp rate capability to constrain-on its output to immediately address threat in security and reliability of the grid.</u></b></li><li><b><u>During islanding operation or whenever a portion or part of the grid is isolated, the System Operator may require the Generator/s to come on-line to supply the corresponding demand of the localized portion of the isolated part of the grid</u></b></li></ul>	
8.0 Scheduling and Dispatch Procedures		8.0 Scheduling and Dispatch Procedures		

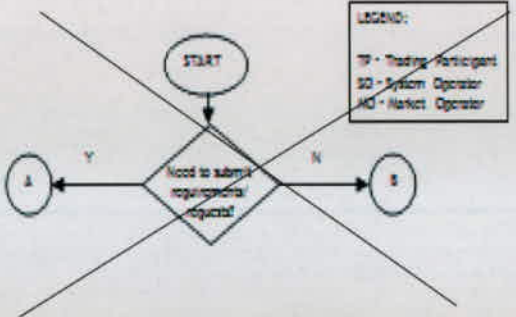
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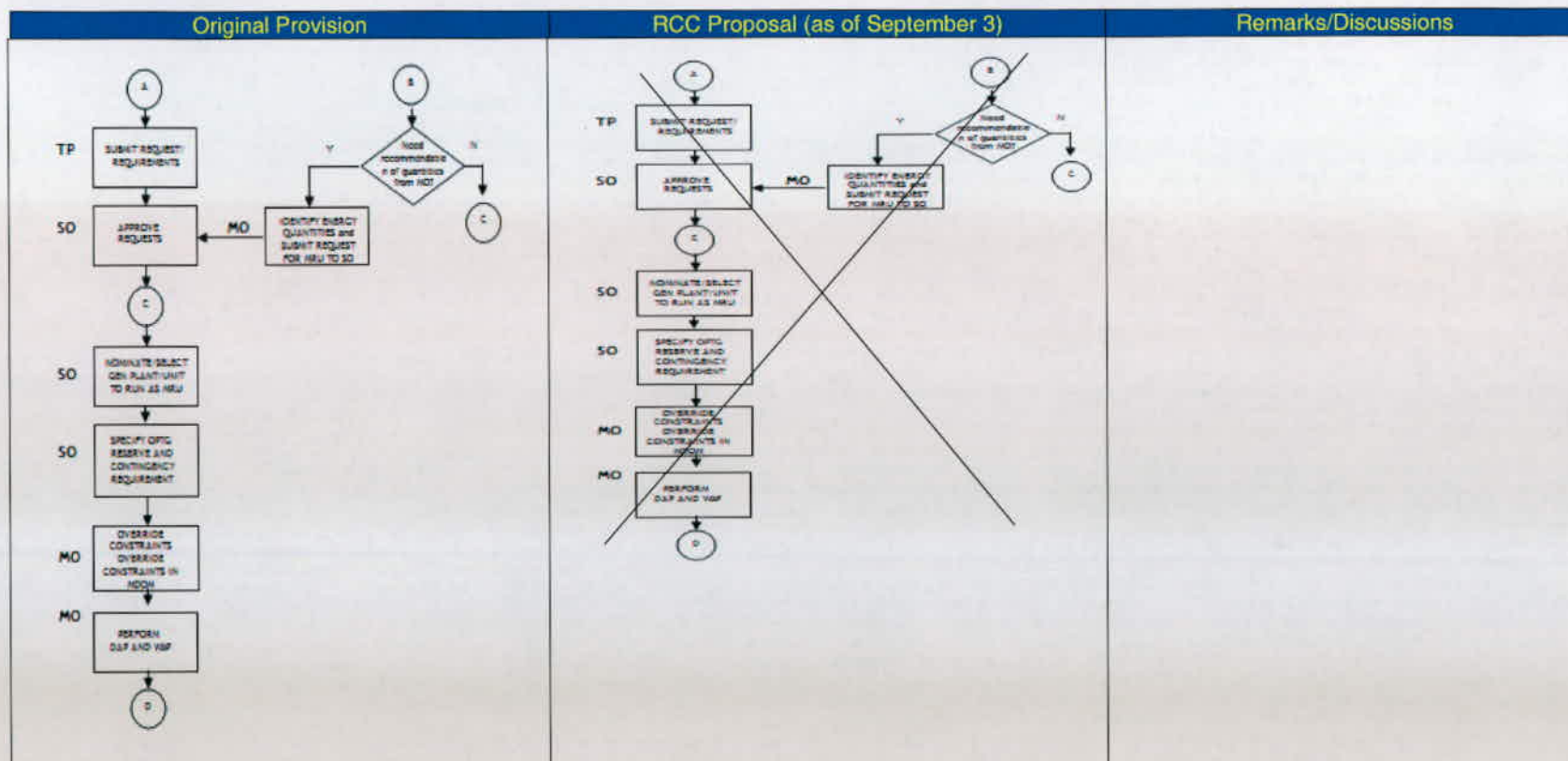
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Original Provision	RCC Proposal (as of September 3)	Remarks/Discussions
8.1 If MRUs are designated due to insufficiency of offers from generators, the Market Operator shall inform the System Operator of the level of expected undergeneration (in MWh) as reflected in the real time dispatch (RTD) schedule	<del>8.1 If MRUs are designated due to insufficiency of offers from generators, the Market Operator shall inform the System Operator of the level of expected undergeneration (in MWh) as reflected in the real time dispatch (RTD) schedule. The Generating unit/s identified and instructed by the System Operator to run as MRUs or MSU either on real-time or scheduled basis, shall be based on the security assessment conducted by the System Operator. The MRU plants utilized by the System Operator shall be reported to the Market Operator for MRU settlement.</del>	<p>The RCC agreed to carry SNAP's Proposal with revisions.</p> <p>The RCC noted the comment on the need for proof on the exhaustion of ancillary service possibly through an SO audit.</p> <p>On the comment that MRU should be accounted for under NGCP's ASPP, it was recalled that NGCP raised in previous RCC discussions that it shall await the directive from the DOE on the same. On this note, the RCC reminded the DOE representative Mr. Ferdinand Binondo on the letter that is supposed to be sent by the DOE to NGCP directing the NGCP to account the MRU as part of its ancillary procurement.</p>
8.2. Trading Participants that request that their generating units be designated as MRUs in order to comply with regulatory or commercial requirements pursuant to Sections 6.2.1 and 6.2.2 of this Manual will submit to the System Operator a formal request for designation as MRU and such supporting documents as may be required by the System Operator. Copies of the request shall be furnished to the Market Operator.	<del>8.2 Trading Participants that request that their generating units be designated as MRUs in order to comply with regulatory or commercial requirements pursuant to Sections 6.2.1 and 6.2.2 of this Manual will submit to the System Operator a formal request for designation as MRU and such supporting documents as may be required by the System Operator. Copies of the request shall be furnished to the Market Operator.</del>	
8.3. Trading Participants that request for designation of their generating units MRUs to avert the impact of local calamities or emergencies will submit request to the System Operator and shall state the quantity (in MWh) for which they request to be run as MRU. Copies of the request shall be furnished the Market Operator.	<del>8.3 Trading Participants that request for designation of their generating units MRUs to avert the impact of local calamities or emergencies will submit request to the System Operator and shall state the quantity (in MWh) for which they request to be run as MRU. Copies of the request shall be furnished the Market Operator</del>	

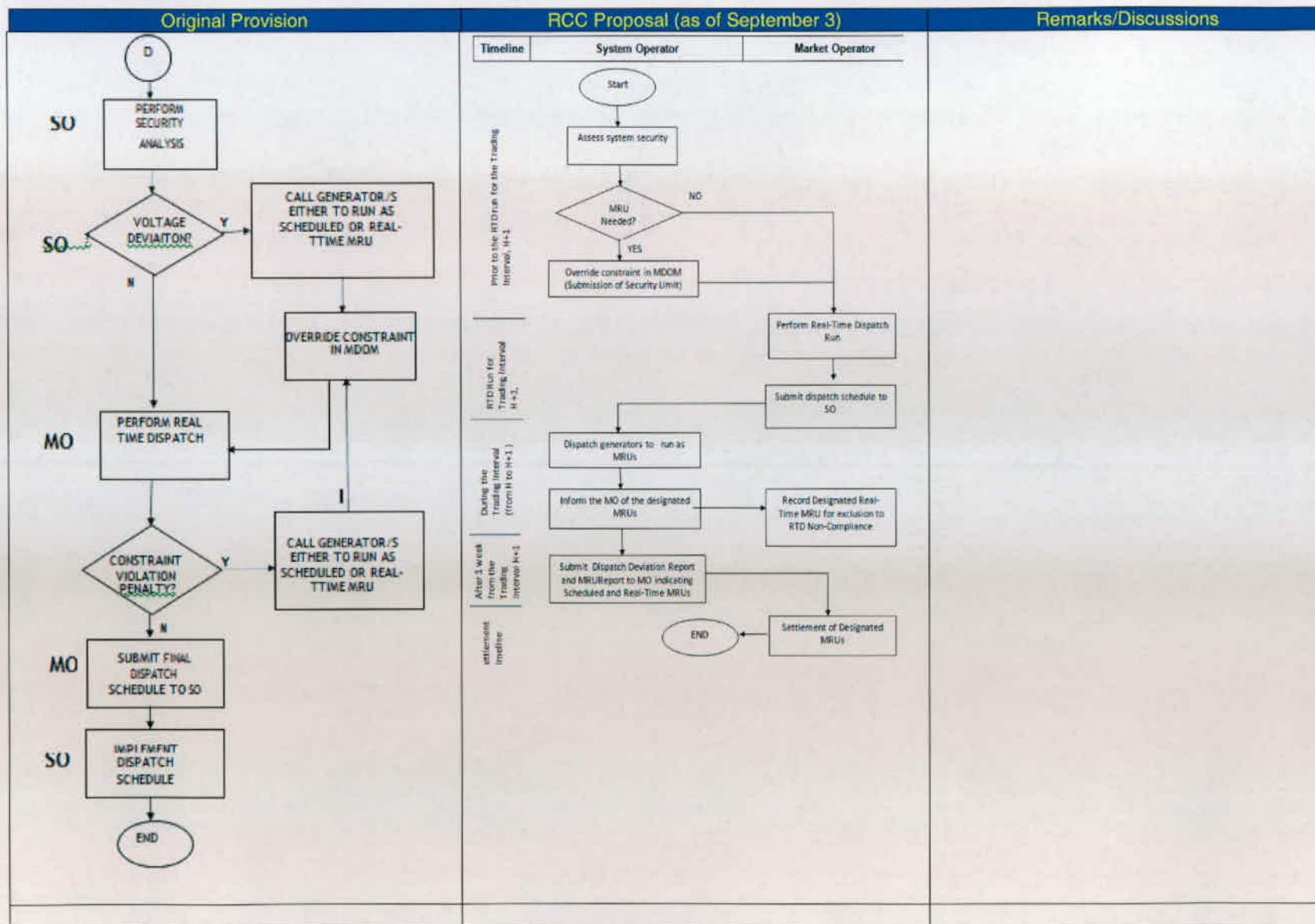
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Original Provision	RCC Proposal (as of September 3)	Remarks/Discussions
8.4. Trading Participants whose generating plants are designated as MRUs must strictly comply with the corresponding dispatch instructions of the System Operator	<del>8.2 8.4 Trading Participants</del> <b>Generators</b> whose generating plants are <b>instructed designated</b> as MRUs must <b>immediately and</b> strictly comply with the corresponding dispatch instructions of the System Operator.	
8.5. The following flowchart outlines the treatment of Must-Run Units during the scheduling and dispatch:	<b>8.3 8.5</b> The following flowchart outlines the treatment of Must-Run Units during the scheduling and dispatch: 	The RCC agreed to accept PEMC's proposed flowchart. SNAP's comment is already addressed in the PEMC's proposed flowchart.







Public

Original Provision	RCC Proposal (as of September 3)	Remarks/Discussions
<b>9. Settlement of Must Run Units</b>  Generating units which are designated by the System Operator as Must Run Units shall be compensated based on the prevailing Generation Price Index (the "GPI"). GPI represents the blended price of bilateral and spot energy purchases. This approximates the generation charge component paid by the electricity end-consumers.  xxx	<b>9. Settlement of Must Run Units</b>  Generating units <u>that are designated instructed</u> by the System Operator as Must Run Units shall be compensated based on the prevailing Generation Price Index (the "GPI"). GPI represents the blended price of bilateral and spot energy purchases. This approximates the generation charge component paid by the electricity end-consumers.  Xxx	RCC agreed to use instructed instead of designated.
	<b>9.2. Verification of MRU Data</b>  <b>9.2.1. The System Operator shall submit all reports of MRU events to the Market Operator for purposes of MRU settlement.</b>  <b>9.2.2. The Generators shall endeavour to validate all System Operator reports of MRU events within two weeks after the Market Operator publishes these reports.</b>  <b>9.2.3. Discrepancies shall be reported by the Generator to the Market Operator for settlement before the end of the next billing period.</b>	RCC agreed that it shall be the Generators that shall validate all SO reports and not the MO and thus agreed to change 9.2.2. to reflect this agreement.
<b>9.2. Calculation of MRU Settlement Amounts</b>  For every billing period, the Market Operator will calculate the payments to be made to each designated MRU that complied with the dispatch instructions as such by multiplying the applicable GPI with the energy quantities at which that MRU was designated as MRU.  The applicable GPI for a given billing period	<b>9.3. 9.2 Calculation of MRU Settlement Amounts</b>  For every billing period, the Market Operator will calculate the payments to be made to each designated MRU that complied with the dispatch instructions as such by multiplying the applicable GPI with the energy quantities at which that MRU was designated as MRU.  The applicable GPI for a given billing period shall be	The RCC agreed to accept SNAP proposal to revise text to be consistent with formula of MRU volume:  9.3.1 xxx The MRU quantity is the total metered quantity of that generating unit minus the higher between the Ex-ante Quantity <del>its real-time dispatch (RTD) schedule, if any, and the bilateral contract quantity (BCQ)</del>



Original Provision	RCC Proposal (as of September 3)	Remarks/Discussions
<p>shall be that calculated using data from the immediately preceding billing period. The billing period shall be as defined in the WESM Rules.</p> <p>9.2.1. Additional Compensation</p> <p>A Trading Participant which has complied with dispatch instructions as MRU may be entitled to additional compensation. Additional compensation is allowed in cases where the Trading Participant submits sufficient proof that the MRU settlement amount calculated in accordance with this Manual is not sufficient to cover the following costs that are incurred in complying with the MRU call –</p> <p>a) fuel costs b) variable operating and maintenance costs, which may include start-up cost and shut-down costs</p> <p>The additional compensation will not be more than the aggregate of the above costs less the amount of the MRU settlement amount already paid or payable, subject to the determination and approval of the Market Operator.</p> <p>The affected Trading Participant will submit to the Market Operator a claim for additional compensation with supporting documents justifying the requested additional compensation.</p>	<p>that calculated using data from the immediately preceding billing period. The billing period shall be as defined in the WESM Rules.</p> <p><b>9.3.1. Calculation of MRU Volume</b></p> <p><u>The MRU quantity is the total metered quantity of that generating unit minus the higher between the Ex-ante Quantity and the bilateral contract quantity (BCQ) declared for that unit.</u></p> <p><u>MRU Volume = MQ – max (BCQ, EAQ), MWh</u></p> <p><b>Additional Considerations in the Determination of MRU Volume</b></p> <p><input type="checkbox"/> <u>With no offer and no security (Overriding Constraint) limit</u></p> <p><u>MRU Volume = MQ – BCQ</u></p> <p><input type="checkbox"/> <u>With Overriding Constraint limit and RTD = Smin</u></p> <p><u>MRU Volume = MQ – BCQ</u></p> <p><input type="checkbox"/> <u>With Overriding Constraint limit and RTD &gt; Smin</u></p> <p><u>MRU Volume = 0</u></p> <p><b>Where:</b></p> <p><u>RTD = target schedule at ex-ante</u> <u>Smin = minimum loading in the SO-submitted security limit</u></p> <p><u>In cases where the calculated MRU Volume is less than zero, then the MRU Volume is equal to zero.</u></p>	<p><u>declared for that unit.</u></p>

Original Provision	RCC Proposal (as of September 3)	Remarks/Discussions
	<p><u>The imbalance shall be initially paid at ex-post (EPETA). After obtaining the MRU price, the MRU Trading Amount shall then be computed. Adjustments shall be made given the discrepancy between the EPETA and the MRU Trading Amount.</u></p> <p><b>9.3.2. 9.2.1</b> Additional Compensation</p> <p>A Trading Participant which has complied with dispatch instructions as MRU may be entitled to additional compensation. Additional compensation is allowed in cases where the Trading Participant submits sufficient proof that the MRU settlement amount calculated in accordance with this Manual is not sufficient to cover the following costs that are incurred in complying with the MRU call –</p> <p>a) fuel costs b) variable operating and maintenance costs, which may include start-up cost and shut-down costs</p> <p>The additional compensation will not be more than the aggregate of the above costs less the amount of the MRU settlement amount already paid or payable, subject to the determination and approval of the Market Operator.</p> <p>The affected Trading Participant will submit to the Market Operator a claim for additional compensation with supporting documents justifying the requested additional compensation.</p>	
<p><b>9.3. Allocation of MRU Settlement Amounts to Customers</b></p> <p>The amount to be allocated to each Customer will be the Total Settlement Amounts for all</p>	<p><b>9.4. 9.3 Allocation of MRU Settlement Amounts to Customers</b></p> <p>The amount to be allocated to each Customer will be the Total Settlement for all MRUs Amounts <b>in each</b></p>	<p>The RCC agreed to adopt regional allocation of MRUs based on principle that whoever used the MRU shall pay the MRU.</p>



Original Provision	RCC Proposal (as of September 3)	Remarks/Discussions
MRUs, including the amount paid as additional compensation, pro-rated to the Customers based on their metered quantities.	<u>grid, either Luzon or Visayas</u> , including the amount paid as additional compensation, pro-rated to the Customers <u>either within Luzon grid or Visayas grid</u> , based on their metered quantities.	
<b>9.4. Submission of WESM Customer Information</b>  To compute GPI on a regular basis, all WESM Customers shall submit to the Market Operator the relevant data on their total bilateral and spot energy purchases with their corresponding payments for each billing period.	<b>9.5 -9.4 Submission of WESM Customer Information</b>  To compute GPI on a regular basis, all WESM Customers shall submit to the Market Operator the relevant data on their total bilateral and spot energy purchases with their corresponding payments for each billing period.	
<b>9.5. Publication of the Generation Price Index</b>  The applicable GPI will be published in the Market Information Website.	<b>9.6 9.5 Publication of the Generation Price Index</b>  The applicable GPI will be published in the Market Information Website <u>every end of the month</u> .	The RCC agreed to adopt a timeline for the publication of the GPI.
<b>New Provision</b>	<b>10. Settlement of Displaced Generators</b>  <u>Generating plants that do not follow the instructions of the System Operator to reduce their target loading for a particular trading interval and continue to generate shall be tagged as MSUs and shall pay the Displaced Generators, if any, during the said interval. A list of displaced plants shall be generated by the Market Operator from the Dispatch Deviation Report provided by the System Operator. Displaced plants will be identified using the WMOT in the interval where an MSU was tagged by the System Operator. The Market Operator will facilitate the process of payment to the Displaced Generators by the corresponding MSUs in accordance with the formula stated in this Manual. Any adjustment in the settlement shall be included in the final billing statement.</u>  <b>10.1 Calculation of Amounts due to Displaced</b>	The RCC agreed to revise the formula to incorporate the 3% Dispatch Deviation in the computation of the Displaced Generator Amount. The provisions under 10.1 and 10.2 were accordingly revised.  The RCC agreed to have the settlement of Displaced Generators facilitated by the MO instead of settlement outside the market.

Original Provision	RCC Proposal (as of September 3)	Remarks/Discussions
	<p><u>Generator/s</u></p> <p><u>The difference between the scheduled ex-ante quantity and the actual quantity, multiplied by the ex- post price.</u></p> <p><u>Displaced Generator Amount = ( (EAQ-MQ)- (0.03EAQ))*EPP</u></p> <p><u>EPP, EAQ and MQ of the Displaced -Generator/s</u></p> <p><u>Displaced Generator Amount is equal to zero when (EAQ- MQ) is less than 3% of EAQ.</u></p> <p><u>10.2 Settlement of Amounts due to Displaced Generators</u></p> <p><u>MSUs will pay the displaced Generators, on a pro-rata basis with respect to EAQ-MQ.</u></p>	
<p><b>New Provision</b></p>	<p><u>Appendix A. Non-Exhaustive List of Criteria for the Designation of MRU</u></p> <p><b>A. <u>Criteria for Security Related MRU</u></b></p> <p><b>1. <u>Thermal Limits</u></b></p> <p><b>a. <u>Violation of Single Outage contingency criterion upon receipt of the DAP (e.g. Outage of San Jose Transformer)</u></b></p> <p><b>b. <u>Overloading of submarine cable/lines/transformers (e.g. Loading of Negros – Panay)</u></b></p> <p><b>c. <u>Generator/Transmission Line/Transformer Outage</u></b></p> <p><b>d. <u>Line/Transformer Capacity Limitation</u></b></p>	<p>The RCC agreed to delete the examples.</p>

Public



Original Provision	RCC Proposal (as of September 3)	Remarks/Discussions
	<p><b>2. <u>System Voltage Requirement</u></b></p> <p><b>a. <u>Voltage correction</u></b></p> <p><b>i. <u>Under-voltage Scenario</u></b></p> <p><b>ii. <u>Overvoltage Scenario</u></b></p> <p><b>iii. <u>Outage of reactive compensation (Capacitor/Shunt Reactor)</u></b></p> <p><b>iv. <u>Insufficient reactive support</u></b></p> <p><b>3. <u>Real Power Balancing and Frequency Control</u></b></p> <p><b>a. <u>Forecast error</u></b></p> <p><b>b. <u>Under-generation/Over-generation</u></b></p> <p><b>c. <u>Intra-hour variation of demand</u></b></p> <p><b>d. <u>Exhausted operating reserve</u></b></p>	

At this point, the RCC agreed to continue discussions on the MRU matter in the meeting set for September 10, 2014.

#### IV. New Business

Dr. Peter Lee U, one of the members of the Market Surveillance Committee (MSC), made a presentation before the Rules Change Committee as part of the MSC's public consultation, to solicit comments, on its proposed Retail Market Monitoring Data and Indices.

Below are the highlights of the presentation made by Dr. Peter Lee U.

- ✓ The proposed indices aim to: a) monitor and assess performance of the retail market and the activities conducted by the RCOA participants; and b) provide indication of market trends, performance, and possible drivers and circumstances which may require further assessment and enhancement in the Retail Market Rules;
- ✓ There are two types of Retail Monitoring Indices: a) Market Structure and b) Retail Activity

Index	Purpose	Source of Data
<b>Market Structure</b>		
1. Number of Players <ul style="list-style-type: none"> <li>a. Number of Contestable Customers</li> <li>b. Number of Contestable Customers with a demand of 5MW or less who entered into contract with Supplier</li> <li>c. Number of Contestable Customers with a demand of above 5MW who entered into contract with Supplier</li> <li>d. Number of Suppliers</li> <li>e. Number of self-retailing Suppliers</li> </ul>	To determine the size of the retail market in terms of the number of Contestable Customers and Suppliers participation	CRB, ERC
2. Market share for the whole market, per region and per DU franchise area: <ul style="list-style-type: none"> <li>a) Percentage of end-users that are Contestable Customers</li> <li>b) Percentage of electricity consumption that is used by Contestable Customers</li> <li>c) Supplier market share</li> <li>d) Herfindahl-Hirschman Index (HHI)</li> <li>e) Three-firm Concentration Index (C3)</li> </ul>	To assess the size of the Contestable Market, and whether particular Suppliers might have large market share per DU franchise area, region or whole market	CRB
3. Supplier Structure <ul style="list-style-type: none"> <li>a. Percentage of Suppliers with affiliate generators</li> <li>b. Percentage of Suppliers with affiliate Contestable Customers</li> <li>c. Percentage of Suppliers with affiliate generator and Contestable Customer</li> <li>d. Percentage of Suppliers with affiliate DU and generator</li> </ul>	To assess the level of retail market competition through the degree of integration between and among Suppliers and Generation Companies, Distribution Utility and/or Contestable Customers	To be determined
<b>Retail Activity</b>		



1. Customer participation level for the whole market, per region and per franchise DU  a. Percentage of Contestable Customers from each Industry	• Assess the development of the retail market in terms of the activities of the Suppliers and Contestable Customers	CRB
2. Customer Switching rate for the whole market, per region and per DU franchise area  a. Percentage of Contestable Customers that are Switching to another Supplier b. Percentage of Switching due to relocation c. Percentage of Switching due to termination of Supplier service by Supplier d. Percentage of Switching due to a Last Resort Supply Event	• Indicator of the following: ✓ Customer satisfaction and Supplier performance ✓ Customer payment difficulties and overall affordability of energy	CRB
3. Supplier Product Diversity		CRB
4. Spot exposure of Supplier and Contestable Customer  a) Percentage of energy withdrawn not covered by bilateral contracts		CRB
5. Demand bids of Supplier/ Contestable Customer  a. Maximum demand bids b. Minimum demand bids		CRB
6. Number of Contestable Customers with a generator set		To be determined

✓ Relative to the presentation, the RCC commented and suggested as follows:

- Refine Indices and identify priority indices;
- Consider Benchmarks;
- Consider the % of Registered Contestable Customers (CCs) vs. Possible CCs (Monitor RES in terms of % instead of count)
- In relation to bullet 3, include an indicator that will determine if all the Retail Electricity Suppliers (RES) are Generators or if there are new players in the market
- Consider the load factor of the CCs as an index
- Additional index on switching, to include switching from Supplier of Last Resort (SOLR) to RES

Dr. Peter Lee U thanked the RCC for the opportunity to present the MSC's proposed Retail Market Indices and for the RCC's inputs to the proposal.

## V. OTHER MATTERS

### 1. NGCP-SO's Presentation on Price Spikes and the Pay-as-Bid Concept

Mr. Ambrocio Rosales made a presentation on price spikes and the concept of proposed pay-as-bid scheme, resulting from a meeting between the System Operator and the Electric Cooperatives in the Rules Change Committee. The presentation covered the following:

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- ✓ Price spikes during the November-December 2013 supply months
- ✓ ERC Resolution on the imposition of Secondary Price Cap
- ✓ RCC's action on the Proposed Stand-By Capacity by the Generators
- ✓ Concept of Marginal Pricing
- ✓ Importance of Demand Side Bidding
- ✓ Alternate Scheme to prevent Price Spike: Concept of Pay-as Bid scheme; and
- ✓ Recommendation to Implement Pay-as-Bid Scheme.

The presentation was noted by the RCC.

In reaction to the presentation, Comm. Gloria Victoria Yap-Taruc noted that the WESM commenced in 2006, and recalled that before the current pricing scheme/model was adopted, it underwent a long process before it was approved. Thus, since the Electric Cooperatives and the System Operator are proposing a pay-as-bid scheme, she suggested first reviewing literature on the soundness of the pay-as-bid scheme as opposed to marginal pricing to really understand the concepts and determine their true benefits. She expressed that the proposal of the System Operator and Electric Cooperatives might be fostering expectations on providing benefits that may not necessarily happen. She stated that the proposal should sufficiently justify the benefits before it should get approved.

Dr. Guevara clarified that the presentation is merely a discussion emanating from a previous assignment of the respective members of the Rules Change Committee. This is not yet a proposal because a proposal should have all the elements such as the ones mentioned by Comm. Taruc. She explained that a proposal may be published for comments only upon the RCC's approval after determining that such proposal passed all the criteria for rules changes.

Atty. Caryl Lopez-Mateo commented that although the EPIRA provides that generators are not regulated and thus should be able to make a profit, this should only be up to the extent that such profit-making is done in a manner that is not anti-competitive. She opined that the problem is not the market architecture but finding appropriate regulation that defines what truly is excessive. The extent to which the market Rules can help is only to encourage good behaviour. She explained that the reason for the objections on the pay-as-bid scheme is that it is not truthful in terms of the outcome of prices because it does not provide incentive to bid at the marginal price, thus, does not reflect the true cost of electricity. She likewise stated that the current scheme considers long term efficiency and not just prices, and is aimed at encouraging new technology and capacity.

In response to the comments of Atty. Lopez-Mateo, Mr. Rosales stated that he is also in favor of the current market design, as long as there is demand side bidding to avoid price spikes.

Dr. Guevara suggested that the Electric Cooperatives and the System Operator consider the comments aired in the discussion and should they decide to pursue the proposal, submit the proposed amendments to the WESM Rules as well as other Manuals as applicable together with the discussion paper, as required under the Rules Change Process..

## **2. Resolution on the Modeling of MERALCO in the WESM market Network Model**

Relative to the discussion and agreements made on the matter in the previous RCC meeting, for the RCC to adopt a resolution endorsing the results of the PEMC simulations and the recommendation for the modeling of MERALCO in the WESM Market Network



Model, Dr. Guevara commented that such may be beyond the RCC's authority. She emphasized that the RCC is proposal-driven and that the recommendations that it endorses to the PEM Board should be relative to its actions on proposed rules changes submitted to the RCC.

Mr. Ferdinand Binondo expressed that the RCC's agreement emanated from his suggestion for the RCC, as above, to sign a Resolution accepting the result of simulation made by PEMC as valid. He explained that this was recommended so as to better compel MERALCO to submit the required data to enable PEMC to model the MERALCO network in the MNM.

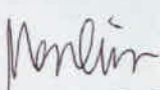
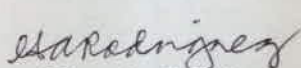
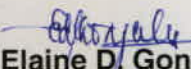
In agreement with the viewpoint of Dr. Guevara on the matter, the RCC agreed that it will no longer submit a recommendation to the PEM Board, but instead, inform the DOE through a letter on the result of the PEMC's simulation, and leave it up to the DOE to take further actions relative to its policy directive on the MNM modeling of MERALCO.


## VI. NEXT MEETING

The RCC agreed to conduct a Special Meeting on September 10 to continue deliberations on the MRU matter.


## VII. ADJOURNMENT

The meeting was adjourned around 3:30 PM.

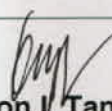
Prepared By:	Reviewed By:	Noted By:
 <b>Romellen C. Salazar</b>	 <b>Geraldine A. Rodriguez</b>	 <b>Elaine D. Gonzales</b>
<b>Analyst</b> – Market Governance Administration Unit <b>Market Assessment Group</b>	<b>Assistant Manager</b> – Market Governance Administration Unit <b>Market Assessment Group</b>	<b>Manager</b> – Market Data and Analysis Division <b>Market Assessment Group</b>

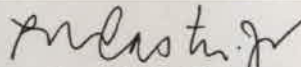



Approved by:  
RULES CHANGE COMMITTEE

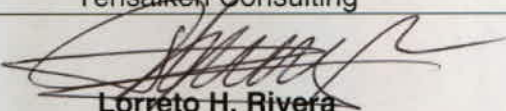
  
**Rowena Cristina L. Guevara**  
Chairperson  
Independent  
University of the Philippines  
(UP)


Members:


  
**Concepcion I. Tanglao**  
Independent

  
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Tensaiken Consulting


  
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Supply Sector  
Team (Philippines) Energy Corporation


  
**Jose P. Santos**  
Distribution Sector (EC)  
Ilocos Norte Electric Cooperative, Inc.  
(INEC)


  
**Ciprinilo C. Meneses**  
Distribution Sector (PDU)  
Manila Electric Company  
(MERALCO)

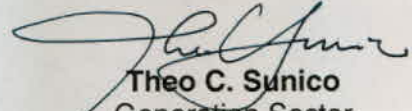
**Sulpicio C. Lagarde Jr.**  
Distribution Sector (EC)  
Central Negros Electric Cooperative, Inc.  
(CENECO)


  
**Gilbert A. Pagobo**  
Distribution Sector  
Mactan Electric Company  
(MECO)

  
**Jose Ferlino P. Raymundo**  
Generation Sector  
SMC Global

  
**Joselyn D. Carabuena**  
Generation Sector  
Power Sector Assets and Liabilities Management  
Corporation (PSALM)

  
**Ambrocio R. Rosales**  
Transmission Sector  
National Grid Corporation of the Philippines  
(NGCP)

  
**Theo C. Sunico**  
Generation Sector  
1590 Energy Corporation

  
**Isidro E. Cacho, Jr.**  
Market Operator  
Philippine Electricity Market Corporation  
(PEMC)