

**WHOLESALE ELECTRICITY SPOT MARKET
RULES CHANGE COMMITTEE**

RESOLUTION NO. 2013-01

**Proposed Amendments to WESM Rules and Manual on the
Registration of Ramp Rates**

WHEREAS, the Rules Change Committee (RCC) in its 49th and 50th Meetings held on 22 June 2011 and 06 July 2011, respectively, discussed as follows:

- With the PEMC-Trading Operations Department (TOD), the procedure by which ramp rates are declared in the market as well as the manner by which they are applied in the dispatch optimization;
- With the National Grid Corporation of the Philippines (NGCP)-System Operations (SO), the latter's concerns regarding the ramp rates of generators, including issues on ramping behavior and the SO-Visayas' preference for the registration of ramp rates per generating unit, instead of the aggregate ramp rate of the whole plant, to enable the SO to measure the response of the system based on the availability of each unit;

WHEREAS, during its 50th Meeting, the RCC agreed to formally request the comments of the PEMC-TOD on the concerns/issues raised by the NGCP-SO;

WHEREAS, the RCC received the comments of PEMC on 30 September 2011, which explained that the registration of ramp rates in the WESM is based on the aggregated unit, not on the basis of individual generating units, since the maximum ramp rate can be attained when all units are on line, which then became the basis of its discussion during the RCC's 57th Meeting held on 11 January 2012;

WHEREAS, during the said 57th Meeting, the RCC resolved that generators should instead be required during registration to submit a graph/curve on ramp up/down rates (showing the change in MW versus time) and to submit the same to NGCP-SO to guide them in gauging/determining the response of a generator to certain dispatch instructions over a trading interval;

WHEREAS, on 16 February 2012, the RCC formally requested from PEMC its comments on the above agreement;

WHEREAS, on 03 September 2012, PEMC submitted its comments to the RCC, stating that PEMC is amenable to the RCC's suggestion, with the recommendation to additionally require the submission of minimum ramp up/down rates upon registration, since at present, it is only the maximum ramp up/down rates which serve as the validation criteria in the processing of the ramp rate offers of generators;

WHEREAS, the RCC deliberated upon the concept on the registration of ramp rates and its possible proposed amendments during the RCC meetings held on 14 November 2012 and 05 December 2012 and agreed to include the registration of ramp rates as a deliverable for the First Quarter of 2013 in its 2013 Planning Session;

WHEREAS, the RCC continued with its deliberation on the said topic in its meetings on 16 January 2013 and 13 February 2013 and thereafter agreed to post/publish the proposed amendments in the WESM public information website and solicit comments from interested parties;

WHEREAS, the proposal was published in the WESM public information website on 14 February 2013 and the notification-email requesting comments from interested parties was issued on 15 February 2013;

WHEREAS, the RCC Secretariat duly-received the comments of the Market Surveillance Committee (MSC) and the Technical Committee (TC) on the proposal, both of which expressed their agreement with the proposed amendments;

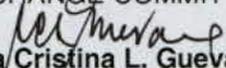
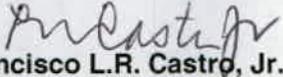
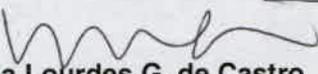
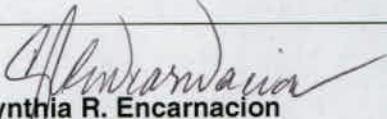
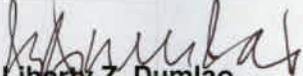
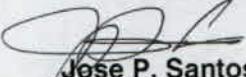
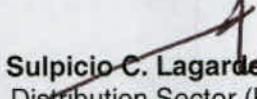
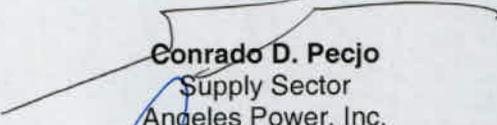
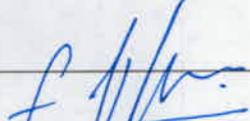
WHEREAS, during the 73rd RCC Meeting held on 03 April 2013, the RCC agreed to adopt the proposed amendments;

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

RESOLVED, that the proposed amendments to Appendix A1 of the WESM Rules and Section 5.4.4 of the WESM Manual on Registration, Suspension and De-Registration Issue 1.0 on the Registration of Ramp Rates, are adopted and approved;

RESOLVED FURTHER, that the above proposed amendments be endorsed to the PEM Board for approval.

Done this 03 April 2013, Pasig City.

Approved by: RULES CHANGE COMMITTEE  Rowena Cristina L. Guevara Chairperson University of the Philippines (UP)	
Members:	
 Epictetus E. Patalinghug Independent University of the Philippines (UP)	 Francisco L.R. Castro, Jr. Independent Tensaiken Consulting
 Maila Lourdes G. de Castro Independent	 Cherry Aquino-Javier Generation Sector AES Philippines (AES)
 Cynthia R. Encarnacion Generation Sector National Power Corporation (NAPOCOR)	 Liberty Z. Dumlao Generation Sector Power Sector Assets and Liabilities Management Corporation (PSALM)
 Augusto D. Sarmiento Distribution Sector (PDU) Dagupan Electric Corporation (DECORP)	 Ciprinilo C. Meneses Distribution Sector (PDU) Manila Electric Company (MERALCO)
 Jose P. Santos Distribution Sector (EC) Ilocos Norte Electric Cooperative, Inc. (INEC)	 Sulpicio C. Lagarde Jr. Distribution Sector (EC) Central Negros Electric Cooperative, Inc. (CENECO)
 Conrado D. Pecjo Supply Sector Angeles Power, Inc.	
 Raul Joseph G. Seludo Transmission Sector National Grid Corporation of the Philippines (NGCP)	 Robinson P. Descanzo Market Operator Philippine Electricity Market Corporation (PEMC)
	Certified True and Correct:  Elaine D. Gonzales RGC Secretary PEMC

Annex "A"

Proposed Amendments to WESM Rules and Manual on the Registration of Ramp Rates

A. WESM Rules

Title	Section	Provision	Proposed Amendment	Rationale
Appendix A1. Information to be Supplied with Offers to Supply and to Buy Electricity	Appendix A1.1 (g) Generation Offers	Shall include maximum up/down <i>ramp rates</i> ;	Shall include maximum up/down ramp rates, <u>consistent with the registered maximum</u> ramp up and ramp down rate, <u>minimum ramp up and ramp down rate and ramp rate capability curve</u> of each generation unit <u>or aggregated</u> generation units;	To require generators to submit a graph/curve of ramp up and ramp down rates, showing the change in MW versus time, as part of the registration requirement. Said information will also be submitted to NGCP-SO to guide the latter in gauging the response of a generator to certain dispatch instructions over a trading interval. Further, this will provide the MO with the reference for internal validation of the submitted values.
Chapter 11	Glossary	(New Provision)	Ramp Rate capability curve. This is the chart showing the ramping capability of a generating unit/s or aggregate generating unit/s. It provides data on the minimum and maximum ramp-up and ramp-down rate and the MW break-points for each generating unit/s or aggregate generating unit/s	To define or describe ramp rate capability curve.

Annex "A"

Proposed Amendments to WESM Rules and Manual on the Registration of Ramp Rates

B. Registration Manual

Title	Section	Provision	Proposed Amendment	Rationale
5. Registration of Direct WESM Members and Trading Participants	5.4.4 Generation Registered Capacities	A <i>Generation Company</i> shall include in its application the <i>maximum stable load (Pmax)</i> , the <i>minimum stable load (Pmin)</i> , the <i>ramp up rate</i> , and <i>ramp down rate</i> of each <i>generation unit</i> or aggregated <i>generation units</i> that are included in its application. The information provided to the <i>Market Operator</i> must be consistent with the information contained in the <i>Certificate of Compliance</i> issued by the <i>ERC</i> as well as submissions made to the <i>ERC</i> in relation to the issuance of its <i>Certificate of Compliance</i> .	A <i>Generation Company</i> shall include in its application the <i>maximum stable load (Pmax)</i> , the <i>minimum stable load (Pmin)</i> , the <u>maximum ramp up and ramp down rate</u> , <u>minimum ramp up</u> and <u>ramp down rate and ramp rate capability curve</u> of each <i>generation unit</i> or aggregated <i>generation units</i> that are included in its application <u>in accordance with Appendix B</u> . The information provided to the <i>Market Operator</i> must be consistent with the information contained in the <i>Certificate of Compliance</i> issued by the <i>ERC</i> as well as submissions made to the <i>ERC</i> in relation to the issuance of its <i>Certificate of Compliance</i> .	To make the Manual consistent with the WESM Rules provision on ramp rates, as above discussed.

Appendix B

Generator Name: _____

Unit Number: _____

Date: _____

Schedule 1 STABLE LOAD

Maximum Stable Load (Pmax)	MW	
Minimum Stable Load (Pmin)	MW	

Schedule 2 RAMP RATES

	Breakpoints (BP) in MW			
	Pmin-BP ₁	BP ₁ -BP ₂	BP _n - Pmax
Maximum Ramp Up Rate				
Maximum Ramp Down Rate				
Minimum Ramp Up Rate				
Minimum Ramp Down Rate				

Submitted by: _____

Approved by: _____

Discussion Paper: Provision of Minimum and Maximum Ramp Rates and Ramping Capability Curves of Generating Units

I. SUMMARY OF THE PROPOSED RULES CHANGE

WESM Rules

Title	Section	Provision	Proposed Amendment	Rationale
Appendix A1. Information to be Supplied with Offers to Supply and to Buy Electricity	Appendix A1.1 (g) Generation Offers	Shall include maximum up/down <i>ramp rates</i> ;	Shall include maximum up/down ramp rates, <u>consistent with the registered maximum ramp up and ramp down rate, minimum ramp up and ramp down rate and ramp rate capability curve</u> of each generation unit <u>or aggregated</u> generation units;	To require generators to submit a graph/curve of ramp up and ramp down rates, showing the change in MW versus time, as part of the registration requirement. Said information will also be submitted to NGCP-SO to guide the latter in gauging the response of a generator to certain dispatch instructions over a trading interval. Further, this will provide the MO with the reference for internal validation of the submitted values.

B. Registration Manual

Title	Section	Provision	Proposed Amendment	Rationale
5. 5. Registration of Direct WESM Members and Trading Participants	5.4.4 Generation Registered Capacities	A <i>Generation Company</i> shall include in its application the <i>maximum stable load (Pmax)</i> , the <i>minimum stable load (Pmin)</i> , the <i>ramp up rate</i> , and <i>ramp down rate</i> of each <i>generation unit</i> or <i>aggregated generation units</i> that are included in its application. The information provided to the <i>Market Operator</i> must be consistent with the information contained in the <i>Certificate of Compliance</i> issued by the <i>ERC</i> as well	A <i>Generation Company</i> shall include in its application the <i>maximum stable load (Pmax)</i> , the <i>minimum stable load (Pmin)</i> , the <u>maximum ramp up and ramp down rate, minimum ramp up and ramp down rate and ramp rate capability curve</u> of each <i>generation unit</i> or <i>aggregated generation units</i> that are included in its application <u>in accordance with Appendix B.</u> The information provided to the <i>Market Operator</i> must be consistent with the information contained in the	To make the Manual consistent with the WESM Rules provision on ramp rates, as above discussed.

		as submissions made to the <i>ERC</i> in relation to the issuance of its <i>Certificate of Compliance</i> .	<i>Certificate of Compliance</i> issued by the <i>ERC</i> as well as submissions made to the <i>ERC</i> in relation to the issuance of its <i>Certificate of Compliance</i> .	
Chapter 11	Glossary	(New Provision)	Ramp Rate capability curve. This is the chart showing the ramping capability of a generating unit/s or aggregate generating unit/s. It provides data on the minimum and maximum ramp-up and ramp-down rate and the MW breakpoints for each generating unit/s or aggregate generating unit/s	To define or describe ramp rate capability curve.

II. BACKGROUND

A. Registration and Submission of Maximum Ramp Rates in the WESM

The RCC suggested that all generators be required to submit a graph/curve of ramp up and ramp down rates, showing the change in MW versus time, as part of the registration requirement. This information is recommended to be submitted to NGCP-SO to guide them in gauging the response of a generator to certain dispatch instructions over a trading interval. PEMC deems this suggestion amenable and has transmitted a discussion paper regarding the issues associated with the ramp rates¹.

In its 69th meeting, the RCC adopted the discussion paper and has directed the drafting of Rules Changes regarding the ramp rates in the WESM based on the discussion paper of PEMC. This Section A was lifted directly from that discussion paper but with slight modification as to the format and presentation.

Registration and Submission of Maximum Ramp Rates in the WESM

In the WESM, the information on the generator ramp rate capability curve is utilized by the MMS in its calculation of the target schedule of the power plants. This

¹ Please see Annex A-PEMC Comments on Ramp Rate Registration attached in the letter of PMLO to RCC

information is submitted by the generator participants in the ramp rate² fields on their market offers and in their registration data.

Figure 1 provides sample ramp rate information in the market offer, in this example, of a 250 MW power plant. The screenshot is representative of the actual interface that the market participants use in their submission of offers to the market, which is through the market-participant interface (MPI).

Interval	A	B	C
All <input type="checkbox"/>	Prices/Quantities (PESO,MW)	Ramp Rates (Breakpoint, RR up, RR down)	Reason
1 <input checked="" type="checkbox"/>	(2280.06,225.0),(2280.06,250.0)	(90.0,6.0,6.0),(150.0,4.0,4.0),(210.0)	None
2 <input checked="" type="checkbox"/>	(2280.06,225.0),(2280.06,250.0)	(90.0,6.0,6.0),(150.0,4.0,4.0),(210.0)	None
3 <input checked="" type="checkbox"/>	(2280.06,225.0),(2280.06,250.0)	(90.0,6.0,6.0),(150.0,4.0,4.0),(210.0)	None

Figure 1. Sample ramp rate information in the market offer of a 250 MW power plant.

Included in the ramp rate information are break points. These break points represent the level of generation (in MW) where the ramp rate changes as the generation is increased or decreased further. A generator can specify up to five (5) break points on its offer with each able to have their own ramp rate. Using this information, the ramp rate capability curve of the generator can be derived.

Table 1 summarizes the ramp rate information of the sample 250 MW power plant based on its submitted market offer.

Table 1. Ramp rate information of the sample 250 MW power plant.

Generator Loading (MW)	Break Point (MW)	Ramp Up Rate (MW/min)	Ramp Down Rate (MW/min)
0 - 90	90	6	6
90 - 150	150	4	4
150 - 210	210	3	3
210 - 250	250	2	2

The table indicates that there are four (4) break points with four (4) different ramp rates. To calculate the maximum or minimum schedule that this generator can achieve, the time required to reach each break point under their respective ramp rates needs to be determined. This is calculated using equation (1):

² Ramp rate information is one of the items required from the generators for their offer at every interval.

$$Time_i = \frac{Break\ Point_i - Break\ Point_{i-1}}{Ramp\ Rate_i} \quad (1)$$

Where,

Time_i = time required to reach Break Point_i from Break Point_{i-1} in min

Break Point_i = generation where the ramp rate is equivalent to ramp rate_i in MW

Break Point_{i-1} = generation where the ramp rate is equivalent to ramp rate_{i-1} in MW

Ramp Rate_i = increase in MW per min when generating from Break Point_{i-1} to Break Point_i in MW/min

The Table 2 below shows the results upon application of equation (1) on the ramping up of the generator. It can be noted that the table indicates that it would take 70 min for the power plant to reach its full capacity of 250 MW from its Pmin of 0 MW.

Table 2. Time Required to Reach Each Break Point for Ramping Up

Generator Loading (MW)	Break Point (MW)	Ramp Up Rate (MW/min)	Time (min)	Cumulative Time (min)
0 to 90	90	6	15	15
90 to 150	150	4	15	30
150 to 210	210	3	20	50
210 to 250	250	2	20	70

Considering a 1 hour or 60 min trading interval, the maximum MW (MW_{Max_RR}) schedule this plant can achieve can be calculated as follows:

$$MW_{Max_RR} = BreakPoint_3 + RampRate_4 * RemainingTime \quad (2)$$

$$MW_{Max_RR} = 210 + 2 * (60 - 50) \quad (3)$$

$$MW_{Max_RR} = 230MW \quad (4)$$

This means that this generator from an initial loading of 0MW can only be scheduled up to 230MW in the MMS due to its ramping up limitations.

On the other hand, The Table 3 below shows the results upon application of equation (1) on the ramping down of the generator. It can be noted that the table indicates that it would also take 70 min for the power plant to reach 0MW from its Pmax of 250 MW.

Table 3. Time Required to Reach Each Break Point for Ramping Down

Generator Loading	Break Point (MW)	Ramp Up Rate	Time (min)	Cumulative Time
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(MW)		(MW/min)		(min)
250 to 210	250	2	20	20
210 to 150	210	3	20	40
150 to 90	150	4	15	55
90 to 0	90	6	15	70

Again, considering a 1 hour or 60 min trading interval, the minimum MW (MW_{Min_RR}) schedule this plant can achieve can be calculated as follows:

$$MW_{Min_RR} = BreakPoint_1 - RampRate_1 * RemainingTime \quad (2)$$

$$MW_{Min_RR} = 90 - 6 * (60 - 55) \quad (3)$$

$$MW_{Min_RR} = 60 \text{ MW} \quad (4)$$

This means that this generator from its maximum capacity of 250MW can only be scheduled down to 60MW in the MMS due to its ramping down limitations.

Figure 2 shows the theoretical generator loading when it is ramping up to 230MW from 0MW and when it is ramping down to 60MW from its full capacity of 250MW.

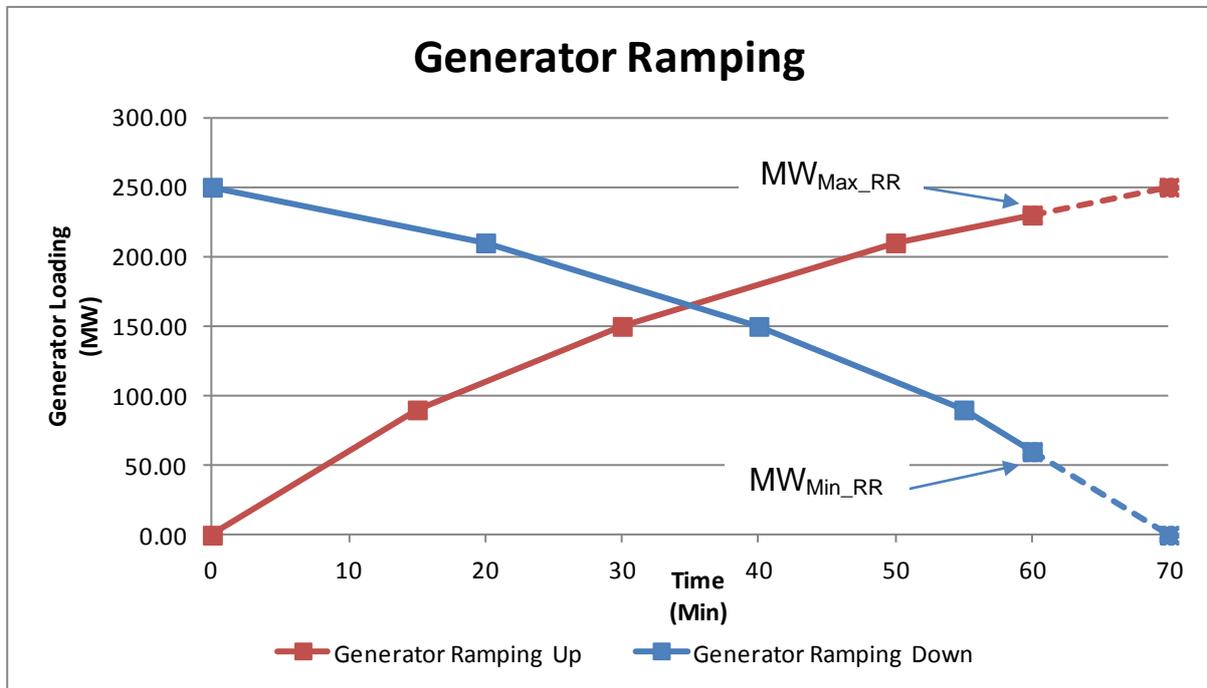


Figure 2. Theoretical Generator Loading Considering Ramp Rate Capability Curve

In addition, maximum ramp up and ramp down rates are included in the registration data of the generators as a single value (Figure). This is pursuant to Appendix A1.1 of the WESM Rules, which requires that generator offers include maximum up/down ramp rates.

Figure 3. Ramp rate registration data of the sample 250 MW power plant.

This currently serves as the only validation criteria in the processing of the ramp rate offers of a generator since no similar requirement prevails in respect to minimum ramp rates. The MMS, though, implements a universal minimum ramp rate wherein the ramp rate of a specified break point should be at least 0.1 MW/min. This validation process can be illustrated by the following constraint equations.

$$0.1 \leq RR_{UP,OFFER} \leq RR_{UP,MAX}$$

$$0.1 \leq RR_{DOWN,OFFER} \leq RR_{DOWN,MAX}$$

Where,

$RR_{UP,OFFER}$ – ramp up rate provided by the generator in its offer in MW/min

$RR_{DOWN,OFFER}$ – ramp down rate provided by the generator in its offer in MW/min

$RR_{UP,MAX}$ – maximum ramp up rate of the generator in MW/min

$RR_{DOWN,MAX}$ – maximum ramp down rate of the generator in MW/min

The absence of a minimum ramp rate for validation is a cause for concern since a generator is allowed to reduce its ramp down rate down to 0.1 MW/min. This results to a 6 MW maximum decrease in the schedule of a generator for an interval.

In this regard, it is proposed that maximum ramp rates ($RR_{UP,MAX}$, $RR_{DOWN,MAX}$) and minimum ramp rates ($RR_{UP,MIN}$, $RR_{DOWN,MIN}$) be required from generators during registration in addition to the proposed submission of a ramp rate capability curve. The ramp rate capability curve to be relayed to the SO would be used by the MO in validating the minimum and maximum ramp rate values submitted by the participants. This would provide the market all the boundary values needed for the validation of the generator's offers. Hence, the constraint equations would be modified to be:

$$RR_{UP,MIN} \leq RR_{UP,OFFER} \leq RR_{UP,MAX}$$

$$RR_{DOWN,MIN} \leq RR_{DOWN,OFFER} \leq RR_{DOWN,MAX}$$

Where,

$RR_{UP,MIN}$ – minimum ramp up rate of the generator in MW/min
 $RR_{DOWN,MIN}$ – minimum ramp down rate of the generator in MW/min

Having both the upper and lower boundary for the ramp rates that is validated against the ramp rate capability curve of the generator would ensure that the schedule of a generator is actually within its operational limits.

Furthermore, it is also suggested that all generators be required to submit a graph/curve of ramp up and ramp down rates, showing the change in MW versus time, as part of the registration requirement. Said information be also submitted to NGCP-SO to guide the latter in gauging the response of a generator to certain dispatch instructions over a trading interval. PEMC deems this suggestion amenable.

For the above example, the graph/curve reflecting the ramp up and ramp down rates, in MW versus time, of a power plant is shown in Figure 3. Figure provides a sample generator ramping up and down of a power plant to achieve its target schedule.

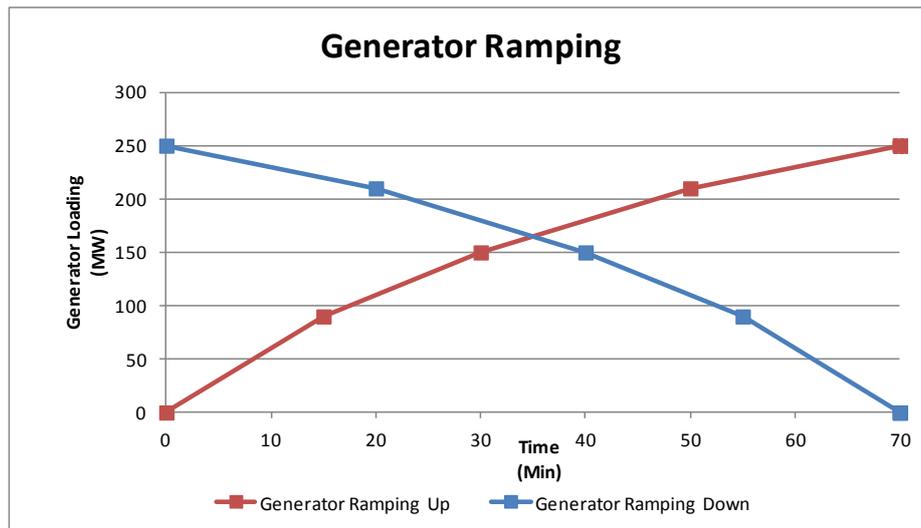


Figure 3. Sample of a Generator Ramping of a Power Plant.

Based from Figure 3, the ramp rate capability of the generator can be derived by getting the slope (in terms of MW/min) of the curve in Figure 3. Figure 4 shows the Generator Ramp Rate Capability for a certain MW loading level.

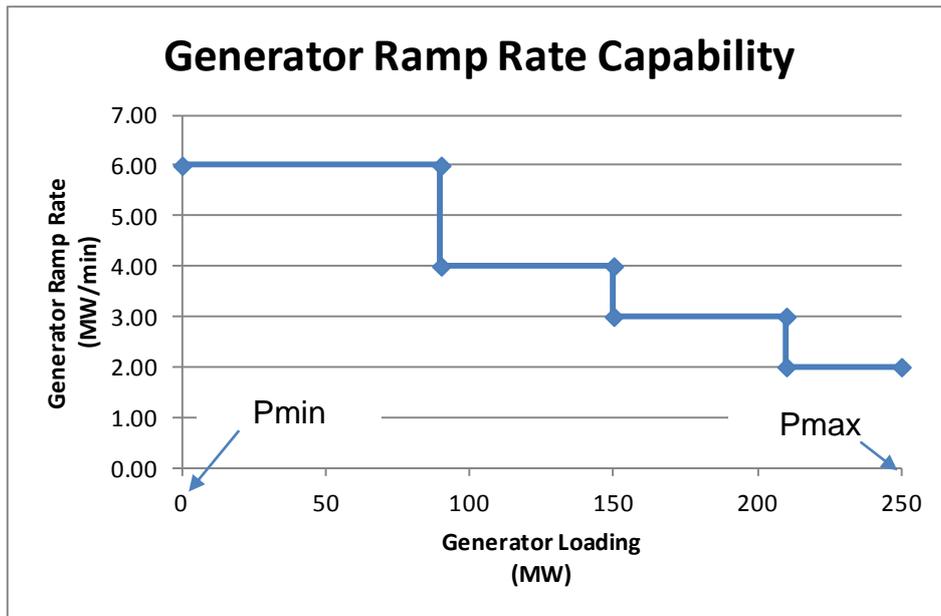


Figure 4. Sample of a Generator Ramp Rate Capability

B. Market Scheduling and Pricing Impact of Ramp Rate Limitations

This Section B provides additional illustration on the impact of ramp rates in scheduling and pricing in the WESM.

The operating limit of the generating unit is calculated by the Market Management System (MMS) based on the initial MW schedule, offer quantity, and ramp rates. That is, the maximum or minimum schedule from the initial MW schedule shall be within its ramping limitations. Figure 5 shows a sample operating limit of the 500MW generator.

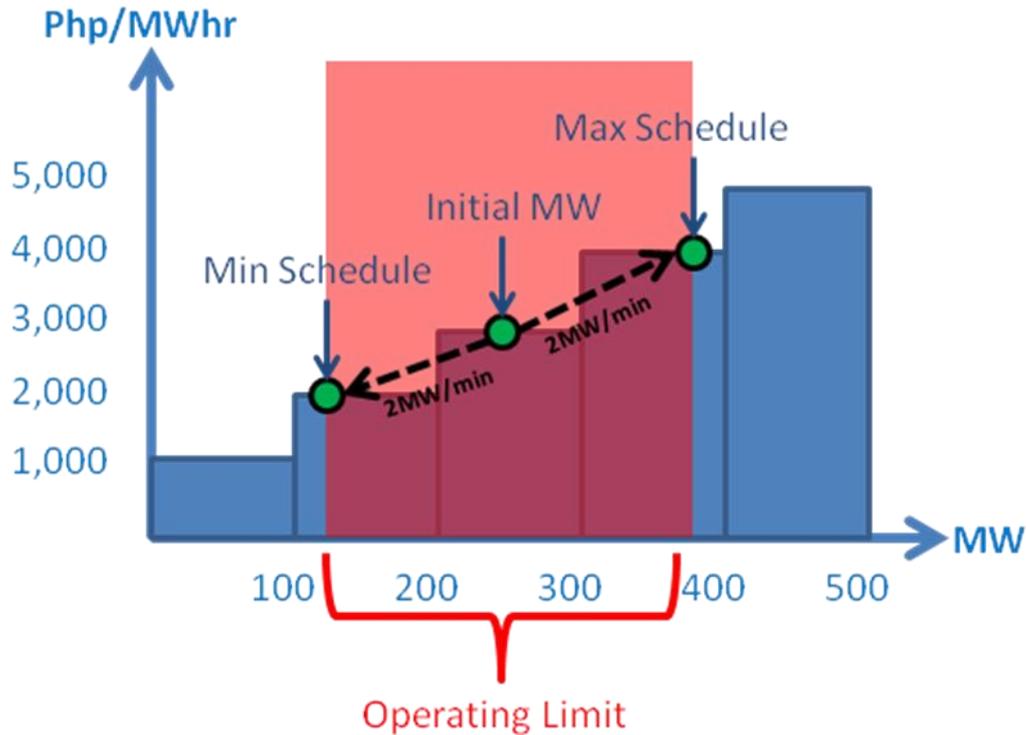


Figure 5. Sample of a Generator Ramp Rate Capability

In Figure 5, the generator's initial MW is 250MW with Ramp-Up and Ramp-Down Rate of 2MW/Min. Thus, its operating limit shall be from 130MW ($250\text{MW} - 2\text{MW}/\text{min} \times 60\text{min}$) up to 370MW ($250\text{MW} + 2\text{MW}/\text{min} \times 60\text{min}$). At these boundaries, the generator is considered to be as a price taker.

To illustrate the adverse effect of the having no minimum ramp down limitation, the same sample 500 MW power plant with 250 initial MW loading will be considered. In the current WESM process, the trading participant has the ability to reduce its ramp down rate to 0.1 MW/min. In doing so, its minimum schedule shall be 244MW. It can be noted that the generators are allowed to a $\pm 3\%$ dispatch tolerance thus, for 244MW target schedule the dispatch tolerance is from 236.68MW to 251.32MW. This means that generator can still maintain and ensure its schedule at 250MW without being called for a dispatch deviation by just submitting a ramp down rate of 0.1MW/min as shown in Figure 6.

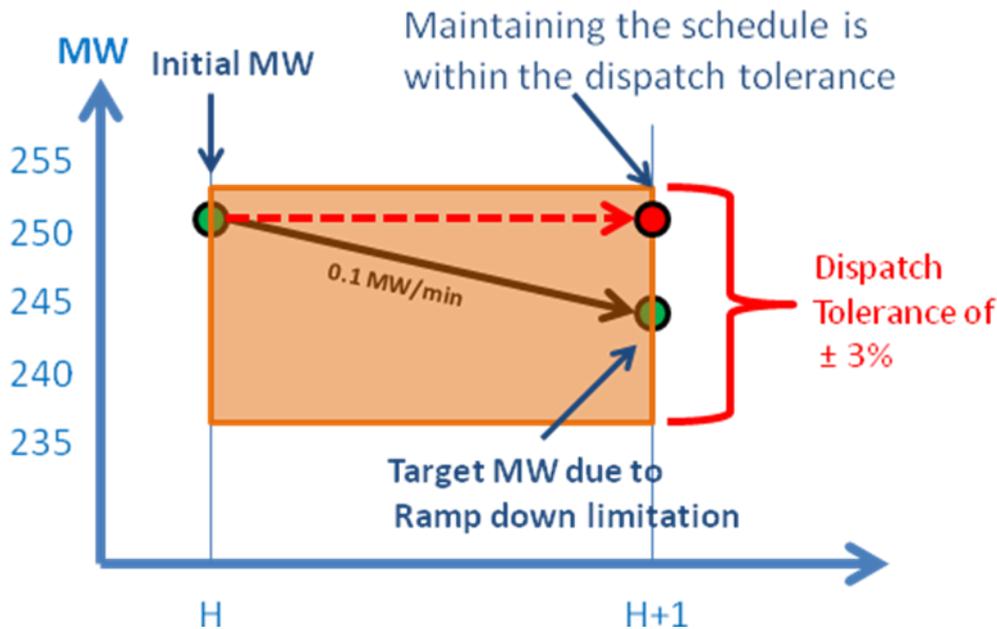


Figure 6. Dispatch Tolerance and Ramp down Limitation

If it is assumed that the generator's submitted minimum ramp down rate is 2 MW/min validated against its ramp rate capability curves, the offer with indicated ramp rate of less than 2MW/min (ie. 0.1MW/min and 0.5MW/min) would be invalidated.

On the other hand, ramp-up limitation of a generating unit tends to decrease the generating unit's maximum schedule, lessening the supply readily available in the grid. It can be noted that, upon verifying with generators' actual delivery at the end of the interval, some generators actually ramped faster than their offered ramp rate. This inappropriate declaration of ramp-up rates results to the thinning of the supply margin leading to high market clearing prices. In some extreme cases, this results to manifestation of artificial under-generation and load shedding causing pricing errors in the market runs

C. Summary of Market Issues

This Section C summarizes the associated market issues that triggered the Rules Change proposals.

1. Ramp-Down limitation of generating unit increases a generating unit's minimum schedule which results to a guaranteed schedule to a particular generating unit for particular trading intervals.; and
2. Ramp-Up limitation of a generating unit decreases the generating unit's maximum schedule, lessening the supply readily available in the grid/market. This thinning of the supply margin results to high market clearing prices and in some cases, these results to manifestation of artificial under-generation and load shedding causing pricing errors in the market runs.

III. THE PROPOSED RULES CHANGE

The proposed Rule Change is to amend the Appendix A1 of the WESM Rules (“Information to be Supplied with Offers to Supply and to Buy Electricity”) to include **minimum ramp up and ramp down rate** and **Clauses 3.8.4, 3.8.5 and 3.8.6. A definition of Ramp Rate Capability Curve** is also proposed to be included in the Glossary. Revisions of the pertinent provisions in the WESM Rules shall require all generators to register a minimum and maximum ramp up/down rate supported by their ramp rate capability curve which the generators will submit upon registration.

The basic rationale for the Rule Change is to improve the integrity of the market schedules and provide a level playing field in reference to the ramp rates of the generators and minimize adverse impact of limited ramp rate capability specially to the supply margin in the WESM. In addition, an amendment of associated registration manual is also necessary to reflect the requirement for the submission of the necessary data including the ramp rate capability curve and the provision of this information to the MO, SO and MSC as reference for validation of the submitted values of ramp rates as part of the generator offers and also in the monitoring of the WESM. Consequently, the accuracy of the market offers of the generators would be enhanced since deviating from its submitted ramp rate capability curve would result to offer invalidation. The proposed Rules change, however, will also require corresponding changes to the Market participant interface of the MMS.

IV. BACKGROUND AND DESCRIPTION OF THE PROPONENT

The proponent is RCC.

V. CONCLUSIONS AND RECOMMENDATIONS

Considering that the objective of the proposed Rules and Manual changes are to promote transparency, improve the integrity of the market schedules and provide a level playing field in reference to the ramp rates of the generators resulting to better competition, the adoption of the changes are highly recommended.

VI. REFERENCES

WESM Rules (As Amended)
Registration, Suspension and De-Registration Criteria and Procedures Issue 1.0