MINUTES OF RULES CHANGE COMMITTEE 118th Regular Meeting (No. 2016-11)	
Meeting Date & Time:	07 September 2016, 9:00AM to 5:30PM
Meeting Venue:	19/F Conference Room, Robinsons Equitable Tower, Ortigas Center, Pasig City

Attendance List

In-Attendance	Not In-Attendance
Rules Change Committee **Principal Members:** Maila Lourdes G. de Castro, Chairperson – Independent Francisco Leodegario R. Castro, Jr. – Independent Allan C. Nerves–Independent Ambrocio R. Rosales – System Operator (NGCP) Abner B. Tolentino – Generation (PSALM) Lorreto H. Rivera – Supply (TPEC) Theo Cruz Sunico – Generation (1590 EC) Ciprinilo C. Meneses – Distribution (MERALCO) Jose P. Santos –Distribution (INEC) Ludovico D. Lim – Distribution (ANTECO) **Alternate Members:** Edwin N. Mosa – Market Operator (PEMC)	Concepcion I. Tanglao – Independent Jose Ildebrando B. Ambrosio – Generation (Northwind) Isidro E. Cacho – Market Operator (PEMC) Juanito O. Tolentino, Jr. – Distribution (MECO)
PEMC – Market Assessment Group (MAG) Chrysanthus S. Heruela Elaine D. Gonzales Geraldine A. Rodriguez Ma. Delia B. Arenos Karen A. Varquez Divine Gayle C. Cruz Aldjon Kenneth M. Yap	

PEMC – Legal Atty. Caryl Miriam Y. Lopez-Mateo Atty. Sheryll M. Dy **PEMC – BSMD** Renato B. Afurong Jerahmeel Philippe A. Mendoza **PEMC – CPC** Jonathan B. de la Viña **PEMC – TOD** Julius Bunyi Andrea May T. Caguete Jocelyn S. Canicon Rhe-An A. Abrasia
System Operator (NGCP) Emmanuel Sotomil Joselito C. Quilala Ermelindo R. Bugaoisan Jr.
DOE Observers Ferdinand B. Binondo Lorelie Baguio-Moya

There being a quorum, Chairperson Atty. Maila Lourdes G. de Castro commenced with the meeting at approximately 9:30 AM.

Atty. De Castro noted the changes to the meeting agenda as relayed by the Secretariat. There being no objection to the changes made on the agenda, the body approved the same, as revised.

1. Review of the Minutes of the Previous Meeting

The RCC reviewed the minutes of the 117th Regular Meeting held last 03 August 2016 and approved the same as revised.

2. Matters Arising from the Previous Meeting

2.1. Proposed Amendments to the WESM Manual on Dispatch Protocol Issue No. 11 (Flow Charts on Market Intervention)

The Secretariat informed the RCC that as agreed upon during the 117th RCC meeting held last 03 August 2016, the Market Operator (MO) and the System Operator (SO) submitted their respective flow charts indicating the procedures to be observed by each upon occurrence of market intervention or market suspension. Upon receipt of the said flow charts from SO and MO, the Secretariat immediately forwarded both flowcharts to the RCC, copied the DOE and others concerned, for review and comments. The DOE thereafter submitted its comments on the flow charts, which DOE comments, the Secretariat flagged are subject of the RCC's discussion in this meeting.

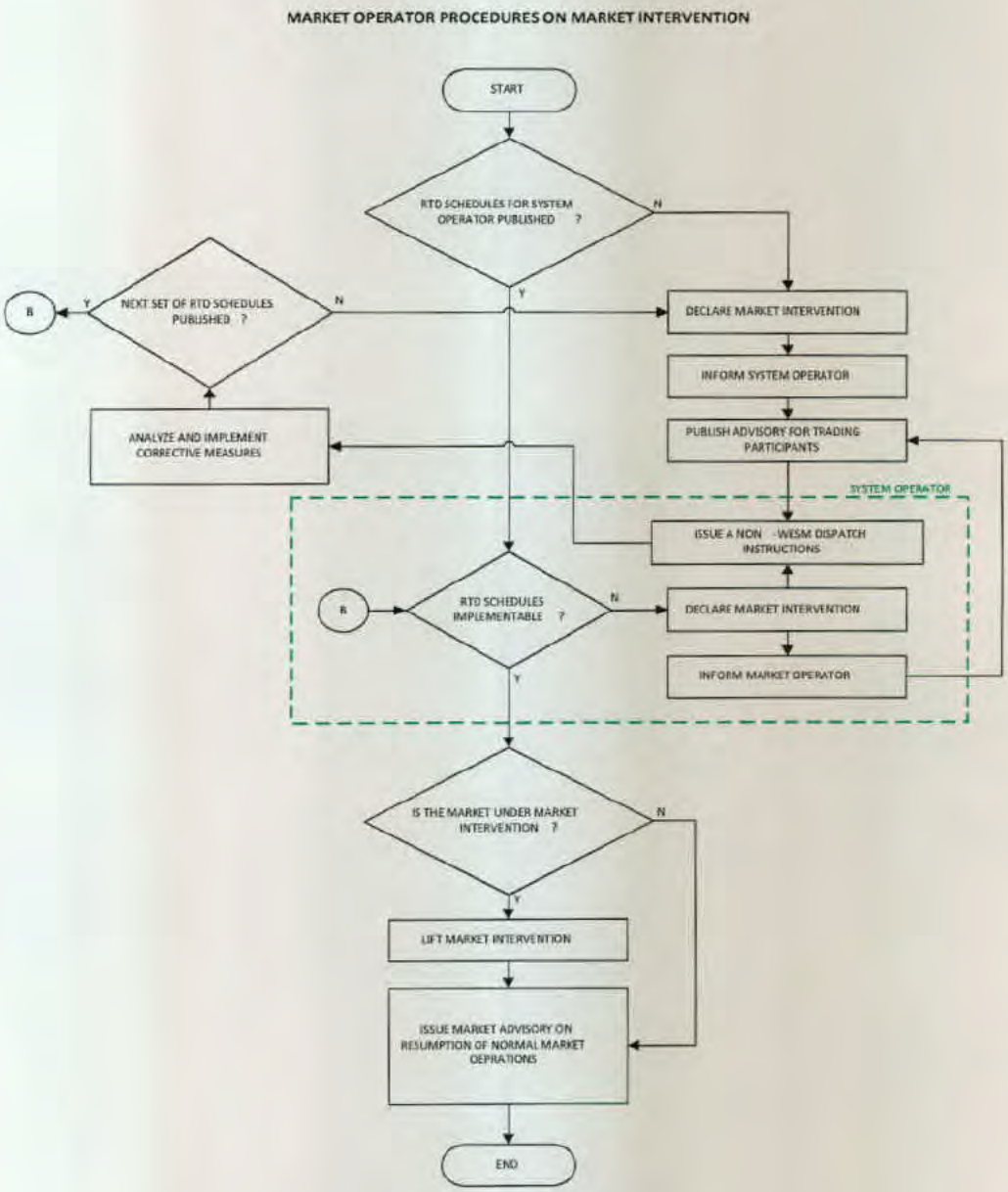
Atty. De Castro requested Mr. Edwin N. Mosa (MO) to briefly run through the MO's submitted flow charts. Mr. Mosa explained that the MO decided to submit two flowcharts (please refer to MO flow charts below), one for market intervention and another for market suspension to clearly differentiate the processes observed during these said events. On the MO's procedures on market intervention, the DOE suggested transferring the responsibility of declaring market intervention to the SO upon its assessment that the RTD schedule is non-implementable, which suggestion the RCC agreed to adopt.

Proceeding with the MO's proposed flow chart for market suspension, Mr. Mosa explained that the market is already in the state of market intervention before a recommendation for market suspension is made by the MO. He added that what the MO shall initially do is to assess the time needed for the system error from the MO's end to be resolved. If the MO establishes that the restoration shall take a significant amount of time, the MO shall then recommend the suspension of the market to the ERC. Atty. De Castro inquired about the timeline within which said recommendation shall be made. In response, Mr. Mosa answered that this is to be done as immediately as possible. Mr. Ciprinilo Meneses then suggested specifying the period of time which the MO considers to be significant as to trigger a recommendation for market suspension because, he deems that in the absence of such, this period may be interpreted as indefinite. Mr. Mosa agreed with the suggestion and pointed out that the MO has noted in the previous submissions made that the significant time being referred to be usually one (1) week. In this regard, Mr. Abner Tolentino, thus suggested to reflect this time period in the flow chart and to clarify in the said flow chart that market intervention is already in effect prior to a recommendation for a market suspension.

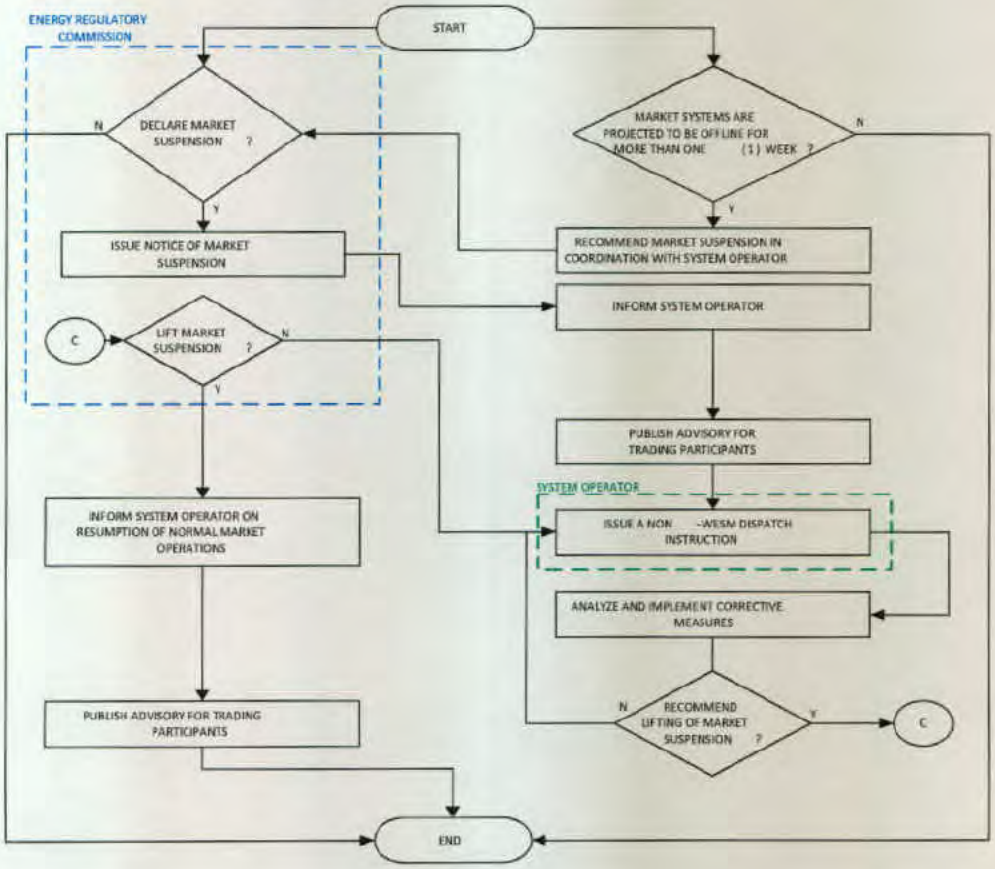
On the lifting of the market suspension, Mr. Mosa explained that if the system is successfully restored, the MMS will be run to acquire an RTD schedule, after which the MO shall thereafter recommend the lifting of the market suspension to the ERC and subsequently inform the SO of the ERC's approval of the recommendation for the lifting of the market suspension.

Regarding the issuance of non-WESM dispatch instructions by the SO upon occurrence of market suspension, as reflected in the MO's flowchart, Mr. Ambrocio R. Rosales commented that such may not necessarily be reflective of the actual SO processes since prior to MO's recommendation, the SO has already been issuing non-WESM dispatch instructions. Atty. De Castro then suggested to reword the statement to "continue issuance of non-WESM dispatch instructions". The RCC agreed with the changes and approved the flow charts submitted by the Market Operator, as revised.

Proposed Market Operator Flow Charts on Market Intervention/Market Suspension



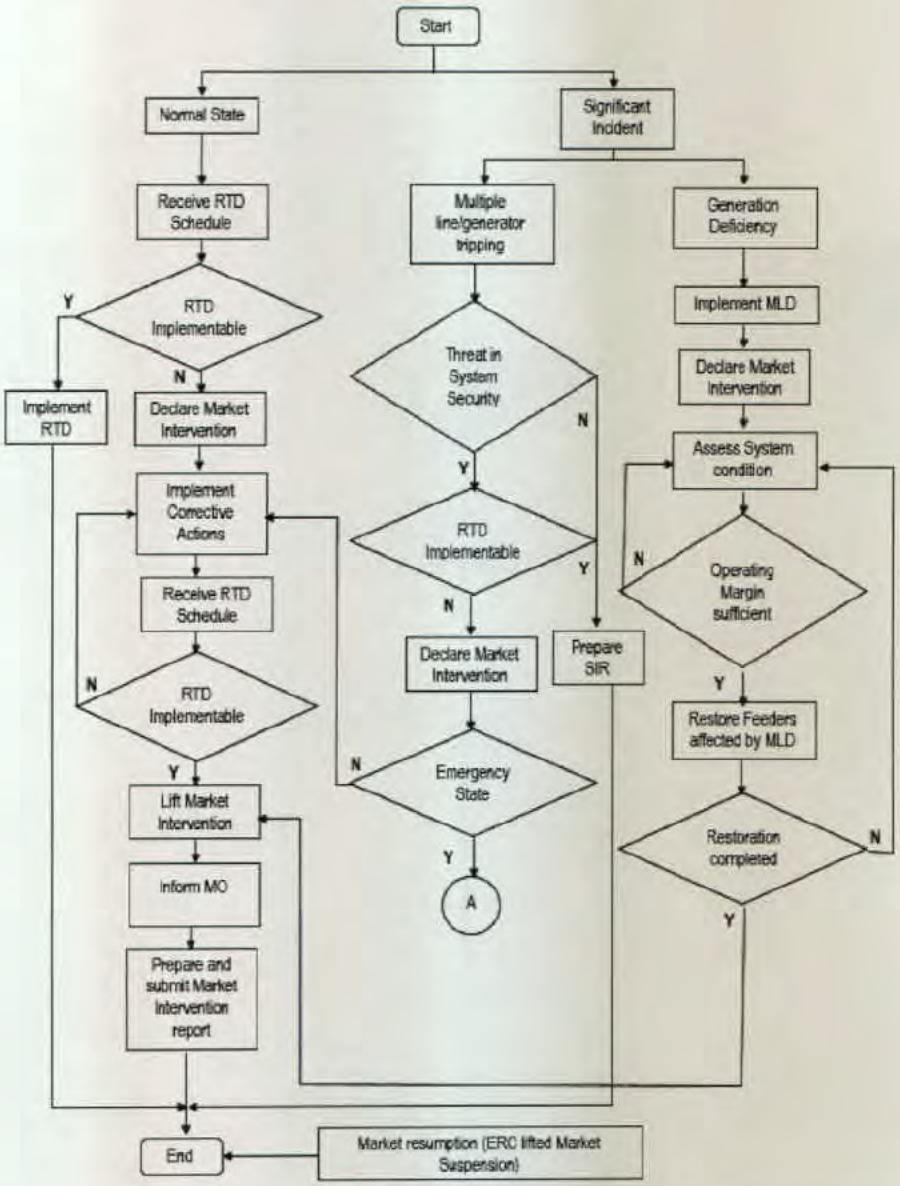
MARKET OPERATOR PROCEDURES ON MARKET SUSPENSION



The RCC then reviewed the flow charts submitted by the SO. On the procedures during market intervention, the RCC discussed that the SO may declare market intervention due to the non-implementability of the RTD schedule or an occurrence of a significant event. Mr. Ferdinand Binondo then commented on the succeeding actions of the SO as presented in a portion of the SO Flow Charts, herein shown below:

63 **Proposed System Operator Flow Charts on Market Intervention/Market Suspension**

SYSTEM OPERATOR PROCEDURES ON MARKET INTERVENTION



64 Mr. Binondo suggested clarifying which RTD schedule shall be received by the SO in the
65 process. According to him, it will be more appropriate to specify that the RTD schedule
66 to be received by the SO is the RTD Schedule for the next trading interval from the MO.
67 Mr. Rosales agreed with the recommendation.

68 On the actions for the implementation of manual corrective actions, Mr. Binondo clarified
69 if this is an action intended for the SO only. Mr. Rosales explained that both the MO

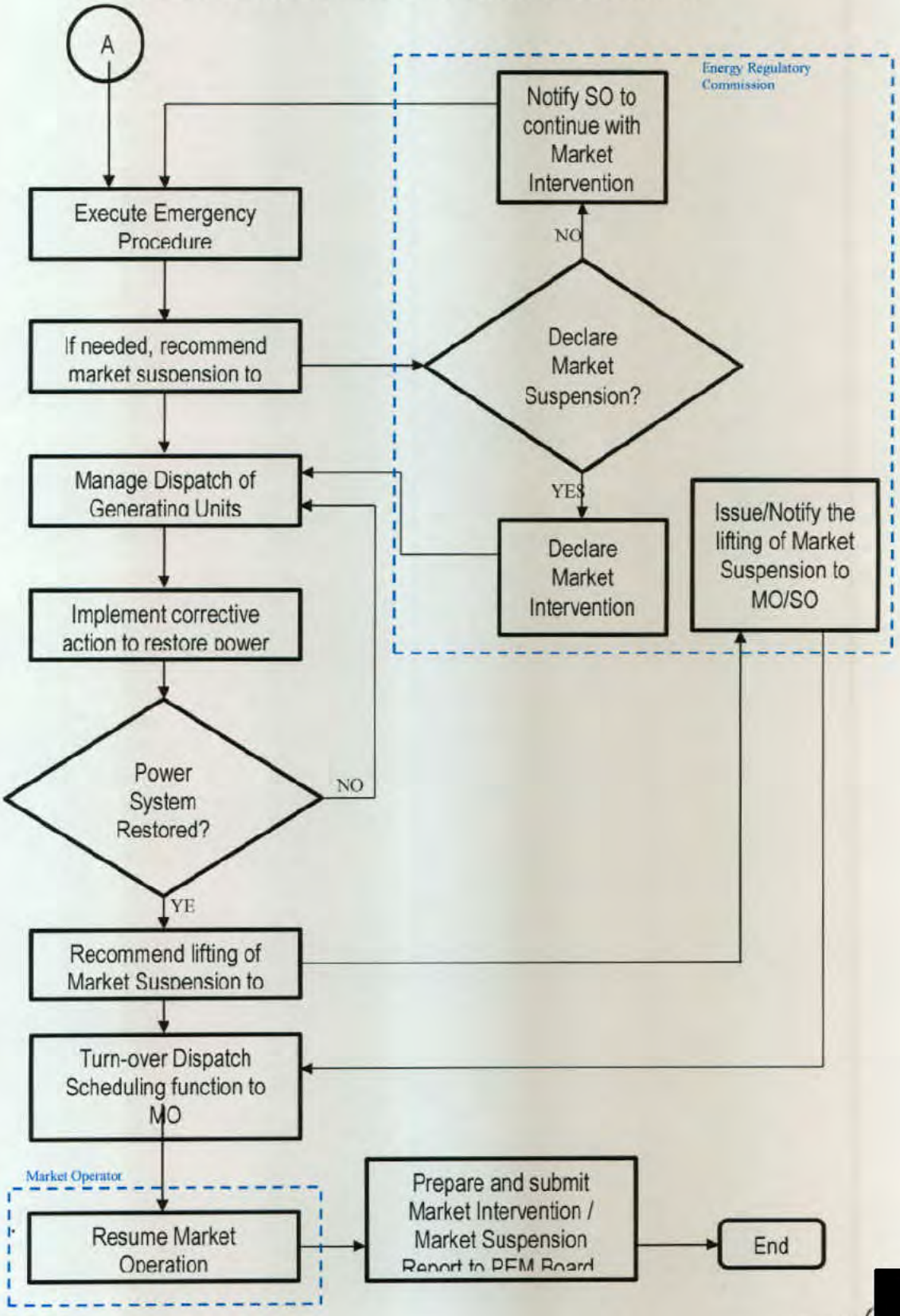
and SO are to implement corrective actions. He expounded that whenever an RTD schedule is not implementable and no threat to system security exists, then MO shall be the one to undertake the corrective actions. Otherwise, if the RTD schedule is not implementable and there is an existing threat to system security, then SO shall be the one to implement manual corrective actions.

Atty. De Castro inquired if there is a need to separate the actions of the SO and the MO. Mr. Rosales answered that it may be necessary to do so and to also state that both MO and SO have its own corrective actions. Mr. Binondo, on the other hand, commented that upon declaration of market intervention due to non-implementable RTD schedules, the SO's action shall be to directly issue non-WESM dispatch instructions. He also added that the need for manual corrective actions shall only apply for significant events in the power system. According to Mr. Mosa, the actions for implementing manual corrective actions shall be reflected on the portions of the process flow where significant events occur. Mr. Binondo also inquired which entities shall be informed by the SO of the declaration of market intervention. Mr. Rosales answered that the SO shall inform the MO about the declaration of market intervention and the MO shall then inform the Trading Participants of the same.

On the portion of the process flow where significant events occur, Mr. Binondo commented that upon regaining the stability of the power system, the market can already run and must not be under market intervention anymore. Mr. Rosales then explained that as long as loads are curtailed from the system, then it is not considered under normal state. He further stated that manual load dropping is done by the SO to ensure that the system shall remain running. He again reiterated that the system can still not be considered to be under normal state since some loads have been curtailed from the system.

[redacted]

SYSTEM OPERATOR PROCEDURES ON MARKET SUSPENSION



The RCC also reviewed the SO-proposed Flow Charts for market suspension and thereafter incorporated minor changes on the processes of the SO for the same.

Based from the discussions, the Secretariat was instructed to finalize the flowcharts and re-submit the same to the RCC for final approval.

Agreements/Action Plans:
The Secretariat to finalize the process flows on market intervention and market suspension for the MO and SO, as revised, and have the same sent to the RCC for approval.

2.2. PEMC's Proposed Amendments to the WESM Metering Standards and Procedures:

a. Re: MSP Performance

By way of background, the Secretariat informed the RCC, that the proposed amendments to the WESM Metering Manual regarding the MSP Performance Standards had earlier been deliberated upon by the RCC in its last meeting but there being matters regarding the proposal that remained unresolved, an RCC sub-committee composed of directly affected parties in the power industry was constituted by the RCC to resolve the remaining issues. Last 17 August 2016, the RCC sub-committee met and agreed on the following matters:

SECTION	PEMC PROPOSAL/RCC APPROVED	RCC SUB-COMMITTEE	WAY FORWARD
Section 10.5.1.a	**a) Timeliness of Daily Meter Data Delivery** **This measures the ability of the Metering Services Provider to deliver meter data of the previous trading day, within 0800H of the succeeding day. The required average daily result shall be greater than or equal to 95%.** $\text{Daily Meter Data Delivery} = \frac{\text{Total MI's Meter Data Received}}{\text{Total Active Metering Installations}}$	Timeliness **and Completeness of Daily Meter Data Delivery** **This measures the ability of the Metering Services Provider to deliver meter data of the previous trading day, ~~within~~by 0800H of the succeeding day. The required average daily result shall be greater than or equal to 95%.** $\text{Daily Meter Data Delivery} = \frac{\text{Total MI's Meter Data Received}}{\text{Total Active Metering Installations}}$	For RCC's endorsement to the PEM board
Section 10.5.1.c.	**c)** Timeliness **and Percentage Resolution to the Daily Meter Trouble Report** **This measures the number of daily**	**c) Timeliness and Percentage Resolution to the Daily Meter Trouble Report** **This measures the number of daily MTRs that have been resolved and**	For RCC's endorsement to the PEM board

SECTION	PEMC PROPOSAL/RCC APPROVED	RCC SUB-COMMITTEE	WAY FORWARD
	MTRs that have been resolved and corrected within 10 calendar days. The required result should be greater than or equal to 90%." $\text{Timely Resolution to the Daily MTR} = \frac{\text{Resolved Daily MTR}}{\text{Total Daily MTR Issued}}$	corrected within 10 calendar days from the date of the issuance of the MTR. The required result should be greater than or equal to 90%." $\text{Timely Resolution to the Daily MTR} = \frac{\text{Resolved Daily MTR}}{\text{Total Daily MTR Issued}}$	
Section 10.5.1.d.	d) Timeliness of Monthly Meter Data Delivery This measures the ability of the Metering Services Provider to deliver monthly meter data within 3 calendar days after the billing period. It is rated 100% for complete delivery of meter data submitted via secured, electronic means, including but not limited to, PEMC's SFTP site. $\text{Timeliness of Monthly Meter Data Delivery} = \frac{\text{Total MI's Meter Data Received}}{\text{Total Active Metering Installations}}$	d) Timeliness of Monthly Meter Data Delivery This measures the ability of the Metering Services Provider to deliver monthly meter data within 84 hours~~3-7 calendar days~~ after the billing period. It is rated 100% for complete delivery of meter data submitted via secured, electronic means, including but not limited to, PEMC's SFTP site ~~and B2B system~~. $\text{Timeliness of Monthly Meter Data Delivery} = \frac{84\ hours}{\text{No. of hours to complete the meter data delivery}}$ *84 hours/3.5 calendars days	For RCC's endorsement to the PEM board
Section 10.5.2.a.	a) New Metering Installations Before a metering installation is energized, the Metering Services Provider shall register the metering facility and submit the following documents: 1. Accomplished Metering Installation Registration Form (MIRF) 2. Single Line Diagram (SLD) 3. ERC Meter Test Certification/MSP Meter Test 4. Current Transformer Ratio Tests 5. Potential Transformer Ratio Tests	a) Assessment of new Metering Installation's documentation	PEMC-BSMD will draft the wording for the provision on the assessment of new metering installations' documentation which shall contain that the said submission of the MSP to the TP will be subject for MO's assessment with consideration on the technical aspects. The deadline for the said requested

SECTION	PEMC PROPOSAL/RCC APPROVED	RCC SUB-COMMITTEE	WAY FORWARD
	The required result should be 100%. $= \frac{\text{New Metering Installation Energized MI with approved documentations}}{\text{Total New MI for the month}}$		action is on **24 August 2016.**
Section 10.5.2.b.	**b) Compliance with Periodic Metering Installation Testing** **This measures the number of Metering Installations which have been tested as accurate within the periods provided in the Section 8.4.1.1and 8.4.2.3 of the Philippine Grid Code. As stated, all registered main and backup meters shall be re-tested annually and every 5 years for all instrument transformers. The required result shall be greater than or equal to 90%.** $\text{Compliance with Periodic MI Testing} = \frac{\text{Total MI Tested}}{\text{Total number of MI for Test Update}}$	**b) Compliance with Periodic Metering Installation Testing**	PEMC-BSM will revise the computation of the ratings with due consideration to the TP-owned metering facilities that do not warrant the testing of transformers. The deadline for the said requested action is on **24 August 2016.**
Table – Performance Standards		Reflected the agreements on the provisions	For RCC's endorsement to the PEM board
Table – Overall Passing Percentage		Reflected the agreements on the provisions	For RCC's endorsement to the PEM board
Table – Customer Satisfaction Measurement			PEMC-BSMD will reflect the following in the CSM: a. TP's rating for the completeness and timeliness of MSP's submissions for new metering

SECTION	PEMC PROPOSAL/RCC APPROVED	RCC SUB-COMMITTEE	WAY FORWARD
			installation b. TP's rating for MSP's notification regarding the tests needed for its metering facilities The deadline for the said requested action is on **24 August 2016.**

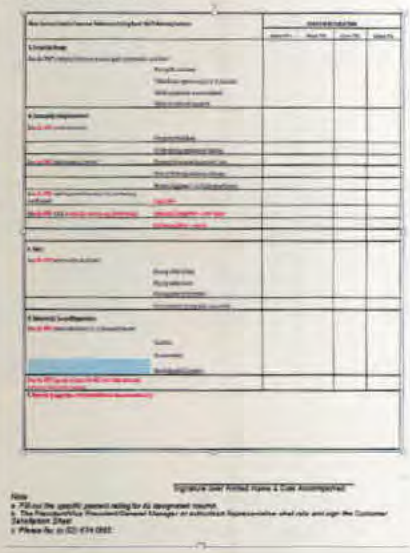
110 It was pointed out by the Secretariat that some items were assigned by the Sub-Committee
111 to PEMC-BSMD for finalization. Noting that submissions have already been received from
112 PEMC-BSMD, RCC deliberated on the same to finalize the proposed amendments to the
113 MSP Performance Rating.

SECTION	PEMC PROPOSAL/RCC APPROVED	PEMC-BSMD	AGREEMENTS/ DISCUSSIONS
10.5.2.a.	**a) New** Metering **Installations** **Before a metering installation is energized, the Metering Services Provider shall register the metering facility and submit the following documents:** 1. **Accomplished Metering Installation Registration Form (MIRF)** 2. **Single Line Diagram (SLD)** 3. **ERC Meter Test Certification/MSP Meter Test** 4. **Current Transformer Ratio Tests** 5. **Potential Transformer Ratio Tests** **The required result should be 100%.**	**10.5.2.** Assessment **of Metering Installations Compliance** **a. Assessment of New Metering Installations' Documentation** **Before a metering installation is energized, the following documents shall be submitted and signed by Trading Participants prior to assessment:** 1. **Accomplished Metering Installation Registration Form (MIRF)** 2. **Single Line Diagram (SLD)** 3. **Wiring Diagram** 4. **ERC Meter Test Report/ MSP Meter Test Report for Main Meter** 5. **Current Transformer Ratio Test for Phase A** 6. **Current Transformer Ratio Test for Phase B** 7. **Current Transformer Ratio Test for Phase C** 8. **Potential Transformer Ratio Test**	Atty. De Castro clarified if the list is an exhaustive one. Mr. Renato Afurong confirmed that it is already an exhaustive list. Having no objections from the body on this submission, the RCC adopted the same.

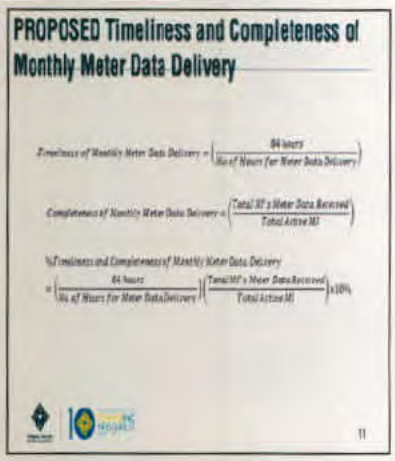
SECTION	PEMC PROPOSAL/RCC APPROVED	PEMC-BSMD	AGREEMENTS/ DISCUSSIONS
	New Metering Installation Energized MI with approved documentations / Total New MI for the month	for Phase A 9. Potential Transformer Ratio Test for Phase B 10. Potential Transformer Ratio Test for Phase C **The required result should be 100% using the formula below:** Assessment of New MI Documentation = Sum of Compliant Documents per New MI / Total New MI Documents * Total New MI for the Month	
10.5.2.b.	**b) Compliance with Periodic** Metering **Installation Testing** **This measures the number of Metering Installations which have been tested as accurate within the periods provided in the Section 8.4.1.1and 8.4.2.3 of the Philippine Grid Code. As stated, all registered main and backup meters shall be re-tested annually and every 5 years for all instrument transformers. The required result shall be greater than or equal to 90%.** Compliance with Periodic MI Testing = Total MI Tested / Total number of MI for Test Update	**b. Compliance with Periodic Metering Installation Testing** **This measures the number of Metering Installations which have been tested as accurate within the periods provided in the Section 8.4.1.1 and 8.4.2.3 of the Philippine Grid Code. As stated, all registered main meters shall be re-tested annually and every 5 years for all instrument transformers. The required result shall be greater than or equal to 90%** Compliance with Periodic MI Testing = Total MI Tested / Total MI Tests * Total number of MI for Test Update	Upon deliberation on PEMC-BSMD's submission, Mr. Emmanuel Sotomil suggested removing the phrase "as accurate" since according to him, the accuracy of the test will be determined only upon testing the equipment. Atty. De Castro then inquired about the cycles for testing the metering facilities. Mr. Sotomil explained that main revenue meters are subject for annual testing. On the other hand, instrument transformers are up for testing once every five (5) years. Atty. De Castro then suggested corrections on the subject statement for clarity. Concerns were raised on the provision which identifies the equipment due for testing. Mr. Ciprinilo Meneses suggested to generalize the term such that it would cover all the equipment due for testing. As a resolution, an additional phrase was added in the provision. Regarding the proposed formula, Mr. Sotomil proposed to remove "Total MI tests" from the denominator as it would cause a lower ratio using the proposed formula. Following the discussions above,

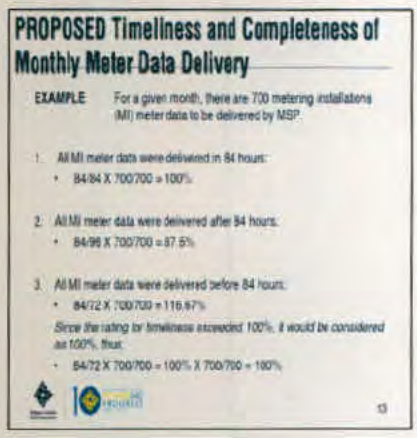
SECTION	PEMC PROPOSAL/RCC APPROVED	PEMC-BSMD	AGREEMENTS/ DISCUSSIONS
			the final provision was agreed upon to be as follows: **b. Compliance with Periodic Metering Installation Testing** **This measures the number of Metering Installations which have been tested ~~as accurate~~ within the periods provided in the Section 8.4.1.1 and 8.4.2.3 of the Philippine Grid Code. As stated, all registered main meters shall be re-tested annually, and all instrument transformers shall be tested every 5 years. The required result shall be greater than or equal to 90%** $$\text{Compliance with Periodic MI Testing} = \frac{\text{Total MI Tested}}{\text{~~Total MI Tests~~ + Total number of MI due for testing}}$$ **Metering Services Provider shall conduct tests on all components of metering installations due for testing, consisting of the instruments transformers and the Grid Revenue Main Meter, on or before the due date.**

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Table – Customer Satisfaction Measurement	*Please see Appendix A*		As discussed and agreed by the RCC, the rating of new metering installations shall solely be done by the customers. The agreement has been duly noted by the RCC sub-committee members which led to its decision in tasking the PEMC-BSMD to update the Customer Satisfactory Rating. The RCC was informed that PEMC-BSMD has already submitted the updated rating to the RCC Secretariat which included two (2) additional sections: E.) New Metering Installation and F.) Periodic Metering Installation Testing. Atty. De Castro suggested to replace the word "they" with "MSP" when referring to the same. On the other hand, Mr. Sotomil commented that portion B.) Punctuality/Responsiveness already covers the rating for timely submission of documents, the added sections only details these submissions. He also added that the ideal rating sheet must be as much as possible short and brief. Mr. Abner Tolentino and Ms. Lorreto Rivera agreed with the comment and suggested the removal of the added portions as it has already been covered by other measures. Ms. Rivera further suggested to just add another measure in portion B. Mr. Meneses, on the other hand, requested to include a portion in the rating where remarks can be placed for improvements of the MSP. Mr. Sotomil stated that on the first part of the rating, MSP's actual

SECTION	PEMC PROPOSAL/RCC APPROVED	PEMC-BSMD	AGREEMENTS/ DISCUSSIONS
			performances are the ones being rated. He further added that the MSP shall also be rated if it complies with the grid code prescribed meter and instrument transformers testing. Following the agreements above, an updated Customer Satisfaction Rating *(Appendix A)* was agreed to form part of the WESM Metering Manual: Appendix A: 
10.5.1.d.	d) Timeliness of Monthly Meter Data Delivery This measures the ability of the Metering Services Provider to deliver monthly meter data within **3 calendar days** after the billing period. It is rated 100% for complete delivery of meter data submitted **via secured, electronic means, including but not limited to, PEMC's SFTP site.**	d) Timeliness of Monthly Meter Data Delivery This measures the ability of the Metering Services Provider to deliver monthly meter data within **84 hours** ~~**3 calendar days**~~ after the billing period. It is rated 100% for complete delivery of meter data submitted **via secured, electronic means, including but not limited to, PEMC's SFTP site.** $\text{Timeliness of Monthly Meter Data Delivery} = \frac{84\ hours}{\text{No. of hours to complete the meter data delivery}}$	Mr. Jerahmeel Philippe Mendoza presented the PEMC-BSMD's proposed computations for the meter data submission rating. Regarding the passing rate arrived at using the new computations, Ms. Rivera commented that the passing rate using the new computations should be the same. The RCC also agreed with the comment and instructed the PEMC-BSMD to re-compute the same such that the passing rate will still be 94%.

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	Timeliness of Monthly Meter Data Delivery $= \frac{\text{Total MI's Meter Data Received}}{\text{Total Active Metering Installations}}$	*84 hours/3.5 calendars days	Mr. Mendoza then proceeded with the presentation of the proposed computation for the timeliness of monthly meter data delivery.







SECTION	PEMC PROPOSAL/RCC APPROVED	PEMC-BSMD	AGREEMENTS/ DISCUSSIONS
			Ms. Rivera raised her concerns about the multiplication of the two ratings, on timeliness and completeness. Mr. Aldjon Kenneth Yap further explained that multiplying the two factors may be mathematically incorrect as it would result to getting the percentage of each factor first before getting the percentage on the actual rating. Ms. Rivera recalled that during the sub-committee meeting, it was agreed upon that both factors shall be treated equally. According to her, the submission shall be complete and timely at the same time since from the trading participants' view, the submitted data will be useless for settlement, if the same is still incomplete. She then suggested to change the formula to be consistent with the intention of the Subcommittee. Mr. Yap presented a calculation for the timeliness and completeness of monthly meter data. The recommendation suggests to separately rate the timeliness and completeness of the submission weight at 7% and 3% respectively, giving more weight to the timeliness since the importance of timely submission is necessary. He also explained that the rating, either for timeliness or completeness, must be based on the submissions made by the MSP within the 84-hour-timeline mandated to the same. The computation as explained is presented as follows:

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			For Timeliness: *Total Metering Data for Month X: 100* *Actual Submission for Month X: 95* Computation: (95/100) x 7% = 6.65% **For Completeness:** *Total Metering Data for Month X: 100* *Actual Submission for Month X: 95 (the remaining 5 metering data were submitted after the deadline)* Computation: (95/100) x 3% = 2.85% Ms. Geraldine Rodriguez referred to the computation of the daily metering data since the provisions for both the daily and monthly submissions are the same. Mr. Yap further explained that Ms. Rodriguez was comparing the computation of the daily and monthly submissions. For the daily submissions the factor used for the rating is that actual submission divided by the total active metering facilities. Mr. Meneses, on the other hand, commented that the measure for timeliness should also consider time, otherwise it will not be correct to refer to the measure as timeliness. Mr. Ludovico Lim agreed with the suggestion of Mr. Meneses. Ms. Rivera stated that it was agreed that the measure for the timeliness shall be in terms of hours. Mr. Afurong, on the other hand, expressed his disagreement with giving separate percentage

SECTION	PEMC PROPOSAL/RCC APPROVED	PEMC-BSMD	AGREEMENTS/ DISCUSSIONS
			weights for timeliness and completeness. Mr. Sotomil further opined that the factor which shall solely be measured is timeliness since the MSP is required to submit a complete set of data anyway. While it is true that in the event of the occurrence of force majeure or national security issues the MSP may lack several meter data, Mr. Afurong stated that the PEMC-BSMD can still settle via historical data. Mr. Lim also stated that provisions during force majeure and instances beyond the MSP's control are already provided in the manual. Mr. Sotomil expressed that the worst case that he can foresee is that there may be some meter data that will not be included in the submission. According to him, the MSP has its own procedures to address these cases via estimation and then afterwards the same may be revisited when meter data is already available. He further expressed his agreement to the proposed formula multiplying two factors in rating the MSP's monthly submission. Mr. Binondo on the other hand stated that for him, multiplying two factors may really be mathematically incorrect as explained by Mr. Yap. Furthermore, he added that rating submissions using time is unusual, but for him, as long as the MSP submitted within the given time frame, then it shall have a good rating. Noting that the body is divided, Atty. De Castro requested for the RCC

SECTION	PEMC PROPOSAL/RCC APPROVED	PEMC-BSMD	AGREEMENTS/ DISCUSSIONS
			members to cast their votes on the two proposed measures which resulted to the following: RCC Sub-committee – 6 votes Separation of weights – 1 vote Abstain – 4 votes After the casting of votes, Ms. Rivera clarified the agreements during the RCC sub-committee meeting. She recalled that the equation which was agreed upon to be used utilizes hours in measuring the timeliness of data submissions. Later on, in the exchange of e-mails, several recommendations on the computation have been brought up in order to further clarify the measures. Personally, Ms. Rivera does not agree with multiplying two factors and then multiplying it with the weight because it does not make sense. She then recommended to have only one measure for the timeliness as she agrees that the MSP shall be rated on the completeness of the submission as the timeline has already been provided for. To aid in the discussion, Mr. Meneses presented a computation which would allow the MSP and PEMC-BSMD to adjust the formula on when it would result to zero. $SCI = [\ 6.25 - .0625(t)]\ x\ \left[\frac{k}{n}\right]$ where: a – constant (y-intercept of the line) b – constant (slope of the line) t – time (in hours) it took to submit **k** meter data

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			*note: if **t** is less than 84, then **t** for the SCO formula defaults to 84* k – number of submissions actually made at time **t** n – number of submissions required to be made by the 84th hour Having no objections from the RCC on the proposed formula which Mr. Meneses recommended, Atty. De Castro assigned the PEMC-BSMD and the MSP to agree on the constants which will be used in the rating. Afterwards, the Secretariat shall then forward the agreed formula to the RCC for its subsequent approval, via e-mail.

b. Re: Back-up Meters – comments from MERALCO

As a background, the Secretariat informed the RCC that the Committee already deliberated on the proposed amendments to the WESM Metering Manual during its 117th regular meeting held last 03 August 2016. During the same day, MERALCO submitted its comments to the RCC Secretariat, which was forwarded to the RCC Chair for the appropriate action on the same. After noting that a proposal in the same manual regarding MSP Performance Standards is currently being deliberated, Atty. De Castro decided to consider the comments to be discussed in the 118th RCC meeting.

Mr. Meneses initiated the discussion of the submitted comments by informing the RCC that the main concern of MERALCO was to differentiate the wholesale metering from the retail metering. The RCC Secretariat then reminded the body that these concerns have already been discussed by the RCC during its initial deliberation on the said manual and that the RCC already agreed that sufficient clarification has been made in the WESM Metering Manual that explains that the said manual shall only apply for the WESM. Considering the information, Mr. Meneses withdrew the comments and proposals relating to the matters which differentiate wholesale and retail metering.

Mr. Afurong asked for time to review the submitted comments but Atty. De Castro decided to go through the comments already and requested Mr. Afurong to raise his comments whenever he deems that a proposal is not acceptable for the Market Operator.

Atty. De Castro also reminded MERALCO that this shall be the last time that the RCC will accept its late submission, noting that its representative is present during the deliberation.

135 The RCC then deliberated on other comments and proposals as submitted by MERALCO,
136 as follows:

SECTION	ORIGINAL PROVISION	PEMC PROPOSAL	RCC PROPOSAL	DISCUSSIONS / AGREEMENTS
1.2 Definition of terms	New	***Metering Equipment:*** **The apparatus necessary for measuring electrical real and reactive power and energy, inclusive of a multi-function meter and the necessary instrument potential, current and phase shifting transformers and all wiring and communication devices as provided.**	*Metering Equipment*: The apparatus necessary for measuring electrical real and reactive power and energy, inclusive of a multi-function meter and the necessary instrument **voltage and** current ~~**and phase shifting**~~ transformers and all wiring and communication devices as provided.	According to Mr. Sotomil, phase shifting transformers are already inexistent. The RCC adopted the submitted proposal.
1.3.6 - Responsibilities	New	*New numbering* **(1.4) The *Market Operator* shall periodically review the provisions of *WESM Rules* Chapter 4 in accordance with the public consultation procedure including but not limited to:** **a) new technologies and the impact of new technologies on and in relation to technical standards for metering in the *WESM Rules*, the *Grid Code* and *Distribution Code*;** **b) contestability in the provision and types of**	*New numbering* **(1.4) The *Market Operator* shall periodically review at least once a year the provisions of *WESM Rules* Chapter 4 in accordance with the public consultation procedure, as needed, including but not limited to:** **a) new technologies and the impact of new technologies on and in relation to technical standards for metering in the *WESM Rules*, the *Grid Code* and *Distribution Code*;** **b) contestability in the provision and types of meters used; and** **c) whether the provisions of *WESM Rules* Chapter 4 have the effect of**	Mr. Mosa inquired if there is a significant change in the MERALCO's proposal. Mr. Meneses explained that MERALCO is suggesting to define a timeline for the review of provisions of the WESM Rules. Atty. De Castro added that MERALCO wants the review to be at least once a year to be jointly undertaken with the stakeholders, which is currently through public consultation. Ms. Rodriguez referred to the WESM Rules and informed the RCC that timelines stated in the WESM Rules is only periodical. Upon further assessment, Atty. Sheryll Dy suggested to just add "as needed" in the provision as a qualifier. Atty. De Castro also noticed that MERALCO compressed the provision into one paragraph to which Mr. Binondo opined that the standards set by the references provided should remain because the power system already requires much higher standards.

SECTION	ORIGINAL PROVISION	PEMC PROPOSAL	RCC PROPOSAL	DISCUSSIONS / AGREEMENTS
		meters used; and c) whether the provisions of *WESM Rules* Chapter 4 have the effect of eliminating the use of alternative types of meters.	eliminating the use of alternative types of meters.	Following the discussions above, the RCC agreed to adopt a yearly review of Chapter 4 of the WESM Rules and retained the public consultation procedures.
2.1 Introduction		*New second paragraph:* This section provides the following: a) the general and technical requirements for metering equipment such as current transformer, voltage transformer, lightning arrester and other associated devices; b) the safety requirements and grounding equipment, as well as the location of primary terminals including the distances and clearances between instrument transformers; c) the requirements	*New second paragraph:* This section provides the following: a) the general and technical requirements for metering equipment such as current transformer, voltage transformer, ~~surge arrester~~ and other associated devices; b) the safety requirements and grounding equipment, as well as the location of primary terminals including the distances and clearances between instrument transformers; c) the requirements for the connection to power system of instrument transformers, communication links for the meter data and security	MERALCO suggested to replace "lightning arrester" with "surge arrester". The RCC noted that both of the terms mean the same but Mr. Sotomil opined that it is not part of the metering equipment and should be removed from this provision. The RCC adopted the exclusion of the surge arrester in this provision.

SECTION	ORIGINAL PROVISION	PEMC PROPOSAL	RCC PROPOSAL	DISCUSSIONS / AGREEMENTS
		for the connection to power system of instrument transformers, communication links for the meter data and security of metering installations; and **d) the conditions for redundant and existing metering installations.**	**of metering installations; and** **d) the conditions for redundant and existing metering installations.**	
2.3.1 Applicability to Equipment	This standard applies to the following metering equipment, devices and accessories: a. Meters b. Instrument transformers c. Meter Enclosure d. Meter Test Switch/Block e. Secondary Cabling for Instrument Transformers f. Grounding g. Conduit System h. Communication Link i. Meter Seals and Padlock j. Metering Perimeter ---xxx---	This standard applies to the following metering equipment, devices and accessories: a. Meters; b. ~~Instrument transformers~~ **Current transformer (CT);** c. **Voltage transformer (VT);** d. **Data Logger;** e. Meter Enclosure; f. Meter Test Switch/Block; g. Secondary Cabling for ~~Instrument Transformers~~ **Metering;** h. Grounding **System;** i. **Rigid Metal** Conduit System; j. Communication Link k. ~~Meter Seals and Padlock~~ **Facility**	This standard applies to the following metering equipment, devices and accessories: a. Meters; b. ~~Instrument transformers~~ **Current transformer (CT);** c. **Voltage transformer (VT);** d. ~~**Data Logger**~~**;** e. Meter Enclosure; f. Meter Test Switch/Block; g. Secondary Cabling for ~~Instrument Transformers~~ **Metering;** h. Grounding **System;** i. **Rigid ~~Metal~~** Conduit System **in accordance with the PEC**; j. Communication Link k. ~~Meter Seals and Padlock~~ **Facility to seal and secure the meter;** l. **Other components for checking the**	Atty. De Castro inquired if MERALCO's proposal to refer the types of rigid conduit system to the PEC is acceptable to the body. The RCC agreed that not only metal conduits are provided in the PEC. Regarding the Data Logger, Mr. Sotomil suggested its removal from the provision since the meter itself contains the data logger. He further added that in case of auditing of MSP, if this is provided in the manual, the auditor may look for the same. Following the discussion above, the RCC adopted the suggested revisions.

SECTION	ORIGINAL PROVISION	PEMC PROPOSAL	RCC PROPOSAL	DISCUSSIONS / AGREEMENTS
		to seal and secure the meter; l. **Other components for checking the voltage and current; and** m. Metering Perimeter ---xxx---	**voltage and current; and** m. Metering Perimeter ---xxx---	
		2.3.2. This standard applies to Metering Installation in the WESM administered transactions, **as follows:** a) Connection ~~between utility control areas~~ **to the grid** ~~b) Connection to the WESM controlled grid system~~ ~~c~~ **b) Points of connection between distribution utilities** ~~d~~ **c)** Connection of registered Trading Participants embedded within the ~~local~~ distribution utilities. ~~e) Designated interties with other grid system s.~~ ~~f~~ **d)** Any other locations as required by the WESM for settlement purposes.		Atty. De Castro stated that MERALCO suggests to delete item c in the provision. Mr. Sotomil commented that the WESM is not only limited to Grid-connected Trading Participants. The RCC retained the previously adopted proposal.
		2.3.3 **In accordance with Section 5 of this Manual**, all *WESM* ***Participants*** **shall register their** Metering Installations, ~~consisting of the Revenue Meter, Metering Instrument~~	2.3.3 **In accordance with Section 5 of this Manual**, all *WESM* ***Participants*** **shall register their** Metering Installations, ~~consisting of the Revenue Meter, Metering Instrument Transformers, Meter~~	From the Trading Participants' view, Ms. Rivera stated that the formula used in calculating trading amounts utilizes the terms "injection" and "withdrawal". Further, she expressed her agreement with the proposal for as long as it is defined in the manual.

SECTION	ORIGINAL PROVISION	PEMC PROPOSAL	RCC PROPOSAL	DISCUSSIONS / AGREEMENTS
		~~Transformers, Meter Enclosure, and other Metering Accessories, shall be registered~~ with the MO prior to ~~deployment in the WESM.~~ **injection or withdrawal of electricity to and from the Grid.**	~~Enclosure, and other Metering Accessories, shall be registered~~ with the MO prior to ~~deployment in the WESM.~~ **injection to or withdrawal from the Grid.**	The RCC then agreed with the original terms and just clarified the statements in the provision.
	Requirements for Grid Revenue Meters	Requirements for ~~Grid~~ Revenue Meters	Requirements for ~~Grid~~ ***Transmission Grid*** Revenue Meters	Adopted by the RCC
		2.9.1.1 a) Secondary cabling shall be secured, tamper proof and compliant with the ~~WESM Rules and the Grid and Distribution Code~~ **PGC** requirements on security of registered revenue metering Installations and metering data.	2.9.1.1 a) Secondary cabling shall be secured, tamper ~~proof~~ **resistant** and compliant with the ~~WESM Rules and the Grid and Distribution Code~~ **PGC** requirements on security of registered revenue metering Installations and metering data.	Adopted by the RCC
		All wiring from the instrument transformers' secondary terminal box to the meter installation enclosure (meter box) shall be placed in a **rigid metal** conduit **which** ~~is compliant with environmental requirements~~ to ensure that the connections to cabling are secure **and** ~~tamper proof~~ **tamper-resistant** ~~and compliant with the MO Requirements~~. Conduit joints (elbow, T-connector) shall be properly sealed and secured. No secondary cabling	All wiring from the instrument transformers' secondary terminal box to the meter installation enclosure (meter box) shall be placed in a **rigid** ~~metal~~ conduit **which** ~~is compliant with environmental requirements~~ to ensure that the connections to cabling are secure **and** ~~tamper proof~~ **tamper-resistant** ~~and compliant with the MO Requirements~~. Conduit joints (elbow, T-connector) shall be properly sealed and secured. No secondary cabling shall be exposed and accessible to unauthorized personnel. **Rigid** ~~metal~~ **conduit**	Adopted by the RCC

SECTION	ORIGINAL PROVISION	PEMC PROPOSAL	RCC PROPOSAL	DISCUSSIONS / AGREEMENTS
		shall be exposed and accessible to unauthorized personnel. **Rigid metal conduit used for the instrument transformer shall be surface mounted.** See Figure 5.	**used for the instrument transformer shall be surface mounted.** See Figure 5.	
		2.10.1 xx 2.10.2 xx **2.10.3 The minimum requirement is partial redundant metering using single set of instrument transformer where the main and back-up meters are in series or in parallel and connected to a common core.** **2.10.4 The metering data recorded by the Main and Back-up Meters must not deviate by more than 0.6% of the values recorded by the meters. In the event that the deviation exceeds this value, the MSP must investigate and correct the causes of such deviations not later than three (3) months from discovery.**	2.10.1 xx 2.10.2 xx **2.10.3 The minimum requirement is partial redundant metering using single set of instrument transformer where the main and back-up meters are in series or in parallel and connected to a common core.** **2.10.4 The metering data recorded by the Main and Back-up Meters must not deviate by more than 0.6% of the *monthly average* values recorded by the meters *for three (3) consecutive billing periods.* In the event that the deviation exceeds this value, the MSP must investigate and correct the causes of such deviations not later than three (3) months from discovery.**	Mr. Meneses stated that MERALCO is suggesting to provide a timeline. Atty. De Castro further assessed the proposal which suggests to put monthly average of three (3) consecutive billing period since the RCC proposal did not contain a time frame. MERALCO suggests to state in the provision that the deviation of the main and back-up meter shall not exceed 0.6% of the monthly average values for three (3) consecutive billing periods. Mr. Afurong expounded that the PEMC-BSMD considers the data of the back-up meters whenever the deviation of the two meters is 0.2%, if it is more than 0.2%, they apply a corrective factor to the meter data, meanwhile if the deviation exceed 0.6% PEMC-BSMD does not consider anymore the data of the back-up meters and recommends its replacement. There being no objection, the RCC adopted the suggested time frame but retained the original provision on deviation.
	2.11 A Metering Installation installed and commissioned that does not comply with	2.11 **An existing** Metering Installation ~~installed and commissioned~~ that does not fully comply with the requirement of this standard will be	2.11 A Metering Installation installed and commissioned that does not comply with the requirement of this standard will be permitted by the MO to remain in	Atty. De Castro opined that MERALCO wanted to make sure that the MSP replaces non-compliant meters. Mr. Binondo then commented that the original provision is in effect prior

SECTION	ORIGINAL PROVISION	PEMC PROPOSAL	RCC PROPOSAL	DISCUSSIONS / AGREEMENTS
	the requirement of this standard will be permitted by the MO to remain in service subject to the following conditions: 2.11.1 The meter shall have a mass memory capable of recording the required demand interval data for a period of at least 60 days and have communication ports for remote and manual data retrieval. 2.11.2 ERC has tested/verified and sealed the meter, 2.11.3 Accuracy class of the meter and instrument transformers shall be 0.5 or better, and 2.11.4 All non-compliant instrument transformers shall be replaced within one	permitted by the **Market Operator** ~~MO~~ to remain in service subject to the following conditions: **a)** The meter shall have a mass memory capable of recording ~~the 15-minute~~ the required demand interval **data for a period of at least 60 days** and have communication ports for remote and manual data retrieval; **b) Energy Regulatory Commission** (ERC) has tested/verified and sealed the meter; ~~2.11.3 Accuracy class of the meter and instrument transformers shall be 0.5 or better, and~~ **c) All non-compliant meters shall be replaced within six (6) months from the effectivity of registration in the WESM;** **d)** All non-compliant instrument transformers shall be replaced within ~~one year after the WESM come into effect.~~ **the period of two (2) years from the effectivity of registration in the WESM; and** **e) Continued non-compliance of**	service subject to the following conditions: 2.11.1 The meter shall have a mass memory capable of recording the required demand interval data for a period of at least 60 days and have communication ports for remote and manual data retrieval. 2.11.2 ERC has tested/verified and sealed the meter, 2.11.3 Accuracy class of the meter and instrument transformers shall be 0.5 or better, and 2.11.4 All non-compliant instrument transformers shall be replaced within one year after the WESM come into effect.	the effectivity of the WESM. He further added that since it was already provided previously that the meters must be replaced within 1 year after the commencement of the WESM, then amending the provision and extending the timeline may mean that non-compliant metering facilities are still allowed in the WESM. Atty. De Castro inquired if there are still meters that are non-compliant. Mr. Sotomil stated that there are still meters that are non-compliant particularly those power plants whose owners are non-WESM members. With the discussions above, the RCC retained the original provision of section 2.11 of the WESM Metering manual.

SECTION	ORIGINAL PROVISION	PEMC PROPOSAL	RCC PROPOSAL	DISCUSSIONS / AGREEMENTS
	year after the WESM come into effect.	**metering installations shall be subject to sanctions or penalties.**		
	The following procedures for labeling and identification of revenue Metering Installation and its equipment, devices, auxiliaries, etc. is detailed below:	~~The following procedures for labeling and identification of revenue Metering Installation and its equipment, devices, auxiliaries, etc. is detailed below:~~ **The assignment of the Site Equipment Identification Number (SEIN) numbering and identifying of revenue Metering Installation shall be done by the MSP.**	~~The following procedures for labeling and identification of revenue Metering Installation and its equipment, devices, auxiliaries, etc. is detailed below:~~ **The assignment of the Site Equipment Identification Number (SEIN) numbering and identifying of revenue Metering Installation shall be done by the MSP for grid connected Trading Participants and the MO for FIT-embedded generators.**	The RCC agreed that the MSP should be the sole responsible entity in assigning SEIN number for grid connected Trading Participants. Meanwhile Atty. Caryl Miriam Lopez-Mateo inquired about the SEIN assignment for FIT-embedded generators. According to Mr. Sotomil, it is the DU who assigns the SEIN in that case. He further opined that it would be better to assign the responsibility in assigning SEIN numbering to the MO, for uniformity.
6.3 Metering Database	The Metering data recorded in the Metering database with respect to a registered wholesale meter is confidential information and will only be made available to: 6.3.1. TP whose settlement statement is determined on the basis of the Metering data recorded in that registered wholesale meter;	*New section number and title:* **c) Access** **Pursuant to WESM Rules Clause 4.8.3, the only entities entitled to have either direct or remote access to metering data on a read only basis from the metering database or the metering register in relation to metering point are:**~~The Metering data recorded in the Metering database with respect to a registered wholesale meter is confidential information and will only be made available to:~~	6.3 **Market Operator's** Metering Database	Mr. Meneses suggested to identify whose metering database is being referred to in this section. Mr. Sotomil stated that over the years, MSP's understanding on the database being pointed out in this section is the MO's database, thus the agreement to specify that the section pertains to MO's database. MERALCO proposed to remove ERC and the DOE from the entities entitled to have either direct or remote access to metering data because it will be less costly if the ERC goes to the MSP. Most of the RCC members expressed their disagreement with the proposal. Mr. Binondo then stated that there is already an existing manual on confidentiality which provides the entitled entities for the data.

SECTION	ORIGINAL PROVISION	PEMC PROPOSAL	RCC PROPOSAL	DISCUSSIONS / AGREEMENTS
	6.3.2 The MSP for that registered wholesale meter; and 6.3.3 Network Service Provider to whose system a TP is connected using a separate WESM Metering Installation. The TP may query the Metering database for the purpose of reviewing the Metering data to determine its correctness.	**i. Each** Tr**ading** P**articipant** whose settlement statement amounts ~~is~~ **are** determined ~~on the basis of the Metering data recorded in that registered wholesale meter~~ **by reference to quantities of energy flowing through that metering point;** ~~6.3.2.~~ **ii.** The **Metering Services Provider who is responsible for the metering installation at that metering point;** ~~for that registered wholesale meter; and~~ **iii.** Network Service Provider ~~to whose system a TP is connected using a separate WESM Metering Installation.~~ **associated with the metering point;** **iv. The Market Operator and its authorized agents; and** **v. Any customer with respect to the metering data in relation to the metering point registered to it;** **vi. The Market Surveillance Committee;** **vii. The ERC;**		

SECTION	ORIGINAL PROVISION	PEMC PROPOSAL	RCC PROPOSAL	DISCUSSIONS / AGREEMENTS
		viii. DOE ~~The TP may query the Metering database for the purpose of reviewing the Metering data to determine its correctness.~~		
	New	**6.3.1 Requirements** **xxx** **b) Format:** **The Metering Services Provider shall submit the metering data in the meter data exchange format prescribed by the Market Operator.** **xxx**	**b)** Format: **The Metering Services** Provider **shall submit the metering data in meter data exchange format** or any other secure file format, as mutually agreed upon by the Market Operator and the Metering Services Provider, which can be accepted, read and processed by the system of the ~~prescribed by the~~ **Market Operator**.	MERALCO proposed amendments to the section to be sure that the formal can be any other format, mutually agreed upon prescribed by the MO. Mr. Afurong stated that it may be in any format for as long as it is secured.
7.4.2.1.	(a) Energy Comparison For each dispatch interval (1 hour), the kWh delivered of the main meter shall be compared with the kWh delivered of the alternate/check meter. If the difference exceeds a predefined limit, Validation fails and a trouble call shall be issued.	(a) Energy Comparison For each dispatch interval (1 hour), the kWh delivered of the main meter shall be compared with the kWh delivered of the ~~alternate/check~~ **back-up** meter. If the difference exceeds a predefined limit **as described in Section 2.9.4,** validation fails and a trouble call shall be issued.	(a) Energy Comparison For each dispatch interval (1 hour), the kWh delivered of the main meter shall be compared with the kWh delivered of the ~~alternate/check~~ **back-up** meter. If the difference exceeds a predefined limit **as described in Section 2.10.4,** validation fails and an MTR shall be issued.	MERALCO requested for a clarification between a Meter Trouble Report (MTR) and a trouble call. Mr. Afurong explained that there is no difference between the two terms and suggested to replace the trouble call with MTR.

[redacted]

SECTION	ORIGINAL PROVISION	PEMC PROPOSAL	RCC PROPOSAL	DISCUSSIONS / AGREEMENTS
	New	8.3.2. Unresolved Meter Trouble Reports f. Meter Malfunction In cases where there is an unintentional meter error (e.g., meter multiplier) that causes a meter malfunction, the Metering Services Provider shall reconcile the metering data of the affected trading intervals within one (1) year after the date of discovery of such error.	f. Meter Malfunction In cases where there is an unintentional meter error (e.g., erroneous use or application of meter multiplier) that causes a meter malfunction, the Metering Services Provider shall submit the recommended corrections to the metering data of the affected trading intervals within three months after the date of discovery of such error.	Atty. De Castro stated that MERALCO proposes to add erroneous use of meter multiplier as a classification of unintentional meter error and to replace the timeline to address the error. Mr. Binondo commented on why the timeline is being proposed to be from three (3) months to (1) year if the error has already been recognized. Mr. Sotomil explained that there are instances where errors are discovered late in which this section mandates that the same shall be reconciled with in the timeframe. On the other hand, Atty. Lopez-Mateo referred to the WESM rules which requires six (6) months to reconcile on meter error. She then proposed to shorten the timeline to allow the MO to have ample time in addressing the same. Mr. Sotomil was amenable with the proposal. He then expounded on the process of the reconciliation. According to him, the MSP submits the recommended correction, but prior to that there shall be an agreement on adjustments between the MSP, MO and the affected Trading Participants which may require three (3) months at most so that the remaining three (3) months would be spent for the reconciliation and final agreement with the affected parties. Atty. Lopez-Mateo also added that there are two timelines, one is for the MO which requires to reconcile six (6) months from the discovery and another is for the Trading Participants which is up to one (1) year. The RCC then adopted the three (3)-month timeline for the MSP to submit its recommended corrections.

Agreements/Action Plans:
a) The body approved for submission to the PEM Board of the Proposed Amendments to Section 10 of the WESM Metering Manual regarding MSP Performance Rating, as revised. The Secretariat shall finalize the revisions based from the discussions. b) The Secretariat shall accordingly draft the corresponding RCC Resolution for the Proposed Amendments to the Metering Manual, for the approval of the RCC.

2.3. RCC Resolution No. 16-12 – Technical Committee's Proposed Amendments to the WESM Market Manual on Guidelines Governing the Constitution of PEM Committees

Agreements/Action Plans:
The RCC approved the draft RCC Resolution No. 2016-10, as presented. The Secretariat shall hence submit said resolution to the PEM Board for its endorsement to the DOE.

2.4. Proposed Amendments to the WESM Market Manual on Price Determination Methodology and Constrain Violation Coefficient Manual – Comments from DOE, APC, SNAP and TC

Ms. Karen A. Varquez from the WESM Design Study-Technical Working Group (WDS-TWG) facilitated the discussions on PEMC's proposed Price Determination Methodology Manual. The discussions considered the comments received from the DOE, APC, SNAP and TC, as well as PEMC's responses to said comments.

The details of the discussion are provided in the Annex A of this document.

Agreements/Action Plans:
Further discussions on the proposed amendments to the CVC Manual as well as on cost recovery will be continued in the next RCC meeting in October 2016.

3. New Business

3.1. Proposed Amendments to the WESM Market Manual on Dispatch Protocol regarding Data Format

Mr. Ermelindo Bugaoisan, Jr. (NGCP-SO) presented the SO's proposed amendments to the Dispatch Protocol Manual 11 (DPM 11) regarding data format requirements. The proposal aims to correct the file name and formats of data, as well as add column data for

certain information sent by the SO to the MO. Considering the development of the interchange of data between the MO and the SO, Mr. Bugaoisan stated that the naming convention and data formats in the Manual should be revised as well to reflect what have been used in practice. The data file name and formats for Outage Schedules, System Reserve Requirements, Contingency List and Security Limits were proposed to be revised.

Referring to the proposed change in data format requirements, Mr. Mosa requested that the current format stipulated in the Manual, .dat, still be retained along with the proposed one, .csv, since in practice, the SO actually submits data in both formats. Mr. Bugaoisan, for the information of the body, explained that the .dat format is the one used in the Market Dispatch Optimization Model, while the .csv format is the one being submitted to certain entities for information, for instance, the Market Surveillance Committee. He agreed that the SO could still submit the same data in two formats, thus retaining the current format in the Manual. However, he maintained that the naming convention should be revised.

Since the proposal intends to amend the current DPM 11, the RCC requested the SO to already incorporate its proposed amendments to the draft DPM 12, which proposal is already set for submission to the PEM Board pending the finalization of the MO and SO flowcharts for market intervention and suspension as discussed earlier. The RCC gave the SO three (3) days after the Secretariat has provided to it the draft DPM 12 to re-submit its proposal, after which the MO shall provide its comments. So as not to further delay the submission of the proposed DPM 12 to the PEM Board, the RCC agreed to no longer have the proposal published in the market website to request for comments of Market Participants, save for the MO since the affected procedure is only between the SO and the MO. The RCC agreed to thereafter approve the final version of the SO's proposal via e-mail for expediency.

Agreements/Action Plans:
a) The Secretariat is to provide the SO with the latest version of the DPM
b) SO shall incorporate the proposed changes to the latest version and submit the same for review and concurrence of the MO
c) The Secretariat shall have proposed amendments approved by the RCC through e-mail for expediency

4. Other Matters

4.1. DOE Letter regarding Proposals related to (i) NSS, (ii) BCQ Declaration and Line Rental Calculation, and (iii) Price Determination Methodology Manual

Ms. Rodriguez informed the RCC of the DOE's recommendation for PEMC to already harmonize the proposals related to the NSS and BCQ Declaration and Line Rental Calculation before submitting both to the DOE. Alternatively, the DOE suggested to disregard the two proposals as these will be integrated in the proposed Price

Determination Methodology Manual. The DOE stated in its letter that its recommendation would save time, budget and effort in the rules change process.

The body was reminded that the NSS proposal was already submitted to the PEM Board, while the BCQ proposal is still for RCC deliberation pending PEMC's additional submissions of proposed amendments to the affected WESM Manuals.

The RCC noted the recommendation of the DOE.

5. Next Meeting

The next RCC meetings were set as follows:

- 119th RCC Meeting – 05 October 2016
- 120th RCC Meeting – 09 November 2016
- 121st RCC Meeting – 07 December 2016

6. Adjournment

There being no other matter to be discussed, the meeting was adjourned at around 5:30 PM.

Prepared By:	Reviewed By:	Noted By:
Aldjon Kenneth M. Yap	**Geraldine A. Rodriguez**	**Elaine D. Gonzales**
***Analyst** – Market Governance Administration Unit*	***Assistant Manager** – Market Governance Administration Unit*	***Manager** – Market Data and Analysis Division*
Market Assessment Group	***Market Assessment Group***	***Market Assessment Group***

Approved by: RULES CHANGE COMMITTEE [redacted] **Maila Lourdes G. de Castro** Chairperson Independent	
Members:	
Concepcion I. Tanglao Independent	[redacted] **Francisco L.R. Castro, Jr.** Independent
[redacted] **Allan C. Nerves** Independent	[redacted] **Isidro E. Cacho, Jr.** Market Operator Philippine Electricity Market Corporation (PEMC)
[redacted] **Ambrocio R. Rosales** Transmission Sector National Grid Corporation of the Philippines (NGCP)	[redacted] **Abner B. Tolentino** Generation Sector Power Sector Assets and Liabilities Management Corporation (PSALM)
Atty. Jose Ildebrando B. Ambrosio Generator Sector NorthWind Power Development Corp. (NorthWind)	[redacted] **Theo C. Sunico** Generation Sector Vivant Corporation
[redacted] **Ciprinilo C. Meneses** Distribution Sector (PDU) Manila Electric Company (MERALCO)	[redacted] **Jose P. Santos** Distribution Sector (EC) Ilocos Norte Electric Cooperative, Inc. (INEC)
Juanito O. Tolentino, Jr. Distribution Sector (EC) Mactan Electric Company (MECO)	[redacted] **Ludovico D. Lim** Distribution Sector (EC) Antique Electric Cooperative, Inc. (ANTECO)
[redacted] **Lorreto H. Rivera** Supply Sector TeaM (Philippines) Energy Corporation (TPEC)	

Annex A - Discussions on the Proposed Price Determination Methodology Manual

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Proposed Revised Wording in relation to Comment	Rationale for the Proposed Revised Wording	PEMC Response and RCC proposal	RCC Discussion
Foreword		FOREWORD The establishment of the Philippine Wholesale Electricity Spot Market (the "WESM") is mandated by Republic Act No. 9136, otherwise known as the "Electric Power Industry Reform Act of 2001" (the "EPIRA"). The WESM is to provide the mechanism for determining the price of electricity not covered by bilateral contracts between sellers and purchasers of electricity. Pursuant to the mandate of the EPIRA, the Department of Energy (the "DOE") jointly with the electric power industry participants formulated the detailed rules for the WESM, i.e., the WESM Rules. The WESM Rules were promulgated by the DOE on 28 June 2002. Among other things, the WESM Rules provided for the mechanism for determining the prices of electricity in the market not covered by bilateral contracts. This price determination methodology (the "PDM") contained in the WESM Rules is required by the EPIRA to be approved by the Energy Regulatory Commission (the "Commission"). The Price Determination Methodology for the WESM contained in this document was formulated compliant with the WESM Rules and in consultation with the industry participants. Such consultations were conducted through, initially, the WESM Technical Working Group (the "WESM-TWG"), later the Interim Rules Change Committee, and the Philippine Electricity Market Board (the "PEM Board"). This Price Determination Methodology gives the specific details as to	~~FOREWORD~~ **Section 1 INTRODUCTION** **1.1 Background** **1.1.1** The establishment of the Philippine Wholesale Electricity Spot Market (the "WESM") is mandated by Republic Act No. 9136, otherwise known as the "Electric Power Industry Reform Act of 2001" (the "EPIRA"). ~~The WESM is to provide the mechanism for determining the price of electricity not covered by bilateral contracts between sellers and purchasers of electricity.~~ **1.1.2** Pursuant to the mandate of the EPIRA, the Department of Energy (the "DOE") jointly with the electric power industry participants formulated the ~~detailed rules for the WESM, i.e.,~~ the WESM Rules. ~~The WESM Rules were promulgated by the DOE on 28 June 2002. Among,~~ **which, among** other things, ~~the WESM Rules provided for~~**provides** the mechanism for determining the prices of electricity in the market not covered by bilateral contracts. ~~This price determination methodology (the "PDM") contained in the WESM Rules is required by the EPIRA to be approved by the Energy Regulatory Commission (the "Commission").~~ **1.1.3** ~~The Price Determination Methodology for the WESM contained in this document was formulated compliant with the WESM Rules and in consultation with the industry participants. Such consultations were conducted through, initially, the WESM Technical Working Group (the "WESM-TWG"), later the Interim Rules Change Committee, and the Philippine~~	• Rewording, for clarity • Renumbering to conform with the formatting for Market Manuals		• DOE: Section 1 INTRODUCTION 1.1 Background 1.1.1 The establishment of the Philippine Wholesale Electricity Spot Market (**WESM**) is mandated by Republic Act No. 9136, otherwise known as the Electric Power Industry Reform Act of 2001 (**EPIRA**). 1.1.2 Pursuant to the mandate of the EPIRA, the Department of Energy (**DOE**) ~~jointly with the electric power industry participants~~ **jointly formulated with the electric power industry participants** the WESM Rules, which among others ~~things~~, provides the mechanism for determining the prices of electricity in the market not covered by bilateral contracts. **The price determination methodology contained in the WESM Rules shall be subject to the approval of the Energy Regulatory Commission (ERC).** 1.1.3 This Price Determination Methodology Manual provides the specific details of such mechanism. It is formulated compliant with the WESM Rules, in consultation with the industry participants, and approved by the ~~Energy Regulatory Commission~~ (**ERC**)[1]	Quotation marks on acronyms not necessary For clarity and to give emphasis that the PDM in the WESM Rules is subject to ERC's approval	Adopted, with revisions. ~~FOREWORD~~ **Section 1 INTRODUCTION** **1.1 Background** **1.1.1** The establishment of the Philippine Wholesale Electricity Spot Market (~~the~~ "WESM") is mandated by Republic Act No. 9136, otherwise known as the "Electric Power Industry Reform Act of 2001" (~~the~~ "EPIRA"). The ~~WESM is to provide the mechanism for determining the price of electricity not covered by bilateral contracts between sellers and purchasers of electricity.~~ **1.1.2** Pursuant to the mandate of the EPIRA, the Department of Energy (~~the~~ "DOE"), jointly with the electric power industry participants, formulated the ~~detailed rules for the WESM, i.e.,~~ the WESM Rules. ~~The WESM Rules were promulgated by the DOE on 28 June 2002. Among,~~ **which, among** other~~s things~~, ~~the~~ WESM Rules ~~provided for~~**provide** the mechanism for determining the prices of electricity in the market not covered by bilateral contracts. ~~This price determination methodology (the "PDM") contained in the WESM Rules is required by the EPIRA to be approved by the Energy Regulatory Commission (the "Commission").~~ **1.1.3** ~~The Price Determination Methodology for the WESM contained in this document was~~	Ms. Karen Varquez stated that the additional sentence proposed in section 1.1.2 by the DOE has already been covered in section 1.1.3. Mr. Binondo, on the other hand, responded that the proposal was based on EPIRA, which states that PDM requires ERC's approval. He further added that on other jurisdictions (e.g. Australia and Singapore), the PDM is in their rules. Atty. Lopez-Mateo then stated that in substance it is the same that is why she sees no problem on that. Mr. Binondo agreed that it is indeed the same, but inquired regarding the rephrasing of the provision. Atty. Lopez-Mateo answered that the intention is to emphasize that the PDM is in the EPIRA. It was further suggested by the DOE to remove the latter part of section 1.1.3 in order to address the concerns of the body.

[1] WESM Rules Clause 3.2

Agreements during the RCC meeting and PEMC's reponse to the comments received are inked in red.

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Annex A- Discussions on the Proposed Price Determination Methodology Manual

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Proposed Revised Wording in relation to Comment	Rationale for the Proposed Revised Wording	PEMC Response and RCC proposal	RCC Discussion
		how dispatch schedules and locational marginal prices (i.e., nodal prices) are calculated in the Market Dispatch Optimization Model (the "MDOM") as provided for in WESM Rules clause 3.6.	~~Electricity Market Board (the "PEM Board").~~ This Price Determination Methodology**Manual**~~gives~~**provid es**the specific details ~~as to how dispatch schedules and locational marginal prices (i.e., nodal prices) are calculated in the Market Dispatch Optimization Model (the "MDOM"),as provided for in WESM Rules clause 3.6~~**of such mechanism. It is formulated compliant with the WESM Rules. In consultation with the industry participants, and approved by the Energy Regulatory Commission (the "ERC").**[1] *(Footnote 1: WESM Rules clause 3.2)*					~~formulated compliant with the WESM Rules and in consultation with the industry participants. Such consultations were conducted through, initially, the WESM Technical Working Group (the "WESM TWG"), later the Interim Rules Change Committee, and the Philippine Electricity Market Board (the "PEM Board").~~ This Price Determination Methodology **Manual** ~~gives~~ **provides** the specific details ~~as to how dispatch schedules and locational marginal prices (i.e., nodal prices) are calculated in the Market Dispatch Optimization Model (the "MDOM"),as provided for in WESM Rules clause 3.6~~ **of such mechanism. It is formulated compliant with the WESM Rules, in consultation with the industry participants, and approved by the Energy Regulatory Commission (ERC).**[1] *(Footnote 1: WESM Rules clause 3.2)*	
The Electricity Market Model of the WESM	3	3 The Electricity Market Model of the WESM The following characteristics and pricing principles are adopted: 3.1. The WESM adopts locational pricing to provide the correct economic signals to market participants when they properly account for the economic impact of losses and constraints that result from the operation of the electricity network.[1] *(Footnote 1: WESM Rules clause 3.6.1.3,3.6.1.4,3.6.1.5)* 3.2. The WESM adopts the gross pool concept where each	~~3 The Electricity Market Model of the WESM~~**1.2 Purpose** **1.2.1** The **price determination methodology and settlement formula in this Market Manual shall ensure that the** following characteristics and pricing principles **of the WESM are achieved**~~are adopted~~: ~~3.1. The WESM adopts locational pricing to provide the correct economic signals to market participants when they properly account for the economic impact of losses and constraints that result from the operation of the electricity network.[1]~~ ~~*(Footnote 1: WESM Rules clause 3.6.1.3,3.6.1.4,3.6.1.5)*~~ ~~3.2~~**a.** ~~The WESM adopts the gross~~**Gross** pool concept, where	• Rewording, for clarity • Renumbering to conform with the formatting for Market Manuals • Guiding principles under DOE DC 2015-10-0015 are adopted.		• DOE: 1.2 Purpose 1.2.1 The price determination methodology and settlement formula in this Market Manual shall ensure that the following **market design principles and** characteristics and pricing ~~principles of~~ **specified in** the WESM **Rules** are achieved;	• DOE: For clarity For consistency in its enumeration of characteristics and pricing principles	~~Adopted, with revisions.~~ ~~3 The Electricity Market Model of the WESM~~**1.2 Purpose** **1.2.1** The **price determination methodology and settlement formula in this Market Manual shall ensure that the** following **market design principles and** characteristics ~~and pricing principles~~ **of the WESM are achieved** ~~are adopted~~. ~~3.1. The WESM adopts locational pricing to provide the correct economic signals to market participants when they properly account for the economic impact of losses and constraints that result from the operation of the electricity network.[1]~~ ~~*(Footnote 1: WESM Rules clause 3.6.1.3,3.6.1.4,3.6.1.5)*~~	

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Annex A- Discussions on the Proposed Price Determination Methodology Manual

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Proposed Revised Wording in relation to Comment	Rationale for the Proposed Revised Wording	PEMC Response and RCC proposal	RCC Discussion
		generator submits offers for both price and quantity for energy for central scheduling and dispatch.[2] *(Footnote 2: WESM Rules clause 3.5.5)*	each ~~generator~~**scheduled generation company** ~~submits offers for both price and quantity for energy~~ **offer their maximum available capacity, non-scheduled generation company submit a standing nomination of loading levels, and Trading Participants with must dispatch generating units and priority dispatch generating units submit projected outputs** for central scheduling and dispatch~~.~~**, to ensure system security and a level-playing field among generators;**[2] *(Footnote 2: WESM Rules clauses 1.2.5 and 3.5.5)*			a. Gross pool, where each Scheduled Generation Company offer their maximum available capacity, Non-Scheduled Generation Company submit a standing nomination of loading levels, and Trading Participants with must dispatch generating units and priority dispatch generating units submit projected outputs for central scheduling and dispatch, to ensure system security and a level-playing field among generators;[2]		~~3.2.a. The WESM adopts the gross~~ **Gross** pool ~~concept~~, where each ~~generator~~ **Scheduled Generation Company** ~~submits offers for both price and quantity for energy~~ **offers their maximum available capacity, Non-Scheduled Generation Company submits a standing nomination of loading levels, and Generation Company submits projected outputs with respect to their must dispatch generating units and priority dispatch generating units** for central scheduling and dispatch~~.~~**, to ensure system security and a level-playing field among generators;**[2] *(Footnote 2: WESM Rules clauses 1.2.5 and 3.5.5)* **xxx**	
			b. Net settlement, where bilateral contract quantities are settled outside the WESM;[3] ***(Footnote 3: WESM Rules clause 3.13)***			b. Net settlement, where bilateral contract quantities are settled outside the WESM; [3]			
		3.3. The WESM adopts the principle of self-commitment whereby participants assume full responsibility for how and when their plants are operated.[3] *(Footnote 3: WESM Rules Section 3.5.5, 3.5.9, 3.5.10, 3.5.11)*	**c. Co-optimized energy and reserves, where the provision of energy and reserves are jointly optimized in the market dispatch optimization model;**[4] ***(Footnote 4: WESM Rules clause 3.6)***			c. Co-optimized energy and reserves, where the provision of energy and reserves are jointly optimized in the market dispatch optimization model; [4]			
			d. ~~3.3. The WESM adopts the principle of~~**Self-commitment,** ~~whereby~~**where Trading Participants** ~~participants assume full responsibility~~**are responsible** for ~~how and when~~**the management of** their ~~plants are operated.~~ **technical operations, unit commitment decisions and other market risks through submission of bids and offers to the WESM;**[35] *(Footnote 35: WESM Rules ~~Section 3.5.5, 3.5.9, 3.5.10, 3.5.11~~**Clause 3.5**)*			d. Self-commitment, where Trading Participants are responsible for the management of their technical operations, unit commitment decisions and other market risks through submission of bids and offers to the WESM; [5]			
		3.4. The WESM adopts a full nodal pricing regime for both generation and customers. Nodal pricing is a mechanism for revealing, at different points in				e. Prices, are **where as far as practicable**, governed ~~as far as~~			

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Annex A- Discussions on the Proposed Price Determination Methodology Manual

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		the system, the cost incurred to ensure sufficient power flows to meet all loads in all locations.[4] *(Footnote 4: WESM Rules 3.2.2.3 (A), as amended. See DOE Circular DC-2004-07-008 in Annex B)* 3.5 The WESM adopts the scheme of ex-ante and ex-post pricing to account for discrepancies between planned (ex-ante) and actual outcomes (ex-post).[5] *(Footnote 5: WESM Rules clause 3.10.1)*	**e. Prices are governed, as far as practicable, by commercial and market forces;[6]** *(Footnote 6: WESM Rules clause 1.2.5)* ~~3.4.~~ **f.** ~~The WESM adopts a full~~**Full** nodal **or locational marginal** pricing regime **in energy** for both ~~generation~~**generator market trading nodes** and ~~customers~~**customer market trading nodes**~~Nodal pricing is a mechanism for revealing, at different points in the system, the cost incurred to ensure sufficient power flows to meet all loads in all locations~~**to provide economic signals that properly account the economic impact of losses and constraints that resulted from the operation of the electricity market**.[47] *(Footnote 47: ~~WESM Rules 3.2.2.3 (A), as amended. See DOE Circular DC-2004-07-008 in Annex B~~**clauses 3.2.2 and 3.6.1**)* ~~3.5~~**g.** ~~The WESM adopts the scheme of ex-ante and ex-post~~**Zonal** pricing ~~to account~~ for **reserves** ~~discrepancies between planned (ex-ante) and actual outcomes (ex-post).~~;[~~58~~9] *(Footnote ~~58~~: WESM Rules clause 3.10.1**3.6.1**)* **h. Trading Participants are provided with regularly updated information on projected prices, dispatch and other market outcomes to ensure they can make informed commercial and technical decisions;[9] and** *(Footnote **9**: WESM Rules clause 1.2.5)* **i. Other principles that are contained in the issuances of**	• To consolidate all principles and methodology for the pricing and settlement of energy and reserves.		~~practicable,~~ by commercial and market forces,.[6] f. Full nodal or locational marginal pricing regime in energy for both generator market trading nodes and customer market trading nodes, **where** ~~to provide~~ economic signals that properly account the economic impact of losses and constraints that resulted from the operation of the electricity market **are provided;**[7] g. Zonal pricing for reserves;[8] h. ~~Trading Participants are provided with~~ Regularly updated information on projected prices, dispatch and other market outcomes **provided to Trading Participants** to ensure **that** they can make informed commercial and technical decisions;[9] and i. Other principles ~~that are~~ contained in the issuances of the DOE insofar as these principles are consistent with the objectives of applicable laws.		**xxx** **xxx**	
Objectives of the Price Determination Methodology	1	1 Objectives of the Price Determination Methodology The Price Determination Methodology (the "PDM") aims to – 1.1. Provide the market participants with the specific principles by which energy and reserves in the WESM will be priced.							

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Annex A- Discussions on the Proposed Price Determination Methodology Manual

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Proposed Revised Wording in relation to Comment	Rationale for the Proposed Revised Wording	PEMC Response and RCC proposal	RCC Discussion
			the DOE insofar as these principles are consistent with the objectives of applicable laws. ~~1 Objectives of the Price Determination Methodology~~ **1.3 Scope** **1.3.1 This Market Manual provides** ~~The Price Determination Methodology (the "PDM") aims to –~~ ~~1.1. Provide the market participants with the specific~~ principles **and methodology** by which energy and reserves in the WESM ~~will~~**shall** be priced,[10] **including the determination of prices when there is extreme price separation due to network congestion,[11] and determination of administered prices during market suspension and market intervention.[12]** *(Footnote 10:* **WESM Rules Clause 3.10**) *(Footnote 11:* **WESM Rules Clause 3.12.7**) *(Footnote 12:* **WESM Rules Clause 6.2.3**) **1.3.2 This Market Manual provides the principles and methodology by which energy and reserves shall be settled in the WESM, including the cost recovery for reserves, the determination of additional compensation, as applicable, and the determination and allocation of net settlement surplus.[13]** *(Footnote 13:* **WESM Rules Clause 3.13**) **1.3.3 This Market Manual provides the principles and methodology by which energy and reserves shall be priced and settled in accordance with**			1.3 Scope 1.3.1 This Market Manual ~~provides~~ **covers** the principles and methodology by which energy and reserves in the WESM shall be: **a)** priced,[10] including the determination of prices when there is extreme price separation due to network congestion, [11] and determination of administered prices during market suspension and market intervention;[12] **and** ~~1.3.2 This Market Manual provides the principles and methodology by which energy and reserves shall be~~ **b)** settled ~~in the WESM~~, including ~~the~~ cost recovery ~~for reserves~~, the determination of additional compensation, as applicable, and the determination and allocation of net settlement surplus.[13] ~~1.3.3 This Market Manual provides the principles and methodology by which energy and reserves~~ **Provided, however, that the pricing and settlement** shall be **determined** ~~priced and settled~~ in accordance with the market design principles as issued by the DOE **and as provided under Section 1.2.1.**[14] 1.3.4 **1.3.2** This Market Manual **also** ~~provides~~ **covers** the computational formula that will enable the WESM ~~p~~Participants	For clarity and re-numbering	~~1 Objectives of the Price Determination Methodology~~ **1.3 Scope** **1.3.1 This Market Manual provides** ~~The Price Determination Methodology (the "PDM") aims to –~~ ~~1.1. Provide the market participants with the specific principles~~ **methodology** by which energy and reserves in the WESM will ~~shall~~ be priced,[10] **including the determination of prices when there is extreme price separation due to network congestion,[11] and determination of administered prices during market suspension and market intervention.[12]** *(Footnote 10:* **WESM Rules Clause 3.10**) *(Footnote 11:* **WESM Rules Clause 3.12.7**) *(Footnote 12:* **WESM Rules Clause 6.2.3**) **1.3.2 This Market Manual provides the ~~principles and~~ methodology by which energy and reserves shall be settled in the WESM, including the cost recovery for reserves, the determination of additional compensation, as applicable, and the determination and allocation of net settlement surplus.[13]** *(Footnote 13:* **WESM Rules Clause 3.13**) **1.3.3 This Market Manual provides the ~~principles and~~ methodology by which energy and reserves shall be priced and settled in accordance with**	According to Ms. Varquez, the principles are provided being referred to on this section is in the WESM Rules.

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Annex A- Discussions on the Proposed Price Determination Methodology Manual

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Proposed Revised Wording in relation to Comment	Rationale for the Proposed Revised Wording	PEMC Response and RCC proposal	RCC Discussion
			the market design principles as issued by the DOE.[14] *(Footnote **14**: DOE Circular 2015-10-0015, "Providing Policies for further Enhancement of the Wholesale Electricity Spot Market (WESM) Design and Operations", dated 23 October 2015)*			to verify the correctness of the charges being imposed.		**the market design principles as issued by the DOE.**[14] **xxx**	
		1.2. Provide the specific computational formula that will enable the market participants to verify the correctness of the charges being imposed.						On the proposed additional change in revised sections 1.3.1 to 1.3.3: WESM Rules provide for the principles while Market Manuals provide the details based on the principles.	
General Guiding Principles	2	2 General Guiding Principles The EPIRA and the WESM Rules are the main guiding documents for this PDM.	**1.2.1.3.4 This Market Manual** ~~Provide~~**provides** the specific computational formula that will enable the ~~market~~**WESM** participants to verify the correctness of the charges being imposed. ~~2 General Guiding Principles~~ ~~The EPIRA and the WESM Rules are the main guiding documents for this PDM.~~		• DOE: Deletion of General Guiding Principles acceptable				
Glossary of Terms		Glossary of Terms	~~Glossary of Terms~~ **SECTION 2 DEFINITIONS, REFERENCES AND INTERPRETATION** **2.1 Definitions** **2.1.1 Unless otherwise defined or the context implies otherwise, the italicized terms used in this Market Manual that shall bear the same meaning as defined in the WESM Rules and other Market Manuals.** **2.1.2 The following words and phrases as used in this Market Manual shall have the following meaning –**	• To conform with the formatting for Market Manuals		• DOE: 2.1.1 Unless otherwise defined or the context implies otherwise, the italicized terms used in this Market Manual ~~that~~ shall bear the same meaning as defined in the WESM Rules and other Market Manuals. 2.1.2 The following ~~words and phrases~~ **terms** as used in this Market Manual shall have the following meaning –	• DOE: For clarity	Retain original proposal.	
Glossary of Terms		Act. xxx Administered Price Cap. xxx	Act. xxx ~~Administered Price Cap. xxx~~	Already defined in the WESM Rules. Administered Price in WESM Rules bears same meaning as Administered Price Cap (in PDM).	• DOE: Make sure that "Administered Price Cap" in this Manual is changed to "Administered Price" for consistency with the WESM Rules.			Noted. "Administrative Price" is used in the revised PDM.	
Glossary of Terms		Algorithm. The process/processes applied by the MDOM in computing the dispatch schedules and prices.	**a.**Algorithm. The process/processes applied by the ~~MDOM~~**market dispatch optimization model** in	Renumbering and edits for clarity				Adopted by the RCC	

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Annex A- Discussions on the Proposed Price Determination Methodology Manual

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			computing the dispatch schedules and prices.						
Glossary of Terms		Ancillary Services Provider. xxx Bilateral Contract. xxx Central Dispatch. xxx	~~Ancillary Services Provider. xxx~~ ~~Bilateral Contract. xxx~~ ~~Central Dispatch. xxx~~	Already defined in the WESM Rules.				Adopted by the RCC	
Glossary of Terms		NEW	**b. Constrained Solution. A solution produced by the market dispatch optimization model considering all constraints based on the price determination methodology.** **c. Constrained-on Generators. Generation units that were scheduled to run pursuant to the original market solution but would not have been cleared or cleared at a lower quantity based on the unconstrained solution.**	Added terminology used in the PSM.				Adopted by the RCC	
Glossary of Terms		Constraint. xxx Constraint violation. xxx	~~Constraint. xxx~~ ~~Constraint violation. Xxx~~	Already defined in the WESM Rules.				Adopted by the RCC	
Glossary of Terms		Constraint Violation Coefficient Price. The price associated with the Constraint Violation Coefficients.	~~Constraint Violation Coefficient Price. The price associated with the Constraint Violation Coefficients.~~	Not used in the PDM.				Adopted by the RCC	
Glossary of Terms		Constraint Violation Coefficients. xxx Contingency List. xxx	~~Constraint Violation Coefficients. Xxx~~ ~~Contingency List. xxx~~	• Already defined in the WESM Rules. • Contingency is defined in the Dispatch Protocol Manual.				Adopted by the RCC	
Glossary of Terms		Customer Load Forecast. The hourly demand forecast provided by customers at their respective market trading node as defined in the Market Network Model, which forecast is to be used in the determination of market projections and real time dispatch in accordance with WESM timetable.	~~Customer Load Forecast. The hourly demand forecast provided by customers at their respective market trading node as defined in the Market Network Model, which forecast is to be used in the determination of market projections and real time dispatch in accordance with WESM timetable.~~	Not used in the PDM.				Adopted by the RCC	
Glossary of Terms		Customer Pricing Zone. xxx	~~Customer Pricing Zone. Xxx~~	Already defined in the WESM Rules.				Adopted by the RCC	
Glossary of Terms		Day Ahead Dispatch Process. A pre-dispatch process covering the results obtained in the day-ahead projections.	~~Day Ahead Dispatch Process. A pre-dispatch process covering the results obtained in the day-ahead projections.~~	Not used in the PDM.				Adopted by the RCC	
Glossary of Terms		Demand Bid. xxx Dispatch. xxx Dispatch Schedule. xxx Dispatchable load. Xxx DOE. xxx	~~Demand Bid. xxx~~ ~~Dispatch. xxx~~ ~~Dispatch Schedule. xxx~~ ~~Dispatchable load. xxx~~ ~~DOE. xxx~~	Already defined in the WESM Rules.				Adopted by the RCC	

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Glossary of Terms		Economic gain. The benefit that will be received by consumers in the economic dispatch optimization.	**d.** Economic gain. The **total** benefit that will be received by **the producers and** consumers**of electricity** in the **security-constrained** ~~economic~~**dynamic** dispatch optimization.	Renumbering and edits for clarity				Adopted by the RCC	
Glossary of Terms		Economic rental. xxx Emergency. xxx End-user. Xxx Energy. xxx	~~Economic rental. xxx~~ ~~Emergency. xxx~~ ~~End-user. xxx~~ ~~Energy. Xxx~~	Already defined in the WESM Rules.				Adopted by the RCC	
Glossary of Terms		NEW	**e. Energy Administered Price. The price used in lieu of the nodal energy dispatch price during dispatch intervals under market suspension or market intervention.**	Added terminology used in the determining AP.	• DOE: Considering that "Energy Administered Price" and "Reserve Administered Price" are new terms defined in the Glossary, it is suggested that the "Administered Price" in this Manual be changed to either "Energy Administered Price" or "Reserve Administered Price", as applicable.			Adopted by the RCC Noted. "Administered price" is used as a general term covering both the energy and reserve administered prices.	
Glossary of Terms		Energy Balance Equation. xxx	~~Energy Balance Equation. xxx~~	Already defined in the WESM Rules.				Adopted by the RCC	
Glossary of Terms		Energy Management System (EMS). A system of computer-aided tools used by the System Operator to monitor, control, and optimize the performance of the generation and transmission systems.	~~Energy Management System (EMS).~~ ~~A system of computer-aided tools used by the System Operator to monitor, control, and optimize the performance of the generation and transmission systems.~~	Not used in the PDM.				Adopted by the RCC	
Glossary of Terms		Energy Regulatory Commission. xxx Ex-Ante. xxx	~~Energy Regulatory Commission. xxx~~ ~~Ex-Ante. Xxx~~	Already defined in the WESM Rules.				Adopted by the RCC	
Glossary of Terms		Ex-Ante Dispatch Process. Process where dispatch targets is set for the end of a trading interval, immediately preceding the beginning of that trading interval. Ex-Ante Energy Settlement Price. The ex-ante nodal energy price or the ex-ante zonal reserve price, as may be appropriate, determined in accordance with clause 3.10.2 or clause 3.10.3, both of the WESM Rules. Ex-Ante Energy Settlement Quantity. The gross amount determined by the Market Operator in accordance with WESM Rules clause 3.13.5, and	~~Ex-Ante Dispatch Process. Process where dispatch targets is set for the end of a trading interval, immediately preceding the beginning of that trading interval.~~ ~~Ex-Ante Energy Settlement Price. The ex-ante nodal energy price or the ex-ante zonal reserve price, as may be appropriate, determined in accordance with clause 3.10.2 or clause 3.10.3, both of the WESM Rules.~~ ~~Ex-Ante Energy Settlement Quantity. The gross amount determined by the Market Operator in accordance with WESM Rules clause 3.13.5, and~~	Deletion of terms, for consistency with the proposed implementation of single settlements, i.e. no ex-post. Note: revised definition in WESM Rules were proposed				Adopted by the RCC	

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Annex A- Discussions on the Proposed Price Determination Methodology Manual

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Proposed Revised Wording in relation to Comment	Rationale for the Proposed Revised Wording	PEMC Response and RCC proposal	RCC Discussion
		adjusted for bilateral contracts in accordance with clause 3.13.7. Ex-Ante Energy Trading Amount. Determined as the ex-ante energy settlement price for a node in a trading interval multiplied by the ex-ante energy settlement quantity (in MWh) for that node in that trading interval. Ex-Ante Nodal Energy Price. The price determined by the Market Operator for a particular market network node and trading interval, immediately prior to commencement of that trading interval, directly from the dispatch optimization for that trading interval in accordance with WESM Rules clause 3.10.2. Ex-Post. A matter determined in relation to a trading interval after that trading interval concludes. Ex-Post Dispatch Process. Process where dispatch is set for the end of a trading interval, immediately after the trading interval concludes. Ex-Post Energy Settlement Price. The ex-post nodal energy price or the ex-post zonal energy price, as appropriate, determined in accordance with WESM Rules clause 3.10.9 Ex-Post Energy Settlement Quantity. The amount determined by the Market Operator accordance with WESM Rules clause 3.13.6. Ex-Post Energy Trading Amount. The ex-post energy settlement price for a node in a trading interval multiplied by the ex-post energy settlement quantity for that node in that trading interval (in MWh); minus the ex-post energy settlement price for that node in that trading interval multiplied by the ex-ante energy settlement quantity for that node in that trading interval (in MWh).	~~adjusted for bilateral contracts in accordance with clause 3.13.7.~~ ~~Ex-Ante Energy Trading Amount. Determined as the ex-ante energy settlement price for a node in a trading interval multiplied by the ex-ante energy settlement quantity (in MWh) for that node in that trading interval.~~ ~~Ex-Ante Nodal Energy Price. The price determined by the Market Operator for a particular market network node and trading interval, immediately prior to commencement of that trading interval, directly from the dispatch optimization for that trading interval in accordance with WESM Rules clause 3.10.2.~~ ~~Ex-Post. A matter determined in relation to a trading interval after that trading interval concludes.~~ ~~Ex-Post Dispatch Process. Process where dispatch is set for the end of a trading interval, immediately after the trading interval concludes.~~ ~~Ex-Post Energy Settlement Price. The ex-post nodal energy price or the ex-post zonal energy price, as appropriate, determined in accordance with WESM Rules clause 3.10.9~~ ~~Ex-Post Energy Settlement Quantity. The amount determined by the Market Operator accordance with WESM Rules clause 3.13.6.~~ ~~Ex-Post Energy Trading Amount. The ex-post energy settlement price for a node in a trading interval multiplied by the ex-post energy settlement quantity for that node in that trading interval (in MWh); minus the ex-post energy settlement price for that node in that trading interval multiplied by the ex-ante energy settlement quantity for that node in that trading interval (in MWh).~~						

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Annex A- Discussions on the Proposed Price Determination Methodology Manual

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Proposed Revised Wording in relation to Comment	Rationale for the Proposed Revised Wording	PEMC Response and RCC proposal	RCC Discussion
		Ex-Post Nodal Energy Price. The price determined by the Market Operator for a particular market node and trading interval, after the end of that trading interval in accordance with WESM Rules clause 3.10.6.	~~Ex-Post Nodal Energy Price. The price determined by the Market Operator for a particular market node and trading interval, after the end of that trading interval in accordance with WESM Rules clause 3.10.6.~~						
Glossary of Terms		Facility. xxx	~~Facility. xxx~~	Already defined in the WESM Rules.				Adopted by the RCC	
Glossary of Terms		Financial Transmission Right. The right to financial compensation based on differences between nodal energy prices at different market trading nodes.	~~Financial Transmission Right. The right to financial compensation based on differences between nodal energy prices at different market trading nodes.~~	"Transmission right" is already defined in the WESM Rules.				Adopted by the RCC	
Glossary of Terms		Formulation. xxx	~~Formulation. xxx~~	Already defined in the WESM Rules.				Adopted by the RCC	
Glossary of Terms		Generating facility. A facility, consisting of one or more generating units, where electric energy is produced from some other form of energy by means of a suitable apparatus.	~~Generating facility. A facility, consisting of one or more generating units, where electric energy is produced from some other form of energy by means of a suitable apparatus.~~	Not used in the PDM.				Adopted by the RCC	
Glossary of Terms		Generating unit. xxx Generation. xxx Generation offer. Xxx Generator node. xxx Grid. xxx	~~Generating unit. xxx~~ ~~Generation. xxx~~ ~~Generation offer. Xxx~~ ~~Generator node. xxx~~ ~~Grid. xxx~~	• Already defined in the WESM Rules. (Generator node is "generator market trading node" in the WESM Rules, as revised)				Adopted by the RCC	
Glossary of Terms		Gross Pool. The dispatch model where all energy is traded through the WESM.	~~Gross Pool. The dispatch model where all energy is traded through the WESM.~~	Term is a widely accepted term used in electricity markets.				Adopted by the RCC	
Glossary of Terms		Intervention. xxx	~~Intervention. xxx~~	Already defined in the WESM Rules.				Adopted by the RCC	
Glossary of Terms		Linear Programming. A mathematical procedure for minimizing or maximizing a linear function of several variables, subject to a finite number of linear restrictions on these variables.	~~Linear Programming. A mathematical procedure for minimizing or maximizing a linear function of several variables, subject to a finite number of linear restrictions on these variables.~~	Term is a widely used mathematical procedure.				Adopted by the RCC	
Glossary of Terms		Line rental. xxx Load. xxx Load Forecast. xxx	~~Line rental. xxx~~ ~~Load. xxx~~ ~~Load Forecast. xxx~~	Already defined in the WESM Rules.				Adopted by the RCC	
Glossary of Terms		Load Pattern. Represents the relative magnitudes of MW and MVar values on individual loads. The load pattern data is used to	~~Load Pattern. Represents the relative magnitudes of MW and MVar values on individual loads. The load pattern data is used to~~	Not used in the PDM.				Adopted by the RCC	

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		distribute system/zonal load to individual loads, i.e. nodal load.	~~distribute system/zonal load to individual loads, i.e. nodal load.~~						
Glossary of Terms		NEW	**f. Energy Dispatch Quantity. The actual instantaneous injection, for generator resources, withdrawal, for customer resources, or flow, for transmission lines and HVDC interconnection, in MW for a dispatch interval.**	Provide a reference quantity for the computation of energy administered prices.				**f. Energy Dispatch Quantity. The actual ~~instantaneous~~ injection, for generator resources, withdrawal, for customer resources, or flow, for transmission lines and HVDC interconnection, in MW for a dispatch interval.**	Mr. Abner Tolentino commented that there are instances that generators also act as customer of the grid. He further inquired on the classification of this. Ms. Andrea Cagnete responded that is already covered in this definition. According to her, the snapshot data of the generator will be recorded on its node as a load. On the other hand, Dr. Allan Nerves inquired about the usage of the term "instantaneous" because it refers to certain time but the definition refers to a dispatch interval. Ms. Cagnete clarified that the term refers to the instantaneous value that the MO used for the stated dispatch interval. Dr. Allan further argued on the purpose of measuring data and using it. Following the discussion above, it was agreed to remove the term "instantaneous", for clarity.
Glossary of Terms		NEW	**g. Final Nodal Energy Dispatch Price. The final nodal price for energy after the application of price substitution due to network congestion or when conditions for price mitigation exists, or administered prices, as applicable.**	Provide a common terminology for the price used in the computation of energy settlement prices.					Ms. Varquez explained that if the RTD is replaced with the final prices, then it shall referred to as the final nodal energy prices. Mr. Binondo inquired on which term shall be used if price substitution did not occur. Ms. Varquez explained that the definition provides for the applicability of the same. Mr. Tolentino then inquired on which term shall be used in case of market re-run. Ms. Varquez answered that the RTD will be equal to the final nodal energy dispatch price for that case. Mr. Julius Bunyi stated that the MO wants to automate the calculation of the market re-run prices since it is currently processed manually, upon applying the pricing mechanism the result will be the Final Nodal Energy Dispatch Price. Atty. De Castro suggested that this shall be pending until the RCC is presented with the application.
Glossary of Terms		Locational Marginal Price (LMP). This is the marginal value of the objective function at each bus at the solution of the optimization problem.	h.Locational Marginal ~~Price (LMP)~~**Pricing**. ~~This is the~~marginal value of the ~~objective function at each bus at the solution of the optimization problem.~~ **The mechanism by which the nodal energy dispatch price is determined.**	• Renumbering • For clarity				Renumbering due to the insertion of (f) Energy Dispatch Quantity and (g) Final Nodal Energy Dispatch Price.	
Glossary of Terms		Marginal Plant. The generating unit or plant whose price offer corresponds to the system marginal price for a given trading interval.	~~Marginal Plant. The generating unit or plant whose price offer corresponds to the system marginal price for a given trading interval.~~	Not used in the PDM.				Adopted by the RCC	

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Annex A- Discussions on the Proposed Price Determination Methodology Manual

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Proposed Revised Wording in relation to Comment	Rationale for the Proposed Revised Wording	PEMC Response and RCC proposal	RCC Discussion
Glossary of Terms		Market Dispatch Optimization Model (MDOM). xxx Market Network Model. xxx Market Offer. xxx Market Operator. xxx Market Price. xxx Market Suspension. xxx Market Trading Nodes. xxx Market Transaction. xxx Meter. xxx Metering Point. xxx	~~Market Dispatch Optimization Model (MDOM). xxx~~ ~~Market Network Model. xxx~~ ~~Market Offer. xxx~~ ~~Market Operator. xxx~~ ~~Market Price. xxx~~ ~~Market Suspension. xxx~~ ~~Market Trading Nodes. xxx~~ ~~Market Transaction. Xxx~~ ~~Meter. xxx~~ ~~Metering Point. xxx~~	Already defined in the WESM Rules.				Adopted by the RCC	
Glossary of Terms		MW block. Represents the quantity portion of the market offers/bids of the trading participants.	~~MW block. Represents the quantity portion of the market offers/bids of the trading participants.~~	Already explained in the PDM.				Adopted by the RCC	
Glossary of Terms		Net Load Forecast. xxx Net Settlement Surplus. Xxx	~~Net Load Forecast. xxx~~ ~~Net Settlement Surplus. xxx~~	Already defined in the WESM Rules.				Adopted by the RCC	
Glossary of Terms		NEW	**i. Network Congestion. Refers to the congestion at a line or transformer that is connected in a meshed network.**	Added terminology used in the delermining PSM.		• DOE: Network Congestion. ~~Refers to~~ tThe congestion at a line or transformer that is connected in a meshed network.	• DOE: To be consistent with the way other terms are defined	Adopt DOE's rewording **g. Network Congestion. The congestion at a line or transformer that is connected in a meshed network.** Renumbering due to the insertion of (f) Energy Dispatch Quantity and (g) Final Nodal Energy Dispatch Price.	
Glossary of Terms		Network Data. These are electrical parameters used to represent the transmission system or network.	j. Network Data. ~~These~~ are**The**electrical parameters used to represent the transmission system or network **in the market network model.**	Renumbering and clerical edits.				j. Network Data. ~~These~~ are**The**electrical parameters used to represent the transmission system **and sub-transmission system in the market network model.** Renumbering due to the insertion of (f) Energy Dispatch Quantity and (g) Final Nodal Energy Dispatch Price.	Mr. Ambrocio Rosales commented that the sub-transmission system should be included in the network data. The WDS-TWG agreed with the suggestion and revised the definition accordingly.
Glossary of Terms		Network Service Provider. xxx	~~Network Service Provider. xxx~~	Already defined in the WESM Rules.				Adopted by the RCC	
Glossary of Terms		Nodal Energy Price. The energy price at a node determined ex ante or ex-post. This is also the Locational Marginal Price (the "LMP") in the WESM.	~~Nodal Energy Price. The energy price at a node determined ex ante or ex-post. This is also the Locational Marginal Price (the "LMP") in the WESM.~~	Deleted, for consistency with the proposed amendments to the WESM Rules.				Adopted by the RCC	
Glossary of Terms		Node. xxx	~~Node. xxx~~	Already defined in the WESM Rules.				Adopted by the RCC	
Glossary of Terms		Non Dispatchable Load Energy. The MW energy requirement of non-dispatchable load.	~~Non Dispatchable Load Energy. The MW energy requirement of non-dispatchable load.~~	Not used in the PDM.				Adopted by the RCC	

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Glossary of Terms		Objective Function. Function to be minimized or maximized, representing, e.g., cost or profit.	~~Objective Function. Function to be minimized or maximized, representing, e.g., cost or profit.~~	Already described in the PDM.				Adopted by the RCC	
Glossary of Terms		Opportunity Cost. xxx	~~Opportunity Cost. xxx~~	Already defined in the WESM Rules.				Adopted by the RCC	
Glossary of Terms		Outage Schedules. Schedule for shutting down or de-rating of generation and transmission facilities.	~~Outage Schedules. Schedule for shutting down or de-rating of generation and transmission facilities.~~	Outage is already defined in the WESM Rules.				Adopted by the RCC	
Glossary of Terms		Over generation. Constraint Violation Coefficient for the system condition whereby the generation in the system exceeds the total demand. This also corresponds to system energy balance constraint. This condition is also known as excess generation.	~~Over generation. Constraint Violation Coefficient for the system condition whereby the generation in the system exceeds the total demand. This also corresponds to system energy balance constraint. This condition is also known as excess generation.~~	CVCs are described under the CVC Manual.				Adopted by the RCC	
Glossary of Terms		PEM Board. xxx Plant. xxx Power System. xxx	~~PEM Board. xxx~~ ~~Plant. xxx~~ ~~Power System. xxx~~	Already defined in the WESM Rules.				Adopted by the RCC	
Glossary of Terms		Price Curve. The price curve of a generator energy offer is defined by up to ten (10) blocks as follows: the nth block (P/MW) defines the price between the nth and (n+1st) MW points. The last non-zero MW break point and slope (P/MW) defines the price until the maximum generation. The blocks must be monotonically non-decreasing.	~~Price Curve. The price curve of a generator energy offer is defined by up to ten (10) blocks as follows: the nth block (P/MW) defines the price between the nth and (n+1st) MW points. The last non-zero MW break point and slope (P/MW) defines the price until the maximum generation. The blocks must be monotonically non-decreasing.~~	Already described in the PDM.				Adopted by the RCC	
Glossary of Terms		Price Determination Methodology. A document which provides specific details as to how dispatch schedules and locational marginal prices (nodal prices) are calculated in the Market Dispatch Optimization Model (MDOM) as provided in clause 3.6 of the WESM Rules.	~~Price Determination Methodology. A document which provides specific details as to how dispatch schedules and locational marginal prices (nodal prices) are calculated in the Market Dispatch Optimization Model (MDOM) as provided in clause 3.6 of the WESM Rules.~~	Definition is already provided in the Introduction.				Adopted by the RCC	
Glossary of Terms		Receiving node. xxx	~~Receiving node. Xxx~~	Already defined in the WESM Rules.				Adopted by the RCC	
Glossary of Terms		NEW	**k. Reserve Administered Price. The price used in lieu of the reserve prices during dispatch intervals under market suspension or market intervention.**	Added terminology used in the determining AP.				Renumbering due to the insertion of (l) Energy Dispatch Quantity and (g) Final Nodal Energy Dispatch Price.	
Glossary of Terms		Regional Reserve Price. The price for reserve in a particular supply zone, and trading interval, determined in accordance with WESM Rules clause 3.10.10.	~~Regional Reserve Price. The price for reserve in a particular supply zone, and trading interval, determined in accordance with WESM Rules clause 3.10.10.~~	Reserve Price is already defined in the WESM Rules.				Adopted by the RCC	

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		Also known as zonal reserve price.	~~Also known as zonal reserve price.~~						
Glossary of Terms		Reserve Category. xxx Reserve Offer. xxx	~~Reserve Category. xxx~~ ~~Reserve Offer. xxx~~	Already defined in the WESM Rules.				Adopted by the RCC	
Glossary of Terms		Reserve Requirements. Demands for regulation reserve, contingency reserve and other relevant types of reserves. They are determined based on system loading, maximum generator tripping and other considerations	**l.** Reserve Requirements. ~~Demands for regulation reserve, contingencyreserve and other relevant types~~**MW level to be met for the various categories**of reserves. ~~They are determined based on system loading, maximum generator tripping and other considerations~~	• Renumbering • Updated definition to align with proposed amendments regarding reserve categories.				Adopted by the RCC	
Glossary of Terms		Reserve Region or Reserve Zone. xxx Run. xxx	~~Reserve Region or Reserve Zone. xxx~~ ~~Run. xxx~~	Already defined, as amended, in the WESM Rules.				Adopted by the RCC	
Glossary of Terms		Scenario. xxx Scheduled Load. xxx	~~Scenario. xxx~~ ~~Scheduled Load. xxx~~	Already defined, as amended, in the WESM Rules.				Adopted by the RCC	
Glossary of Terms		Security-constrained economic dispatch. Process of apportioning the total load on a system between the various generating plants to achieve the greatest economy of operation and taking account of the limitations of the power system.	**m.**Security-constrained ~~economic~~**dynamic**dispatch. Process of apportioning the total load on a system between the various generating ~~plants~~ **units over a certain time period**to achieve the greatest economy of operation and taking account of the limitations of the power system.	• Renumbering • Minor correction	• TC: The use of the word dynamic to replace economic is not a good choice. (a) Do we not want to highlight that economics is indeed the objective in this optimization? (b) There is no dynamic dispatch here. Solving the optimization problem in different time frames does not produce a dynamic dispatch. Propose to differentiate SCED from SCDD.	• DOE: k. Security-constrained dynamic dispatch. Process of apportioning the total load on a system between the various generating units over a certain time period to achieve the greatest economy of operation and taking **into** account of the limitations of the power system.	• DOE: For clarity	• Adopt DOE's proposed rewording **k.**Security-constrained ~~economic~~ **dynamic** dispatch. Process of apportioning the total load on a system between the various generating ~~plants~~ **units over a certain time period** to achieve the greatest economy of operation and taking **into** account **of** the limitations of the power system. • SCDD determines scheduling of energy and reserves and market clearing pricing based on the least-cost dispatch of physical resources, for RTD, HAP, DAP, and WAP. Computation of real-time dispatch (RTD) schedules uses the SCED mode of SCDD. • Renumbering due to the insertion of (f) Energy Dispatch Quantity and (g) Final Nodal Energy Dispatch Price.	Atty. De Castro sought clarification on the changes being proposed. Mr. Bunyi explained the terms are the same. According to him, currently in the SCED, the DAP and WAP is being calculated separately to arrive with the schedule which contains minimum costing. Meanwhile, for the SCDD, it calculates for the entire study horizon simultaneously, which gives more benefits in the projections resulting to more optimal costs. Atty. De Castro clarified that the body is looking for an explanation on why the term is being changed. Mr. Bunyi explained that it is a term coined by MO's contractor. He further stated the SCED is a subset of SCDD. Mr. Rosales then opined to retained that original term as it is provided in the PGC, he also suggested to just separately define the SCDD. Atty. Lopez-Mateo explained that meaning wise; both of the terms are the same, it is just that SCED will be used for the settlement and the SCDD provides different timeframes. Mr. Binondo then suggested to the just equate the definition of both terms. Mr. Bunyi opined that there is a slight difference between the two, specially in the sense that the SCDD is superior and can calculate simultaneously. Mr. Binondo then inquired if the term SCED will still be utilitized in the WESM. Atty. Mateo-Lopez confirmed that it will still be used, but argued that the intention of changing the term is to inform the trading participants of the slight difference on the projections. Noting that the term SCED will still be

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									used in the market, Mr. Rosales iterated his suggestion to just define both terms separately. Atty. De Castro suggested to placing the decision in this matter on hold, until further discussions.
Glossary of Terms		Security limits. Limits imposed by the System Operator on generation and transmission equipment to maintain system security and reliability.	n. Security limits. Limits imposed by the System Operator on generation and transmission equipment to maintain system security and reliability.	Renumbering				Renumbering due to the insertion of (f) Energy Dispatch Quantity and (g) Final Nodal Energy Dispatch Price.	
Glossary of Terms		Self-commitment. The principle whereby participants assume full responsibility for how and when their plants are operated.	~~Self-commitment. The principle whereby participants assume full responsibility for how and when their plants are operated.~~	Definition is already provided in the Introduction.				Adopted by the RCC	
Glossary of Terms		NEW	**o. Self-scheduled energy. Refers to projected outputs of must dispatch and priority dispatch generating units, and nomination of loading levels of non-scheduled generating units.**	Term to describe resources that do not submit offers.				Renumbering due to the insertion of (f) Energy Dispatch Quantity and (g) Final Nodal Energy Dispatch Price.	
Glossary of Terms		Sending node. xxx Settlement. xxx Settlement Amount. xxx Settlement Price. xxx Settlement Quantity. xxx Settlement Surplus. xxx Spot Market. xxx Standing Bid / Offer. xxx	~~Sending node. xxx~~ ~~Settlement. xxx~~ ~~Settlement Amount. xxx~~ ~~Settlement Price. xxx~~ ~~Settlement Quantity. xxx~~ ~~Settlement Surplus. xxx~~ ~~Spot Market. xxx~~ ~~Standing Bid / Offer. xxx~~	Already defined, as amended, in the WESM Rules.				Adopted by the RCC	
Glossary of Terms		State Estimator. A system forming part of the Energy Management System of the System Operator which determines the status of the power system through system snapshots.	~~State Estimator. A system forming part of the Energy Management System of the System Operator which determines the status of the power system through system snapshots.~~	Not used in the PDM				Adopted by the RCC	
Glossary of Terms		Supplier. xxx Supply. xxx	~~Supplier. xxx~~ ~~Supply. xxx~~	Already defined in the WESM Rules.				Adopted by the RCC	
Glossary of Terms		System marginal price. The price set by the marginal plant scheduled in any trading period or interval	p.System marginal price. The **shadow** price ~~set by the marginal plant scheduled in any trading period or interval~~ **for which energy is priced.**	• Renumbering • For clarity				Renumbering due to the insertion of (f) Energy Dispatch Quantity and (g) Final Nodal Energy Dispatch Price.	
Glossary of Terms		System Operator. xxx	~~System Operator. xxx~~	Already defined in the WESM Rules.				Adopted by the RCC	
Glossary of Terms		System Snapshot. The power system status at a certain time and is generated by the state estimator in the Energy Management System of the System Operator.	~~System Snapshot. The power system status at a certain time and is generated by the state estimator in the Energy Management System of the System Operator.~~	Already defined in the Dispatch Protocol Manual				Adopted by the RCC	
Glossary of Terms		Tie Breaking Rules. Prorating rules which are based on the size of the MW Block of the price	~~Tie Breaking Rules. Prorating rules which are based on the size of the MW Block of the price~~	Provided in the PDM.				Adopted by the RCC	

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		curves containing the non-unique schedules.	~~curves containing the non-unique schedules.~~						
Glossary of Terms		Timetable. Xxx Trading Amount. xxx	~~Timetable. xxx~~ ~~Trading Amount. xxx~~	Already defined in the WESM Rules.				Adopted by the RCC	
Glossary of Terms		Trading interval. A 1-hour period commencing on the hour.	~~Trading interval. A 1-hour period commencing on the hour.~~	Deletion of terms, for consistency with the proposed implementation of 5-minute dispatch interval.				Adopted by the RCC	
Glossary of Terms		Trading Participant. xxx	~~Trading Participant. xxx~~	Already defined in the WESM Rules.				Adopted by the RCC	
Glossary of Terms		Transmission Constraint Group. xxx	~~Transmission Constraint Group. xxx~~	Constraints are described under the CVC Manual.				Adopted by the RCC	
Glossary of Terms		Transmission limits. Generally, thermal limits of individual transmission facilities.	~~Transmission limits. Generally, thermal limits of individual transmission facilities.~~	Already described in the PDM.				Adopted by the RCC	
Glossary of Terms		Transmission Line. xxx	~~Transmission Line. xxx~~	Already defined in the WESM Rules.				Adopted by the RCC	
Glossary of Terms		Transmission Loss Factor. Scaling factors applied on the nodal prices to account for the network loss associated with the delivery or consumption of energy at different locations in the system.	**q.** Transmission Loss Factor. Scaling factors applied on the nodal **energy dispatch** prices to account for the network loss associated with the delivery or consumption of energy at different locations in the system.	Renumbering				Renumbering due to the insertion of (f) Energy Dispatch Quantity and (g) Final Nodal Energy Dispatch Price.	
Glossary of Terms		Transmission Network. xxx Transmission System. xxx	~~Transmission Network. xxx~~ ~~Transmission System. xxx~~	Already defined in the WESM Rules.				Adopted by the RCC	
Glossary of Terms		NEW	**r. Unconstrained Solution. A co-optimized solution of the market dispatch optimization model that does not take into consideration the thermal limits of lines and transformers.**	Added terminology used in the PSM.				Renumbering due to the insertion of (f) Energy Dispatch Quantity and (g) Final Nodal Energy Dispatch Price.	
Glossary of Terms		Under generation. xxx	~~Under generation. xxx~~	CVCs are described under the CVC Manual.				Adopted by the RCC	
Glossary of Terms		Voltage. xxx	~~Voltage. xxx~~	Already defined in the WESM Rules.				Adopted by the RCC	
Glossary of Terms		Week Ahead Dispatch Process. A pre-dispatch process covering the results obtained in the week ahead projections.	~~Week Ahead Dispatch Process. A pre-dispatch process covering the results obtained in the week ahead projections.~~	Not used in the PDM				Adopted by the RCC	
Glossary of Terms		WESM Rules. xxx	~~WESM Rules. xxx~~	Already defined in the WESM Rules.				Adopted by the RCC	
		NEW	**2.2 References**	To conform with the formatting for Market Manuals		• DOE: 2.2 References	• DOE:	Adopt DOE's revised wording. **2.2 References**	

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Title	Section	Provision	Proposed Amendment	Rationale	Comments	Proposed Revised Wording in relation to Comment	Rationale for the Proposed Revised Wording	PEMC Response and RCC proposal	RCC Discussion
			2.2.1 This Manual shall be read in association with the following – a. WESM Rules b. Dispatch Protocol Manual c. Constraint Violation Coefficients and Pricing Re-Runs Manual d. Market Operator Information Disclosure and Confidentiality Manual 2.3 Interpretation 2.3.1 Any reference to a clause in any section of this Market Manual shall refer to the particular clause of the same section in which the reference is made, unless otherwise specified or the context provides otherwise. 2.3.2 Standards and policies appended to, or referenced in, this Market Manual shall provide a supporting framework.			~~2.2.1~~ This Manual shall be read in association with the ~~following~~ a. WESM Rules **and other relevant Market Manuals.** ~~b. Dispatch Protocol Manual c. Constraint Violation Coefficients and Pricing Re-Runs Manual d. Market Operator Information Disclosure and Confidentiality Manual~~	There is no 2.2.2 so disregard 2.2.1 and just put the provision under 2.2 The term "other relevant Market Manuals" will not limit to those that were enumerated	**This Manual shall be read in association with the WESM Rules and other relevant Market Manuals.** **xxx**	
		NEW	**SECTION 3 RESPONSIBILITIES** **3.1 Market Operator** **3.1.1 The Market Operator shall be responsible for the development, validation, maintenance, publication, and revision of this Market Manual in coordination with Trading Participants and the System Operator.** **3.1.2 The Market Operator shall implement the principles and processes provided in this Market Manual.** **3.2 System Operator** **3.2.1 The System Operator shall provide the necessary information and references for the implementation and subsequent revisions and**	• To conform with the formatting for Market Manuals • To provide the responsibilities of the MO, SO and WESM Members in the development, implementation , and review of the PDM.		• DOE: SECTION 3 RESPONSIBILITIES 3.1 Market Operator ~~3.1.1~~ The Market Operator shall be responsible for the development, validation, maintenance, publication **in the WESM website**, and revision of this Market Manual in coordination with **the** ~~Trading~~ **WESM** Participants. ~~and the System Operator.~~ ~~3.1.2 The Market Operator shall implement the principles and processes provided in this Market Manual.~~ 3.2 System Operator ~~3.2.1~~ The System Operator shall xxx. 3.3 Trading Participants	• DOE: To give emphasis where the publication will be made by the MO WESM Participants more appropriate that Trading Participants Deleted 3.1.2 because it is already a given fact. There is no 3.1.2 so disregard 3.1.1 and just put the provision under 3.1 There is no 3.2.2 so disregard 3.2.1 and just put the provision under 3.2 There is no 3.3.2 so disregard 3.3.1 and	Adopt DOE's revised wording, with revision. **SECTION 3 RESPONSIBILITIES** **3.1 Market Operator** **The Market Operator shall be responsible for the development, validation, maintenance, publication in the Market Information Website, and revision of this Market Manual in coordination with WESM Participants.** **3.2 System Operator** **The System Operator shall provide the necessary information and references for the implementation and subsequent revisions and validation of this Market Manual.**	Ms. Varquez stated that DOE's recommendation to include the WESM website in the provision is amenable to the MO but was replace by the term "Market Information Website" since it is the defined in the WESM Rules. Mr. Rosales opined that the network service provider shall be included in the entities which provides necessary information set out in this manual.

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Annex A- Discussions on the Proposed Price Determination Methodology Manual

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Proposed Revised Wording in relation to Comment	Rationale for the Proposed Revised Wording	PEMC Response and RCC proposal	RCC Discussion
			validation of this Market Manual. 3.3 Trading Participants 3.3.1 The Trading Participants shall provide the necessary information and references for the implementation and subsequent revisions and validation of this Market Manual.			~~3.3.1~~ The Trading Participants shall xxx.	just put the provision under 3.3	3.3 Trading Participants The Trading Participants shall provide the necessary information and references for the implementation and subsequent revisions and validation of this Market Manual.	
DISPATCH AND PRICING ALGORITHM	4	4 DISPATCH AND PRICING ALGORITHM	SECTION4 DISPATCH AND PRICING ALGORITHM 4.1 Scope 4.1.1 This section provides an overview of the dispatch and pricing algorithm for energy and reserves in the WESM. The detailed formulation of the algorithm is provided for in Appendix A of this Market Manual.	• Addition to provide the scope of the dispatch and pricing algorithm.		• DOE: 4.1 Scope Formulation of Algorithm ~~4.1.1 This section~~ Section 4 provides an overview of the dispatch and pricing algorithm for energy and reserves in the WESM. The detailed formulation of the algorithm is provided for in Appendix A of this Market Manual.	• DOE: Section 1.3 is already given the title "Scope"	Adopt DOE's revised wording, with revision. SECTION4 DISPATCH AND PRICING ALGORITHM 4.1 Scope ~~4.1.1~~ This section provides an overview of the dispatch and pricing algorithm for energy and reserves in the WESM. The detailed formulation of the algorithm is provided for in Appendix A of this Market Manual.	
Description of the Market Dispatch Optimization Model	4.1	4.1 Description of the Market Dispatch Optimization Model The Market Dispatch Optimization Model (the "MDOM") performs market-clearing computations. It receives information on system conditions and requirements from the System Operator as well as market offers and bids from trading participants. It then processes this information to come up with an optimum scheduling of energy and reserves that will maximize economic gains for the trading participants taking into consideration the physical limitations of the transmission network and of the facilities of the trading participants. It utilizes linear programming techniques to create a security constrained economic dispatch and calculate nodal energy prices for all market trading nodes in the Market	4.2 ~~4.1 Description of the~~ Market Dispatch Optimization Model 4.2.1 ~~The Market Dispatch Optimization Model (the "MDOM") performs market-clearing computations. It receives information on system conditions and requirements~~ from the System Operator as well as market, The WESM shall employ a gross pool dispatch model where all submitted generation offers, reserve offers, projected outputs, nomination of loading levels, and demand bids ~~from trading participants are scheduled~~ based on the mathematical optimization algorithm of the market dispatch optimization model. 4.2.2 The market dispatch optimization model shall perform computations in	• Renumbering • Rewording for clarity	• TC: Propose to also include load forecasts from trading participants as information received by the MDOM.	• DOE: 4.2.2 The market dispatch optimization model shall perform computations in determining the market clearing price based on the information it receives on the following: a) system conditions and constraints from the System Operator; b) generation and reserve offers, nomination of loading levels, projected output and demand bids from Trading Participants; and c) load forecasts from the Market Operator. • TC: 4.2.2 The *market dispatch optimization model* shall perform computations in determining the market clearing price based on	• DOE/TC: For clarity	Section 4.2.2 is further clarified in Section 4.3. TC proposed rewording is adopted, for completeness. 4.2.2 The market dispatch optimization model shall perform computations in determining the market	

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		Network Model (the "MNM") and reserve prices for all reserve regions. The nodal energy prices are the locational marginal prices used to compute charges and payments while the dispatch schedules is used to dispatch generators to maintain balance in the power system.	**determining the market clearing price based on the information it receives on system conditions and constraints from the System Operator; generation and reserve offers, nomination of loading levels, projected output and demand bids from Trading Participants; and load forecasts from the Market Operator.** **4.2.3** It **shall process** ~~then processes this~~**these** information to come up with an optimum scheduling of energy and reserves that will maximize economic gains for the **Trading Participants** ~~trading participants~~ taking into consideration the physical limitations of the transmission network and of the facilities of the trading participants. **4.2.4** It ~~utilizes~~**shall utilize** linear programming techniques to ~~create a security constrained~~**economic determine** dispatch **schedules** and calculate nodal energy **dispatch** prices for all market trading nodes in the ~~Market Network Model (the "MNM")~~ **market network model** and reserve prices for all reserve regions. ~~The nodal energy prices are the locational marginal prices used to compute charges and payments while the dispatch schedules is used to dispatch generators to maintain balance in the power system.~~			the information it receives on system conditions and *constraints* from the *System Operator*; *generation* and *reserve offers*, nomination of *loading levels*, *projected output* and *demand bids* from *Trading Participants*; and *load forecasts* from the *Market Operator* **and *load forecasts from Trading Participants*.**		**clearing price based on the information it receives on system conditions and constraints from the System Operator; generation and reserve offers, nomination of loading levels, projected output and demand bids from Trading Participants; and load forecasts from the Market Operator and load forecasts from Trading Participants.**	
Required Inputs to the MDOM	4.3	4.3. Required Inputs to the MDOM The MDOM receives input data from three sources, namely, the System Operator, the trading participants and the Market Operator. The information provided is as required in the WESM Rules.	4.3. Required Inputs to the MDOM **4.3.1** The ~~MDOM~~**market dispatch optimization model shall receive** ~~receives~~ input data from three sources, namely, the System Operator, the ~~trading participants~~**Trading Participants** and the Market Operator. The information provided is as required in the WESM Rules.[15]	For clarity.		• DOE: 4.3. Required Inputs to the MDOM 4.3.1 The market dispatch optimization model shall receive input data from three sources, namely, the System Operator, the Trading Participants and the Market Operator. The	• DOE: For clarity	Adopt DOE's rewording for 4.3.1. 4.3. Required Inputs to the MDOM **4.3.1** The ~~MDOM~~**market dispatch optimization model shall receive** ~~receives~~ input data from three sources, namely, the System Operator, the ~~trading participants~~**Trading Participants** and the Market Operator. The	

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			*(Footnote 15: **WESM Rules clause3.5**)*			information provided is **are** as required in the WESM Rules.[3]		information provided ~~is~~ **are** as required in the WESM Rules.[15] *(Footnote 15: **WESM Rules clause 3.5**)*	
		System Operator Network data; System snapshot; Reserve requirements for each type of reserve in a reserve region; Outage schedules; Contingency List; Transmission limits; Security limits; and Load pattern.	**4.3.2** System Operator **Inputs:** **a.** Network data; **b.** System snapshot; ~~Reserve requirements for each type of reserve in a reserve region;~~ **c.** Outage schedules; **d.** Contingency List; **and** ~~Transmission limits;~~ **e. Over-riding constraints** • Security limits; ~~and~~ ➢ **Generation Limits** ➢ **Branch Group Limits** • **Must-Run Generation** ~~Load pattern.~~		• TC: Propose to include non-security limits in the over-riding constraints.	4.3.2 **The input data from the** System Operator ~~inputs~~ **are as follows:** a. Network data; b. System snapshot; c. Outage schedules; d. Contingency List; and e. Over-riding constraints • Security limits ➢ Generation Limits ➢ Branch Group Limits • Must-Run Generation • TC: *4.3.2 System Operator Inputs:* *a. Network data;* *b. System snapshot;* *c. Outage schedules;* *d. Contingency List;* and *e. Over-riding constraints* • *Security limits* ➢ *Generation* Limits ➢ Branch Group Limits • ***Non-security limits*** • *Must-run generation*	• TC: Minor edits. Consistent with the MRU Manual.	**4.3.2** System Operator **Inputs:** **a.** Network data; **b.** System snapshot; ~~Reserve requirements for each type of reserve in a reserve region;~~ **c.** Outage schedules; **d.** Contingency List; **and** ~~Transmission limits;~~ **e. Over-riding constraints** • Security limits; ~~and~~ ➢ **Generation Limits** ➢ **Branch Group Limits** ➢ **Must-Run Generation** • **Non-security limits** ➢ **Testing and commissioning** ~~Load pattern.~~	In relation to the comments received from the Technical Committee, the WDS-TWG differentiated the Security Limits and Non-security Limits and further seeks for SO's assistance in itemizing instances for the categories. Mr. Rosales informed the WDS-TWG that the same has already been provided by the SO. He also commented that the data needed for the MDOM should also include the data form the network service providers. Mr. Menses then clarified if the data requires is real time, because the DUs are not modeled in the MDOM. The WDS-TWG clarified that both real time and static data.
		Trading Participants Registration Data; Generation Offers; Reserve Offers; Demand Bids; and Optional Load Forecast. Market Operator Market Network Model; Load Forecast; and Constraint Violation Coefficient. Appendix A.1 of the WESM Rules details the information to be supplied with offers to supply and to buy electricity while	**4.3.3**Trading Participants**Inputs:** **a.** Registration Data; **b.** Generation Offers; **c. Demand Bids;** **d.** Reserve Offers; **e. Schedule of loading levels;** **f. Projected output;** ~~Demand Bids~~; and **g.** Optional Load Forecast. **4.3.4**Market Operator **Inputs** **a.** Market Network Model; **b. Reserve requirements;** **c. Nodal** Load Forecast; and **d.** Constraint Violation Coefficient.			• DOE: 4.3.3 **The input data from the** Trading Participant ~~inputs~~ **are as follows:** a. Registration Data; b. Generation Offers; c. Demand Bids; d. Reserve Offers; e. Schedule of loading levels; f. Projected output; and g. Optional Load Forecast. 4.3.4 **The input data from the** Market Operator ~~inputs~~ **are as follows:**	• DOE/TC: For clarity	On section 4.3.3, adopt TC proposal **4.3.3 Where applicable,** Trading Participants ~~Inputs:~~ **a.** Registration Data; **b.** Generation Offers; **c. Demand Bids;** **d.** Reserve Offers; **e. Schedule of loading levels;** **f. Projected output;** ~~Demand Bids~~; and **g.** Optional Load Forecast.	

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		Appendix A.2 provide details on the information to be supplied by network service provider.	~~Appendix A.1 of the WESM Rules details the information to be supplied with offers to supply and to buy electricity while Appendix A.2 provide details on the information to be supplied by network service provider.~~		• TC: Every TP may not be able to provide all seven (7) inputs required.	a. Market Network Model; b. Reserve requirements; c. Nodal Load Forecast; and d. Constraint Violation Coefficient. • TC: 4.3.3 **Where applicable,** *Trading Participant* Inputs: a. Registration data; b. *Generation offers;* c. *Demand bids;* d. *Reserve offers;* e. Schedule of *loading levels;* f. *Projected output;* and			
Basic Algorithm of the MDOM	4.2	4.2. Basic Algorithm of the MDOM The MDOM aims to maximize the economic gain derived from electricity trades in the market, considering the constraints imposed by existing system conditions. The objective of the MDOM is to maximize: Value of dispatched load based on demand bids, Minus the cost of dispatched generation based on generation offers, Minus the cost of dispatched reserves based on reserve offers, Minus the cost of constraint violation based on constraint violation coefficients. The algorithm of the MDOM is given in the mathematical formulation below.[6] The detailed formulation is contained in Appendix III-2. *(Footnote 6: WESM Rules clause 3.6.1.3)*	**4.4** ~~4.2. Basic Algorithm of the MDOM~~ **Objective Function** **4.4.1** The ~~MDOM~~**market dispatch optimization model**~~aims to~~**shall** maximize the economic gain derived from electricity trades in the market, ~~considering the constraints imposed by existing system conditions.~~ ~~The objective of the MDOM is to maximize:~~ **This is defined to be the maximization of the value** ~~Value~~ of dispatched load based on demand bids, **minus** Minus the cost of dispatched generation based on generation offers, **minus** Minus the cost of dispatched reserves based on reserve offers, **minus** ~~Minus~~ the cost of constraint violation based on constraint violation coefficients.[16] *(Footnote* **15**: **WESM Rules clause 3.6.1.3)** **It is represented by the following formulation:** ~~The algorithm of the MDOM is given in the mathematical formulation:below.[6] The detailed formulation is contained in Appendix III-2.~~	For clarity.		• DOE: 4.4 Objective Function 4.4.1 The market dispatch optimization model shall maximize the economic gain derived from electricity trades in the market. This is defined to be the maximization of the value of dispatched load based on demand bids, **less the costs of the following:** ~~minus~~ **a)** ~~the cost of~~ dispatched generation based on generation offers; ~~minus~~ **b)** the cost of dispatched reserves based on reserve offers; ~~minus~~ **c) load curtailment; and** **d)** ~~the cost of~~ constraint violation based on constraint violation coefficients.[1]	• DOE: To be consistent with the mathematical formula	Adopt DOE's rewording **4.4** ~~4.2. Basic Algorithm of the MDOM~~ **Objective Function** **4.4.1** The ~~MDOM~~**market dispatch optimization model**~~aims to~~**shall** maximize the economic gain derived from electricity trades in the market, ~~considering the constraints imposed by existing system conditions.~~ ~~The objective of the MDOM is to maximize:~~ **This is defined to be the maximization of the value** ~~Value~~ of dispatched load based on demand bids, **less the costs of the following:** **a.** ~~Minus the cost of~~ dispatched generation based on generation offers; **b.** ~~Minus the cost of~~ dispatched reserves based on reserve offers; **c. load curtailment; and** **d.** ~~Minus the cost of~~ constraint violation based on constraint violation coefficients.[16] *(Footnote* **16**: **WESM Rules clause 3.6.1.3)** On TC's proposed rewording, retain the original proposal. The	

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		OBJECTIVE FUNCTION Maximize the economic gain from trade, where:	~~(Footnote 6, WESM Rules clause 3.6.1.3)~~ ~~OBJECTIVE FUNCTION~~ Maximize the economic gain from trade, where:		• TC: Propose to reduce subscripts in all equations in the PDM by mentioning in the relevant sections for which specific [parameter] the equations refer to. In this case, since the economic gain is for a specific dispatch interval, it is suggested that interval i be no longer defined but already mentioned in Sec. 4.4.1	• TC: 4.4.1 xxx Maximize the *economic gain* **for every dispatch interval** from trade, where: (continued below)		equation covers all workflows or market runs.	
Economic Gain = $\left[\sum_{i}^{n}\sum_{b}^{E_D}[(DB_{b,i})(PDB_{b,i})]-\sum_{k}^{E_G}\sum_{i}^{n}[(G_{k,i})(PG_{k,i})]-\sum_{r}^{N_R}\sum_{i}^{E_R}\sum_{i}^{n}[(R_{r,i})(PR_{r,i})]-(CVP)\right]$			Economic Gain = $\sum_{i}^{n}\left\{\sum_{b}^{E_D}[(DB_{b,i})(PDB_{b,i})]-\sum_{k}^{E_G}[(G_{k,i})(PG_{k,i})]-\sum_{r}^{N_R}\sum_{i}^{E_R}[(R_{r,i})(PR_{r,i})]-\sum_{c}^{E_C}[(CQ_{c,i})(CP_{c,i})]-\sum CVP\right\}$		• SNAP: for the appreciation of participants, it would be helpful to see a comparison of the two formula using actual data	Economic Gain = $\sum_{i}^{n}\left\{\sum_{b}^{E_D}[(DB_{b,i-1})(PDB_{b,i-1})]-\sum_{k}^{E_G}[(G_{k,i-1})(PG_{k,i-1})]-\sum_{r}^{N_R}\sum_{i}^{E_R}[(R_{r,i-1})(PR_{r,i-1})]-\sum_{c}^{E_C}[(CQ_{c,i-1})(CP_{c,i-1})]-\sum CVP\right\}$ (continued below)		We suggest that SNAP refer to the presentation of PEMC during the RCC meeting held on 06 July 2016.	
		i ∈resources (generators and dispatchable loads) j ∈energy and reserve offer blocks k ∈ reserve types Where: E_D Total number of dispatchable loads with energy demand bids. E_G Total number of generators with energy offers. E_R Total number of resources (generators or dispatchable load) with reserve offers.	**Where:** i ~~∈resources (generators and dispatchable loads)~~ **refers to a specific dispatch interval** ~~j ∈ energy and reserve offer blocks~~ ~~k ∈reserve types~~ Where: **n refers to the number of dispatch intervals involved in the solution** E_D **Total refers to the** number of~~dispatchable loads with energy demand bids~~**bid blocks in a dispatch interval i** E_G **Total refers to the** number of~~generators with energy offers~~	• For clarity and consistency in the variables of the equations in the PDM. • To address the audit findings under the Procedure Review Report from the 2nd MO Audit, where: N_k is defined incorrectly and should be defined as number of reserve types		Where: ~~i refers to a specific dispatch interval~~ xxx • DOE:		The equation covers all market runs.	

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		N_K Total number of reserve resources for each reserve type "k" $DB_{i,j}$ The MW quantity of the "jth" Energy Bid block of the ith Dispatchable Load. $PDB_{i,j}$ The price per quantity element of the j^{th} Energy Bid block of the i^{th} Dispatchable Load. $G_{i,j}$ The MW quantity of the jth Energy Offer block of the ith Generator (or dispatchable load). $PG_{i,j}$ The price per quantity element of the j^{th} Energy Offer block of the i^{th} Generator (or dispatchable load). $R_{i,j,k}$ The MW quantity of the jth Reserve Offer block of the kth Reserve Type of the ith Resource. $PR_{i,j,k}$ The price per quantity element of the j^{th} Reserve Offer block of the k^{th} Reserve Type of the i^{th} Resource.	**generation offer blocks in a dispatch interval i** E_R ~~Total~~ **refers to the** number of~~resources (generators or dispatchable load)~~ with **reserve offer** offers **blocks in a dispatch interval i** N_K ~~Total number of reserve resources for each reserve type "k"~~ N_R **refers to the number of reserve categories** $DB_{b,i,j}$ ~~The MW~~**refers to the demand bid block** quantity **b**of the ~~"jth" Energy Bid block of the ith Dispatchable Load~~ **at dispatch interval i** $PDB_{b,i,j}$ ~~The~~ **refers to the demand bid block** price **b**per ~~quantity element of the jth Energy Bid block of the ith Dispatchable Load~~ **at dispatch interval i** $G_{k,i,j}$ ~~The MW~~ **refers to the generation offer block** quantity **k** of the ~~jth Energy Offer block of the ith Generator (or dispatchable load)~~**at dispatch interval i** $PG_{k,i,j}$ ~~The~~ **refers to the generation offer block** price **k** per quantity ~~element of the j^{th} Energy Offer block of the i^{th} Generator (or dispatchable load)~~ **at dispatch interval i** $R_{i,j,k,r,i}$ ~~The MW~~ **refers to the reserve offer block** quantity **j** of the ~~j^{th} Reserve Offer block~~**for** ~~of the k^{th} reserve Type~~ **category r** ~~of the i^{th} Resource~~ **at dispatch interval i** $PR_{i,j,k,r,i}$ ~~The~~ **refers to the reserve offer block** price **j** per quantity ~~element of the j^{th} Reserve Offer block~~ **for** ~~of the k^{th}~~ **reserve** ~~Type~~ **category r** ~~of the i^{th}~~			E_R refers to the number of reserve offer blocks in a dispatch interval ~~i~~ **j** $G_{k,i}$ refers to the generation offer block quantity k ~~of~~ the at dispatch interval i	• DOE: i and not I is defined For clarity	Adopt DOE's rewording. Typographical error. E_R ~~Total~~ **refers to the** number of~~resources (generators or dispatchable load)~~ with **reserve offer** offers **blocks in a dispatch interval i** $G_{k,i,j}$ ~~The MW~~ **refers to the generation offer block** quantity **k** ~~of the~~ **jth** ~~Energy Offer block of the ith Generator (or dispatchable load)~~**at dispatch interval i**	

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		CVP The sum of penalty costs for soft constraints violations based on the constraint violation coefficients, where: CVP = $\sum_{t} [CVC_t * Q_t]$ CVC_t = Constraint violation penalty cost for Constraint Violation Type "t" Q_t = Constraint violation quantity for Constraint Violation Type "t" *(Footnote 7:* Refer to section 4.9 for the types of constraint violation and Appendix III-1 for additional details on the formulation of constraint violation coefficients.)	~~Resource~~ **at dispatch interval i** **$CQ_{c,i}$ refers to the curtailment quantity c at dispatch interval i** **$CP_{c,i}$ refers to the curtailment price c at dispatch interval i** CVP **refers to constraint violation penalties**~~The sum of penalty costs for soft constraints violations based on the constraint violation coefficients, where:~~ ~~CVP =~~ $\sum_{t} [CVC_t * Q_t]$ ~~CVC_t = Constraint violation penalty cost for Constraint Violation Type "t"~~ ~~Q_t = Constraint violation quantity for Constraint Violation Type "t"~~ ~~*(Footnote 7: Refer to section 4.9 for the types of constraint violation and Appendix III-1 for additional details on the formulation of constraint violation coefficients.)~~						
		NEW	**4.4.2 The objective function may be comprised of a solution for only one dispatch interval, or a set of dispatch intervals.** **4.4.3 Market projections shall employ a security-constrained dynamic dispatch, wherein the economic gain from trade for each execution of a market projection is maximized for the entire set of dispatch intervals in the covered study period of that market projection.** **4.4.4 The real time dispatch shall employ a security-constrained dynamic dispatch and is solved per dispatch interval.**	For clarity.	• TC: It was clarified to the TC that the objective function is applied to both projection and dispatch runs (i.e. set of dispatch intervals refer to projections – DAP, WAP, HAP with more than one set of dispatch intervals). The TC agrees that DAP, WAP and HAP are calculated. However, in each of those cases, calculation is still done for every interval. Suppose I wish to perform a DAP, don't I perform the calculation one day ahead but is still trying to get the optimum dispatch for just one interval one day later? Would appreciate clarification on the matter.	• DOE: 4.4.2 The objective function may be **is** comprised of a solution for **either** only one dispatch interval, or a set of dispatch intervals. xxx 4.4.4 The **real-time** dispatch shall employ a security-constrained dynamic dispatch and **shall be** is solved per dispatch interval. 4.4.5 If there are no prices and schedules determined during the **real-time** dispatch, then the results of the corresponding **hour-ahead** projection shall be used for that dispatch interval.	• DOE: For clarity To make it mandatory To observe the correct use of hyphen	On the TC's comment, we wish to clarify that DAP is solved as a single optimization problem for the entire study period (e.g. 1200H DAP run covers 36 hours). Please refer to PEMC's slide on Workflow Runs. On DOE's comment on section 4.4.2, retain original proposal. The objective function is applicable for the RTD, DAP, WAP, HAP, thus the use of "may". Adopt DOE's rewording on section 4.4.4. On the correct use of hyphen, for RCC confirmation on global change for the WESM Rules and all Manuals. **4.4.4 The real time dispatch shall employ a security-**	On the TC's clarification, Mr. Rhe-An Abrasia explained that the MMS runs for the following: a. For the WAP – daily and hourly for the next seven (7) days b. For the DAP – hourly c. For the HAP – every 5 minutes for the next hour Ms. Elaine De Guzman stated that the WDS-TWG was hoping to get comments from the SO and generators regarding its respective stand on the proposal. She further clarified that the amendments and enhancements being done by the WDS-TWG are all based on the circular provided by the DOE. Mr. Rosales stated that the SO already conducted assessments based on the proposals. He also informed the body that the SO can go with the new MMS but is in need of facility enhancements. He further sought for the DOE, PEMC and ERC's support for the approval of NGCP's CapEx for this. He also opined that the generators' concerns regarding this matter are of high importance. Ms.

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			4.4.5 If there are no prices and schedules determined during the real time dispatch, then the results of the corresponding hour ahead projection shall be used for that dispatch interval.[17] *(Footnote 17: **WESM Rules Clause 3.4.1.2**)*					constrained dynamic dispatch and shall be solved per dispatch interval.	De Guzman stated that with regards to the generators' concerns, the representatives from the generation sector in the RCC may be a way for them to raise their comments regarding these matters. She further added that the proposal has also been posted in the Market Information Website with subsequent notifications to all WESM stakeholders and only Aboitiz Power Corporation and SNAP submitted their comments. Another concern was raised by Mr. Rosales regarding the possible mandate for the generators to install Automatic Generation Control in its facilities. This is to further assure the compliance of the generators with the newly proposed 5-minute dispatch interval. In this case, the SO may control the output of the generator remotely from its facilities. Ms. Rivera recalled that there was an agreement previously to discuss the new MMS to the generators which may also allow them to provide their feedbacks on this. Ms. De Guzman stated that PEMC will note the concern and will raise the same on the WESM Open House scheduled on 29 September 2016. Following the discussions above, Atty. De Castro suggested the deferment of the discussion on the issue and refer it to the proper channel.
		Subject to the following constraints: xxx	4.5 Dispatch Constraints ~~Subject to the following constraints:~~ xxx 4.5.1The objective function in Section 4.4 of this Market Manual shall be subject to the following constraints: a. System Constraints i.System power balance, including power balance during islanding operation ii. Reserve region requirements, including ancillary services cascading iii.Reserve provider capacity cap iv.AC power flow, including the network loss model and line power flow limits v.HVDC capacity limit	Deletion of details since these are provided in the detailed formulation (Appendix A).		• DOE: 4.5.1The objective function in Section 4.4 of this Market Manual shall be subject to the following constraints: a. System Constraints; xxx b. Resource Constraints; and xxx c. Generic Constraints, xxx	• DOE: To follow the correct enumeration format	Retain original proposal.	

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			vi.Nodal energy balance constraint **b. Resource Constraints** **i. Generator resource energy constraint** **ii.Load resource energy constraint** **iii. Reserve resource constraint** • **Reserve capacity limit** • **Combined reserve ramping limit** **iv. Combined energy and reserve capacity limit** **v.Combined energy and reserve ramping** **vi. Constraints that pertain to the operational modes of generators, loads or similar facilities** **c. Generic Constraints** **i.Over-riding Constraints** • **Security Limit** • **Transmission Limit** **ii. Outage schedule** **iii.Contingency list**						
Tie breaking/ Handling of Equivale nt Olfers	4.10	4.10. Tie breaking/Handling of Equivalent Offers In cases where two or more schedules are optimal, the MDOM will pro-rate the dispatch to the affected trading participants while observing equipment limitations. The pro-rating rules will be based on the size of the MW block of the price curves containing the non-unique schedules[12]. *(Footnote 12: See Appendix III-2 for the sample application of the tie-breaking rules.)* Appendix III-2 presents two examples of the application of the pro-rating rules.	**4.6** ~~4.10.~~ Tie ~~breaking/Handling~~**Breaking** of Equivalent Offers[18] **4.6.1** In cases where two or more schedules are optimal, the ~~MDOM~~**market dispatch optimization model**~~will~~**shall** pro-rate the ~~dispatch~~**schedule** to the affected ~~trading participants~~**Trading Participants** while observing equipment limitations. ~~The pro-rating rules will be~~ based on the**generation offer/demand bid** ~~size of the~~ MW block ~~of the price curves containing the non-unique schedules~~**quantity**[12] *(Footnote ~~12~~**18**: See Appendix ~~III-2~~**B** for the sample application of the tie-breaking rules.)*	For clarity.				Adopted by the RCC	

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			~~Appendix III-2 presents two examples of the application of the pro-rating rules.~~ **4.6.2 In case of a tie between a demand bid and a generator offer, the generation offer shall be maximized to meet the load requirement.**						
		NEW	**4.7 Priority-Scheduling** **4.7.1 When restricting dispatch targets under WESM Rules Clause 3.6.1.7, the market dispatch optimization model shall consider the following hierarchy when a combination of the groups are to be restricted:[19]** *(Footnote* **19**: **WESM Rules clause 3.6.1.8)** **a. Market offers of scheduled generating units** **b.Non-scheduled generating units** **c.Priority dispatch generating units** **d.Must dispatch generating units.**	For clarity and consistency with the management of Pmin via offers under DOE DC 2015-15-0010.		• DOE: 4.7 Priority-Scheduling ~~4.7.1~~ When restricting dispatch targets under WESM Rules Clause 3.6.1.7, xxx a. Market offers of scheduled generating units; b. Non-scheduled generating units; c. Priority dispatch generating units; **and** d. Must dispatch generating units.	• DOE: There is no 4.7.2 so disregard 4.7.1 and just put the provision under 4.7 To follow the correct enumeration format	Adopt DOE's rewording **4.7 Priority-Scheduling** **~~4.7.1~~ When restricting dispatch targets under WESM Rules Clause 3.6.1.7, the market dispatch optimization model shall consider the following hierarchy when a combination of the groups are to be restricted:[19]** *(Footnote* **19**: **WESM Rules clause 3.6.1.8)** **a. Market offers of scheduled generating units;** **b.Non-scheduled generating units;** **c.Priority dispatch generating units; and** **d.Must dispatch generating units.**	
Constraint Violation Coefficients	4.9	4.9 Constraint Violation Coefficients The constraint violation coefficients (the "CVCs") listed in WESM Rules clauses 3.6.1.3 (c) and 3.6.2 correspond to soft constraints in the MDOM and are associated with constraint violation prices. The CVCs are incorporated in the MDOM to ensure that, if constraints shall be violated, the violation will occur in an appropriate priority order that takes account of the security and reliability of the power system and the implementability of the resulting dispatch schedule.	~~4.9~~**4.8**Constraint Violation Coefficients **4.8.1** The constraint violation coefficients ~~(the "CVCs") listed in WESM Rules clauses 3.6.1.3 (c) and 3.6.2~~**shall** correspond to soft constraints in the ~~MDOM~~**market dispatch optimization model**and are associated with constraint violation prices.[20] *(Footnote* **20**: ***WESM Rules clauses 3.6.1.3 and 3.6.2)***	• To harmonize with clause 3.6 of the WESM Rules, as amended. • Note that the hierarchy of CVCs are under the CVC Manual.	• AP: Value of CVC should already be included • SNAP: Will the Regional issuance of Pricing Errors still be implemented in the new MMS? Considering that the reason for the Regional Pricing was to increase the availability of prices / price discovery and this would be made obsolete by the automatic re-runs, should we consider to drop the Regional Issuance of Pricing errors? As observed, regional pricing has a considerable effect, especially on line rental			The values of the CVC are provided in the proposed CVC manual, issue 5, which has been posted for comments together with this proposed PDM manual. We agree with SNAP's observation. Regional issuance of pricing error will not be adopted anymore, as there is already a method in minimizing pricing errors (automatic pricing reruns)	

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					when Luzon's final pricing is not the same with Visayes (e.g., RTX or MRR for Luzon and RTD for Visayes). For consideration. In principle, the market should have one set of nodal prices coming from a single workflow for any dispatch interval. If a re-run has to be made, the resulting prices should be applied to the whole market, whether there is a binding hvdc constraint (where the price in one region is just a combination of the hvdc's shadow price and the system marginal price, which means there is still a single market which couples two regions by a congestion cost)				
			4.8.2 Some constraints in the market dispatch optimization model shall be set up with one or more non negative violations variables and associated constraint violation coefficients to ensure that the market dispatch optimization model will always find a solution which satisfies all constraints, if such a solution exists. It shall also ensure that, if constraints are ~~The CVCs are incorporated in the MDOM to ensure that, if constraints shall be~~ violated, the violation will occur in an appropriate priority order that takes account of the **system** security and reliability of the power system and the ~~implementability~~ **feasibility** of the resulting dispatch schedule.			• DOE: 4.6.2 Some constraints in the market dispatch optimization model shall be set up with one or more non negative violations variables and associated constraint violation coefficients to ensure that the market dispatch optimization model will always find a solution which satisfies all constraints, **even during occurrence of violation of constraints** ~~if such a solution exists~~. It shall also ensure that, if constraints are violated, the violation will occur in an appropriate priority order that takes account of the system security and reliability of the power system and the feasibility of the resulting dispatch schedule.	• DOE: For clarity	Retain original proposal.	Mr. Binondo inquired about the phrase "if such solution exist". Mr. Bunyi explained that the process of the solver is iterative, and there will be instances when it will not be able to find an optimal solution, thus, the wording in the provision. The RCC then agreed to retain the original provision.
		The following are the types of CVCs incorporated in the MDOM: Deficit Interruptible Load Reserve Deficit Dispatchable Reserve	**4.8.3** The following are the types of ~~CVCs~~**constraint violation coefficients** incorporated in the ~~MDOM~~ **market dispatch optimization model**: *a.* ~~Deficit Interruptible~~ Load Reserve**for each reserve category;**			4.8.3 The following are the types of constraint violation coefficients incorporated in the market dispatch optimization model: *xxx* d. Under-generation; e. Over-generation; ~~and~~	To follow the correct enumeration format	Adopt DOE's proposal. **4.8.3** The following are the types of ~~CVCs~~**constraint violation coefficients** incorporated in the ~~MDOM~~ **market dispatch optimization model**:	

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		Deficit Regulating Reserve Deficit Contingency Reserve Nodal Value of Lost Load Contingency Under-generation/Over-generation Base Case Constraint Transmission Constraint Group (TCG) constraint If any of these CVCs are encountered by the MDOM, the associated CVC prices will be reflected in the nodal prices to signal the risks to the power system of violating the constraint/s. If CVCs are indicated in the ex-ante nodal prices or when the resulting prices are believed to be in error, the Market Operator may issue a pricing error notice in which case the ex-post prices calculated at the end of that the relevant trading interval shall be substituted to the ex-ante prices. This is pursuant to clause 3.10.5 of the WESM Rules.[11] *(Footnote 11: See in Annex H, Constraint Violation Coefficients)*	~~Deficit Dispatchable Reserve~~ ~~Deficit Regulating Reserve~~ ~~Deficit Contingency Reserve~~ b. ~~Nodal Value of Lost Load~~; c. ~~N-x~~ contingency **thermal constraint;** d. ~~Under-generation~~; e. ~~/Over-generation~~; **and** f. ~~Base case~~ **thermal** constraint. ~~Transmission Constraint Group (TCG) constraint~~ **g. Self-scheduled generation constraint** **4.8.4 The constraint violation coefficients shall be set for:** **a. market projections and dispatch schedules, and** **b. market pricing reruns when the market projections and dispatch schedules have resulted in a non-zero violation variable.** ~~If any of these CVCs are encountered by the MDOM, the associated CVC prices will be reflected in the nodal prices to signal the risks to the power system of violating the constraint/s.~~ ~~If CVCs are indicated in the ex-ante nodal prices or when the resulting prices are believed to be in error, the Market Operator may issue a pricing error notice in which case the ex-post prices calculated at the end of that the relevant trading interval shall be substituted to the ex-ante prices. This is pursuant to clause 3.10.5 of the WESM Rules.~~[11] *~~(Footnote 11: See in Annex H, Constraint Violation Coefficients)~~* **4.8.5 The constraint violation coefficients shall be set for market pricing re-runs so as to ensure that the dispatch of all network elements, loads, and**			f. Base case thermal constraint; **and** g. Self-scheduled generation constraint,		**xxx** d. ~~Under-generation~~; e. ~~/Over-generation~~; f. ~~Base case~~ **thermal** constraint; **and** ~~Transmission Constraint Group (TCG) constraint~~ **g. Self-scheduled generation constraint**	

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			generating units produced by the market optimization algorithm are approximately the same as the original market dispatch. It shall also be set to ensure that the prices produced by the market optimization algorithm will be appropriate in all the circumstances for settlement purposes, taking into consideration the processes provided for in Section 5 of this Market Manual.						
The Output of the MDOM	4.4	4.4 The Output of the MDOM The optimization process will produce the following outputs: System Marginal Price; Generation output levels for each generating resource; Scheduled load for each dispatchable load; Reserve schedule for each generating resource; Transmission line flows; Transmission losses; Energy prices at each market trading node; and Regional reserve prices.	~~4.4.4.9 The Output~~**Outputs from** ~~of~~ the MDOM **Market Dispatch Optimization Model** **4.9.1** The optimization process will**shall** produce the following outputs**for the market projections and real time dispatch**: **a. Cost of the solution or economic gain;** **b. Transmission line flows;** **c. Losses by each equipment and in aggregate;** **d. Dispatch schedules;** **e. Market prices;** i. System Marginal Price; **ii. Nodal energy dispatch price;** ~~Generation output levels for each generating resource;~~ ~~Scheduled load for each dispatchable load;~~ ~~Reserve schedule for each generating resource;~~ ~~Transmission line flows;~~ ~~Transmission losses;~~ ~~Energy prices at each market trading node; and~~ **iii.** ~~Regional reserve~~**Reserve** prices **for each reserve category and reserve region; and** **f. Non-zero violation variables.**	For clarity.	• SNAP: Reserve schedule for each reserve category per region is not clearly specified.	• SNAP: ~~4.4.4.9 The Output~~**Outputs from** ~~of~~ **the** MDOM**Market Dispatch Optimization Model** **4.9.1**The optimization process will**shall**produce the following outputs**for the market projections and real time dispatch**: **a. Cost of the solution or economic gain;** **b. Transmission line flows;** **c. Losses by each equipment and in aggregate;** **d. Dispatch schedules;** **i. Energy;** **ii. Reserve;** **e. Market prices;** i. System Marginal Price; **ii. Nodal energy dispatch price;** ~~Generation output levels for each generating resource;~~ ~~Scheduled load for each dispatchable load;~~ ~~Reserve schedule for each generating resource;~~ ~~Transmission line flows;~~ ~~Transmission losses;~~ ~~Energy prices at each market trading node; and~~ iii. Regional ~~reserve~~**Reserve**prices **for each reserve category and reserve region; and** **f. Non-zero violation variables.** • DOE:	• SNAP:Included under Dispatch Schedules are the schedules for energy and reserve for clarity purposes	Adopt SNAP proposal. **4.9.1** The optimization process will**shall** produce the following outputs **for the market projections and real time dispatch**: **xxx** **d. Dispatch schedules** **i. Energy; and** **ii. Reserve;** **xxx**	

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						4.9 Outputs from the Market Dispatch Optimization Model 4.9.1 The optimization process shall produce the following outputs for the market projections and **real-time** dispatch: xxx			
Determination of the Dispatch Schedule	4.5	4.5 Determination of the Dispatch Schedule xxx	~~4.5 Determination of the Dispatch Schedule~~ xxx	Deletion of explanatory provisions.				Adopted by the RCC	
Determination of Nodal Prices	4.6	4.6. Determination of Nodal Prices The price at a particular node in the system (i.e. nodal price), signals the economic value of the electricity given the supply and demand interaction at that node. It represents the benefit of supplying electricity or the cost of consuming electricity at that location under the specific system conditions that were considered in the dispatch scheduling process. Nodal prices will differ across nodes in the network due to the presence of physical losses or network constraints (i.e., congestion). In an unconstrained system, the market price is set by one marginal plant (i.e., the system marginal price). This price is adjusted for each node to consider transmission losses, and the resulting value is the locational marginal price (the "LMP"). Where the system is constrained, the relevant flows of electricity are affected as the line limitations arising from the constraint may impede the supply of cheaper electricity from one area to another. In such cases, there may be more than one marginal plant setting the marginal price for the different	4.6 **4.10**~~Determination of Nodal Prices~~ **Locational Marginal Pricing** **4.10.1** ~~The price at a particular node in the system (i.e. nodal price), signals the economic value of the electricity given the supply and demand interaction at that node. It represents~~ **Locational marginal pricing shall reflect** the benefit of supplying electricity or the cost of consuming electricity at that location under the specific system conditions that were considered in the dispatch scheduling process. ~~Nodal prices will differ across nodes in the network due to the presence of physical losses or network constraints (i.e., congestion).~~ ~~In an unconstrained system, the market price is set by one marginal plant (i.e., the system marginal price). This price is adjusted for each node to consider transmission losses, and the resulting value is the locational marginal price (the "LMP").~~ ~~Where the system is constrained, the relevant flows of electricity are affected as the line limitations arising from the constraint may impede the supply of cheaper electricity from one area to another. In such cases, there may be more than one marginal plant setting the~~	Deletion of explanatory provisions.				Adopted by the RCC	

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		nodes on either side of the constraint.	~~marginal price for the different nodes on either side of the constraint.~~						
Price Adjustment to Reflect Transmission Losses and Congestion	4.7	4.7.Price Adjustment to Reflect Transmission Losses and Congestion The nodal prices are to be adjusted to reflect changes in power flows and losses as well as any congestion in the system, and signal to the market the relevant cost to produce and purchase electricity at the relevant market trading nodes. Specifically, the various nodal prices are to be adjusted by considering transmission loss factors and cost of congestion in each location in the system, thus, resulting in the locational marginal prices. Locational marginal prices are the economic value of energy at each node considering the marginal price of generation, transmission losses and congestion, as given by the following formula:	~~4.7 Price Adjustment to Reflect Transmission Losses and Congestion~~ ~~The nodal prices are to be adjusted to reflect changes in power flows and losses as well as any congestion in the system, and signal to the market the relevant cost to produce and purchase electricity at the relevant market trading nodes. Specifically, the various nodal prices are to be adjusted by considering transmission loss factors and cost of congestion in each location in the system, thus, resulting in the locational marginal prices.~~ Locational marginal prices are ~~the economic value of energy at each node considering~~**shall consider** the marginal price of generation, transmission losses and congestion, ~~as~~given by the ~~following formula~~**and is represented as follows**:	Deletion of explanatory provisions.				Adopted by the RCC	
LMPi = **Marginal Generator Price** + **Marginal Transmission Loss Price** + **Marginal Congestion Price**			LMP_i = System Marginal Price + Marginal Cost of Loss + Marginal Cost of Congestion					Adopted by the RCC	
In mathematical form: $LMPi = \lambda + \left[\left(\frac{1}{TLF_i} - 1\right) * \lambda\right] + \sum \mu_j a_{ij}$			~~In mathematical form~~**The locational marginal pricing formula is as follows**: $LMP_i = \lambda + \left[\left(\frac{1}{TLF_i} - 1\right) * \lambda\right] + \sum \mu_n * a_{in}$					Adopted by the RCC	
		Where: LMP_i= Locational Marginal Price at location "i" λ = The system marginal price based on marginal plant offer TLF_i = Transmission Loss Factor at location "i" u_j = Price corresponding to "j" transmission constraint[9] a_{ij} = Sensitivity factor relating the contribution of generation at	Where: LMP_i=**refers to the** locational marginal price at location "i" λ =**refers to the** system marginal price ~~based on marginal plant offer~~ TLF_i=**refers to the**transmission loss factor at location "i" u_n=**refers to the** price corresponding to ~~"~~**n**~~"~~transmission constraint[9]	• For consistent use of subscripts. • Deletion of redundant and explanatory provisions				Adopted by the RCC	

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		location "i" to the energy flow related to constraint "j"[10] *(Footnote 9: u_i is the price associated with the change of the schedules of the generators within the optimization process to prevent overloading a constrained transmission line or lines.* *Footnote 10: The sensitivity factor a_{ij} represents the amount of power (MW) flow change in a constrained line or lines due to the change of the schedules of the generators to prevent overloading the constrained line or lines.)* The three terms defined in the mathematical equation are - marginal price which is the price set by the marginal generator scheduled in any trading interval or period. [redacted] in the system marginal price due to losses and location the system marginal price due to transmission constraints. For an unconstrained optimization, the u_i has a zero value, thus: $$LMPi = \lambda + \left[\left(\frac{1}{TLF} - 1\right) * \lambda\right]$$ Simplifying further: $$LMPi = \left[\frac{\lambda}{TLF_i}\right]$$ 4.8. Transmission Loss Factors	a_{ij}=**refers to the** sensitivity factor relating the contribution of generation at location "i" to the energy flow related to constraint "j"**o**[10] ~~*(Footnote 9: u_i is the price associated with the change of the schedules of the generators within the optimization process to prevent overloading a constrained transmission line or lines.*~~ ~~*Footnote 10: The sensitivity factor a_{ij} represents the amount of power (MW) flow change in a constrained line or lines due to the change of the schedules of the generators to prevent overloading the constrained line or lines.)*~~ ~~The three terms defined in the mathematical equation are -~~ ~~[redacted] em marginal price which is the price set by the marginal generator scheduled in any trading interval or period.~~ ~~[redacted] in the system marginal price due to losses and location.~~ ~~the system marginal price due to transmission constraints.~~ ~~For an unconstrained optimization, the u_i has a zero value, thus:~~ ~~$$LMPi = \lambda + \left[\left(\frac{1}{TLF} - 1\right) * \lambda\right]$$~~ ~~Simplifying further:~~ ~~$$LMPi = \left[\frac{\lambda}{TLF_i}\right]$$~~ ~~4.8 Transmission Loss Factors~~	• Deletion of redundant and explanatory provisions • Deleted sentence is now	• DOE: This formula should also be deleted as well			Yes it is also for deletion.	[redacted]

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		Transmission loss factors (the "TLF") are scaling factors applied on the nodal prices to account for the network loss associated with the delivery or with the consumption of energy at different locations in the system. Transmission loss factors are dynamically computed within the MDOM to fully account for the dynamic change in the losses due to a change in load at the various nodes. The transmission loss factor at location "i" is defined as follows: $TLF_i = \left[1 - \frac{\partial P_{loss}}{\partial P_i}\right]$	**4.10.2** ~~Transmission loss factors (the "TLF") are scaling factors applied on the nodal prices to account for the network loss associated with the delivery or with the consumption of energy at different locations in the system.~~ Transmission loss factors are **shall be** dynamically computed within the ~~MDOM~~ **market dispatch optimization model** to fully account for the dynamic change in the losses due to a change in load at the various nodes. The transmission loss factor at location "~~i~~**j**" is defined as follows: $TLF_j = \frac{1}{1 - \frac{\partial P_{Loss}}{\partial P_j}}$	provided under Definitions.	• DOE: Please clarify why the proposed formula is the reciprocal of the original formula			The revised formula reflects the correct computation of TLF, which is consistent with the actual implementation.	
		Where: TLF_i = Transmission loss factor applied at location "i" $\frac{\partial P_{loss}}{\partial P_i}$ = The incremental change in loss due to the incremental change of power at location "i".	Where: $TLF_{\text{~~i~~}\mathbf{j}}$ = ~~Transmission~~**refers to the transmission** loss factor applied at location "~~i~~**j**" $\frac{\partial P_{Loss}}{\partial P_{\text{~~i~~}\mathbf{j}}}$ = ~~The~~**refers to the** incremental change in loss due to the incremental change of power at location "~~i~~**j**"	For consist use of subscripts.	• TC: Propose to clarify: (a) if there are any discussions on how $\frac{\partial P_{Loss}}{\partial P_j}$ is computed; and (b) if this is simulation-based or if there is a close form equation to derive this.			This is not a simulation-based formula but is a close form derivation based on generally accepted concepts on the impact of change of power to the change in losses.	
		NEW	**4.10.3 Congestion cost shall reflect the restriction imposed on energy dispatches due to the thermal limitations of affected transmission equipment. When a market trading node is affected by one or more congestions in the system, specific congestion costs shall be measured for such market trading node based on its sensitivity relative to the constrained equipment multiplied by the price corresponding to the transmission constraint. The sensitivity shall be measured based on power flow, wherein a market trading node's injection/withdrawal is evaluated if it affects the**	For clarity.					

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			loading of the constrained equipment. **The congestion cost formula is as follows:** Congestion Cost = $\sum \left[\mu_o * a_{j,o}\right]$ **Where:** **$u_o$refers to the price corresponding to o^{th} transmission constraint** **$a_{j,o}$refers to the sensitivity factor relating the contribution of generation at location j to the energy flow related to constraint o**						
Relevant Market Timetable	5	5. Relevant Market Timetable xxx	~~5. Relevant Market Timetable~~ ~~xxx~~	Deletion of redundant and explanatory provisions				Adopted by the RCC	
Market Network Model	6	6. Market Network Model xxx	~~6. Market Network Model~~ ~~xxx~~	Deletion of redundant and explanatory provisions				Adopted by the RCC	
Market Trading Nodes	7	7. Market Trading Nodes xxx	~~7. Market Trading Nodes~~ ~~xxx~~	Deletion of redundant and explanatory provisions				Adopted by the RCC	
Reserve Categories	9	9. Reserve Categories Four reserve categories have been defined for co-optimization in the MDOM, consistent with WESM Rules clause 3.6.1.1. The reserve categories are as follows - Regulation Reserve (REG) - the ability to respond to small fluctuations in system frequency including but not limited to those caused by load or generation changes. This is also termed as "Load Following and Frequency Regulation." Contingency Reserve (CON) - the ability to respond to a significant decrease in system frequency including but not limited to a decrease in system frequency in an interconnected AC network as a result of a credible contingency affecting one (or more) generation companies within that network,	~~9.4.11Reserve Categories~~ **Reserves** **4.11.1 Reserve and energy dispatch schedules shall be determined in a co-optimized manner in the market dispatch optimization model.[21]** *(Footnote **21**: **WESM Rules clause 3.6**)* **4.11.2 The Market Operator, in consultation with the System Operator, shall determine an appropriate set of reserve categories to be traded in the spot market in conformance to the relevant provisions of the Grid Code.[22]** *(Footnote **22**: **WESM Rules clause 3.3.4.2**)* **4.11.3 The** ~~Four~~ reserve categories**shall correspond to**	Harmonize with WESM Rules clause 3.6, as amended.					Mr. Rosales commented that on the co-optimization, energy and reserve shall be both included. Mr. Cagnete stated that on the hierarchy of power supply for energy and reserve, it will depend on the CVC. She also explained that the regulating reserve is above energy, even if there is an existing load shedding it is still included in the co-optimization but the hierarchy is in the CVC. She further added that N-1 violation is higher than contingency in the said hierarchy. Atty. De Castro inquired if the concerns raised is contained in the manual being deliberated. After noting that the concerns are applicable in the CVC manual, the WDS-TWG noted Mr. Rosales concerns and will be addressed accordingly during the discussion of the proposed amendments to the CVC manual.

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		or transmission flows into that network. This is also termed as "Spinning Reserve." Dispatchable Reserve (DIS) - the ability to respond to a re-dispatch performed by the System Operator during a trading interval, on either a regular or an ad hoc basis. This is also termed as "Back-up Reserve." Interruptible Load (ILD) - the ability of a Customer to disconnect loads from the Grid within a very short notice in response to a frequency deviation or a request of the System Operator. Prior to the commencement of the spot market for ancillary services, procurement of reserves can be facilitated by the System Operator outside the market through competitive bidding or negotiated contracts. The procedures and related cost recovery mechanisms for reserve trading in WESM will be submitted to the Commission for approval in a separate and independent filing.	**mutually distinct responses to an increase or decrease in system frequency with different response timeframes. These shall be technology neutral to allow responses from any facility certified to be capable of providing the requisite response, and shall define responses for frequency regulation and contingency reserves,** ~~have been defined for co-optimization in the MDOM, consistent with WESM Rules clause 3.6.1.1. The reserve categories are as follows -~~ ~~Regulation Reserve (REG) - the ability to respond to small fluctuations in system frequency including but not limited to those caused by load or generation changes. This is also termed as "Load Following and Frequency Regulation."~~ ~~Contingency Reserve (CON) - the ability to respond to a significant decrease in system frequency including but not limited to a decrease in system frequency in an interconnected AC network as a result of a credible contingency affecting one (or more) generation companies within that network, or transmission flows into that network. This is also termed as "Spinning Reserve."~~ ~~Dispatchable Reserve (DIS) - the ability to respond to a re-dispatch performed by the System Operator during a trading interval, on either a regular or an ad hoc basis. This is also termed as "Back-up Reserve."~~ ~~Interruptible Load (ILD) - the ability of a Customer to disconnect loads from the Grid within a very short notice in response to a frequency deviation or a request of the System Operator.~~ ~~Prior to the commencement of the spot market for ancillary services, procurement of~~						

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			~~reserves can be facilitated by the System Operator outside the market through competitive bidding or negotiated contracts. The procedures and related cost recovery mechanisms for reserve trading in WESM will be submitted to the Commission for approval in a separate and independent filing.~~ **4.11.4 The Market Operator, in consultation with the System Operator, shall determine an appropriate set of reserve regions that will be used for the purpose of setting reserve requirements, and determining reserve prices and reserve cost recovery charges.[23]** *(Footnote 23: **WESM Rules clause 3.3.7.1**)* **4.11.5 The reserve regions shall initially consist of the Luzon, Visayas, and Mindanao grids.** **4.11.6 The reserve price for each reserve region and reserve category shall be determined as the shadow price on the relevant reserve requirement constraint in the dispatch optimization for that dispatch interval.[24]** *(Footnote 24: **WESM Rules clauses 3.6.1.4 and 3.10.7**)*		• TC: Propose to clarify if there is a procedure on how to revise/update this provision. Otherwise see proposed revision. • SNAP: 3.10.7 refers to Procedures for Ex-Post Nodal Energy Price (in 4.11.6)	• TC: 4.11.5 The *reserve regions* ~~shall initially~~ **currently** consist of the Luzon, Visayas, and Mindanao grids. • SNAP: ***DELETE 3.10.7*** *(Footnote **24**: **WESM Rules clauses 3.6.1.4 and ~~3.10.07~~3.10.10**)*	• TC: For clarity • SNAP: Reference should be attributed to 3.10.10 since it refers to the Determination of Zonal Reserve Price whilst 3.10.7 refers to Procedures for Ex-Post Nodal Energy Price which is already for deletion in alignment to provisions of ex-ante pricing under DOE DC 2015-10-0015	Retain PEMC proposal. Retain PEMC proposal. The old 3.10.10 (Determination of Reserve Price and Reserve Settlement Price) was re-numbered to 3.10.7 in the PEMB-Approved WESM Rules amendments. Please refer to RCC Resolution 2016-05, which was approved by the PEM Board as submitted.	
		NEW	**4.12 Application of WESM Prices** **4.12.1 In general, the nodal prices resulting from the real time dispatch market run as determined in Section 4.4.4, and, as applicable, Section 4.4.5, shall be used in the**	For clarity on the application of WESM prices.	• AP: The pricing reruns and the formula inside the new MMS should be properly audited, since the participants would not know how the formula worked inside the machines.			Yes, the NMMS will be audited prior to its deployment and this will also be covered during the annual market audits. The details of the automatic pricing re-run process are also provided in Section 5 of the proposed PDM Manual.	

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			calculation of settlement prices except if there are non-zero constraint violation variable values or pricing error notices: **a) If there are one or more non-zero constraint violation variable values, then automatic pricing re-run prices in accordance with Section 5.2 shall apply; and** **b) If there are pricing errors, prices from market pricing re-runs under Section 5.3 shall apply.** **4.12.2 If conditions for extreme price separation due to network congestion exist, prices as determined in Section 4.12.1 shall be replaced in accordance with Section 6.** **4.12.3 If conditions for price mitigation exist, prices as determined in Sections 4.12.1 and 4.12.2 shall be replaced in accordance with the methodology as approved by the ERC.** **4.12.4 Notwithstanding Sections 4.12.1, 4.12.2 and 4.12.3, if the dispatch interval is under market intervention or market suspension, administered prices as determined under Section 7 shall apply.**		• SNAP: (1) The market should be designed to provide economic signals for both suppliers and consumers. Putting in a catch all provision for price mitigation (despite the mitigating mechanisms already in place 4.12.1 4.12.2 & 14.12.4) without clear references for the conditions introduces unnecessary intervention. (2) The EPIRA states that PDM shall be approved by the ERC (Sec. 30, EPIRA). Accordingly, ERC approved both PDM and Administered PDM sometime in June 2006 upon application of DOE and PEMC. The APDM is a methodology for determining the administered price for settlement of energy transactions in the WESM in cases of intervention or market suspension of the WESM. Same section also limits intervention or market suspension "in cases of national and international security emergencies or	• DOE: 4.12.1 In general, the nodal prices resulting from the **real-time** dispatch market run as determined in Section 4.4.4, and, ~~as applicable~~, Section 4.4.5, **as applicable,** shall be used in the calculation of settlement prices, except if there are non-zero constraint violation variable values or pricing error notices: . ~~a)~~ **4.12.1.1** If there are one or more non-zero constraint violation variable values, then automatic pricing re-run prices in accordance with Section 5.2 shall apply; ~~and~~ . ~~b)~~ **4.12.1.2** If there are pricing errors, prices from market pricing re-runs under Section 5.3 shall apply. • SNAP: **DELETE** ~~**4.12.3 If conditions for price mitigation exist, prices as determined in Sections 4.12.1 and 4.12.2 shall be replaced in accordance with the methodology as approved by the ERC.**~~	• DOE: For clarity and re-numbering.	In reference to DOE's proposed rewording, revised the proposal, for clarity, as follows: **4.12.1 In general, the nodal prices resulting from the real time dispatch market run as determined in Section 4.4.4, and, as applicable, Section 4.4.5, shall be used as final nodal energy prices or reserve dispatch prices in the calculation of settlements prices except if there are non-zero constraint violation variable values or pricing error notices:** The price mitigating measure referred in section 4.12.3 is the Secondary Price Cap (SEC), which may be amended by the ERC from time to time. For clarity, insert footnote in section 4.12.3 (for subsequent changes in the footnote numbering): **4.12.3 If conditions for price mitigation exist, prices as determined in Sections 4.12.1 and 4.12.2 shall be replaced in accordance with the methodology as approved by the ERC[25].** ***(Footnote 25 ERC Resolution No.20, Series of 2014, dated 15 December 2014, entitled "A Resolution adopting and Establishing a Pre-emptive Mitigation Measure in the Wholesale Electricity Spot Market (WESM)", which may be amended from time to time.)***	

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					natural calamities". There is therefore no need to have the proposed provision 4.12.3 because of the said EPIRA limitations and an existing approved APDM. Otherwise, PEMC should properly petition ERC to amend the APDM. (3) suggest to provide a stronger market monitoring system (real-time) to prevent the need for market mitigation (e.g. Nov-Dec 2013). This approach will promote the right market behavior rather than regulating price which is historically happens long after the fact			This proposal includes the methodology for determining administered prices, which is also subject to ERC approval. In this regard, the APDM will be superseded upon ERC approval of the revised PDM. As recommended in the WESM Design Study and provided under the RCC-approved amendments to the WESM Rules on enhancements to WESM design and operations, the MO, in coordination with the SO and Trading Participants, shall develop a dispatch conformance standard. The said standard shall define the methodology that will be used to determine whether any centrally dispatched facility (generator or load) is not conforming to dispatch instructions, and ancillary services. Please refer to RCC Resolution 2016-05 (Clause 3.8.5, as amended), which was approved by the PEM Board as submitted. With respect to monitoring as regards ACB or market power abuse, this is a matter which should be referred to the ERC and the PCC	
Pricing Zones Reserve Pricing Zones	8	8. Pricing Zones 8.1. Reserve Pricing Zones The Market Operator shall group the market trading nodes into reserve pricing zones. Initially, the reserve pricing zones shall consist of three (3) separate zones, namely, Luzon grid, Visayas grid, and Mindanao grid. Whenever appropriate, this definition of reserve pricing zones may be modified or amended subject to further validation. 8.2.Customer Pricing Zones Originally, WESM Rules clause 3.2.3 provided that customer	~~8. Pricing Zones~~ ~~8.1. Reserve Pricing Zones~~ ~~The Market Operator shall group the market trading nodes into reserve pricing zones. Initially, the reserve pricing zones shall consist of three (3) separate zones, namely, Luzon grid, Visayas grid, and Mindanao grid. Whenever appropriate, this definition of reserve pricing zones may be modified or amended subject to further validation.~~ ~~8.2.Customer Pricing Zones~~ ~~Originally, WESM Rules clause 3.2.3 provided that customer~~	Already covered under proposed section 8.2.1 (c).					

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		market trading nodes may be grouped into customer pricing zones and all customers within a customer pricing zone shall pay the same price for electricity consumed within the zone at the same time interval. The WESM Rules were, however, amended such that nodal pricing shall be adopted for customers and customer zonal pricing shall become optional and not mandatory.	~~market trading nodes may be grouped into customer pricing zones and all customers within a customer pricing zone shall pay the same price for electricity consumed within the zone at the same time interval.~~ ~~The WESM Rules were, however, amended such that nodal pricing shall be adopted for customers and customer zonal pricing shall become optional and not mandatory.~~						
		NEW	**SECTION 5 MARKET PRICING RE-RUNS** **5. Scope** **5.1.1 This section provides the automatic pricing re-run, which shall be performed automatically by the market system software of the Market Operator should the market dispatch optimization model result in one or more non-zero constraint violation variable values.[26]** *(Footnote 26: **WESM Rules clauses 3.6.7**)* **5.1.2 This section also provides the market pricing re-run, which shall be performed by the Market Operator upon issuance of a pricing error notice, notwithstanding the application of an automatic pricing re-run.[27]** *(Footnote 27: **WESM Rules clause 3.10.5**)* **5.2 Automatic Pricing Re-run** **5.2.1 Automatic pricing reruns for market projections and real time dispatch shall ensure that the energy and reserve prices reflect the following:**	Consistent with the proposed WESM Rules clause 3.6.7. Note that violation and delta values are provided under the CVC Manual.	• AP: We would like to inquire on the value of delta.	• DOE: 5.2.1 Automatic pricing reruns for market projections and **real-time** dispatch shall ensure that the energy and reserve prices reflect the following: xxx	• DOE: To observe the correct use of hyphen	Delta values are specified in the CVC manual. Renumbering of footnotes resulting from the addition of footnote in section 4.12.3. Adopt DOE's revised wording. **5.2.1 Automatic pricing reruns for market projections and real-time dispatch shall ensure that the energy and reserve prices reflect the following:** **xxx**	

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			a. marginal costs of supplying energy at each node; b. marginal costs of supplying reserve; c. shortage pricing when there is a shortage of supply at a node or regional level, as determined in accordance with Section 5.4; and d. excess pricing when there is an excess of supply at a node or regional level, as determined in accordance with Section 5.4. 5.2.2 The automatic pricing re-run of the market dispatch optimization model shall determine the prices for energy and reserves with relaxed constraints and approximately the same dispatch schedules. 5.2.3 During the automatic pricing re-run, the soft constraint that was violated shall be relaxed corresponding to the resulting non-zero violation variable, including a very small value (delta) to allow the market dispatch optimization model to find a feasible price. 5.2.4 In case of over-generation and under-generation, the soft constraint shall be relaxed by a value (delta) to allow the market dispatch optimization model to find a feasible price. When the results of the market dispatch optimization model reflect a violation greater than delta, then the automatic pricing re-run shall reflect the shortage price for under-generation and excess pricing for over-generation. 5.2.5 The delta shall be set as little as possible for each CVC so that the automatic pricing re-run is reflective of		• TC: Propose to replace 'delta' with 'Δx'.	5.2.2 The automatic pricing re-run of the market dispatch optimization model shall determine the prices for energy and reserves with relaxed constraints and **shall have** approximately the same dispatch schedules. • TC: During the *automatic pricing re-run*, the soft *constraint* that was violated shall be relaxed corresponding to the resulting non-zero violation variable, including a very small value (~~delta~~ **Δx**) to allow the *market dispatch optimization model* to find a feasible price.	To be mandatory • TC: Clarification and enhancement	**5.2.2 The automatic pricing re-run of the market dispatch optimization model shall determine the prices for energy and reserves with relaxed constraints and shall have approximately the same dispatch schedules.** Retain original proposal.	

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<table>
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<tr><td></td><td></td><td></td><td><u>the most accurate price considering the original dispatch schedules.</u>

<u>5.2.6 The following table shows each type of constraints with their corresponding constraint relaxation formulas during pricing re-runs:</u></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td>
<table>
<tr><th>Soft Constraint</th><th>Violation</th><th>Constraint Relaxation during Pricing Re-Run</th><th>Re-run Price[2]</th></tr>
<tr><td>Thermal Base Case</td><td>x</td><td>x + delta</td><td>EDP AND RP</td></tr>
<tr><td>Transmission Group</td><td>x</td><td>x + delta</td><td>EDP AND RP</td></tr>
<tr><td>Self-scheduled Generation Constraint</td><td>x</td><td>x + delta</td><td>EDP AND RP</td></tr>
<tr><td>System Energy Balance</td><td>x</td><td>delta</td><td>Excess Price if Over-generation
Shortage Price if Under-generation</td></tr>
<tr><td>Nodal Value of Lost Load or Nodal Energy Balance</td><td>x</td><td>x + delta</td><td>EDP AND RP</td></tr>
<tr><td>Thermal Contingency</td><td>x</td><td>x + delta</td><td>EDP AND RP</td></tr>
<tr><td>Reserve Requirement</td><td>x</td><td>x + delta</td><td>EDP AND RP</td></tr>
</table>
<i>(Footnote <u>29</u>: <u>EDP refers to nodal energy dispatch price; and RP refers to reserve price</u>)</td><td></td><td>• TC: Propose to replace 'delta' with 'Δx'.</td><td></td><td>• TC: Clarification and enhancement</td><td>Retain original proposal.

Renumbering of footnote resulting from the addition of footnote in section 4.12.3.</td><td></td></tr>
<tr><td></td><td></td><td></td><td><u>5.2.7 The market projections and real time dispatch runs shall be reflective of prices determined from automatic pricing re-runs.</u></td><td>• To further detail WESM Rules clause 3.10.5
• Proposed methodology in setting scarcity and</td><td></td><td>• DOE:

5.2.7 The market projections and <u>real-time</u> dispatch <u>market</u> runs shall be reflective of prices determined from automatic pricing re-runs.</td><td>• DOE: For clarity</td><td>Adopt DOE revised wording. Further, revised Section 5.3.1 to clarify that RTD prices are not communicated according to the timeline due to erroneous input data.</td><td></td></tr>
</table>

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			5.3 Market Pricing Re-Run to address Pricing Errors **5.3.1 In the event where no real time dispatch prices can be determined or communicated as specified by the timetable or the calculated prices are believed to be in error due to erroneous, inconsistent, or inappropriate input data, notwithstanding the application of automatic pricing re-run, the Market Operator shall issue a pricing error notice and perform a market pricing re-run.[29]** *(Footnote 29: **WESM Rules clause 3.10.5**)* **5.3.2 The Market Operator shall perform the market pricing re-run using the same set of input data used in the original real time dispatch market run and the appropriate solution while taking into consideration the applicable solutions for the various causes of erroneous, inconsistent and inappropriate input data.** **5.4 Shortage and Excess Prices** **5.4.1 In the event of under-generation, the shortage price shall be determined as the offer price cap.** **5.4.2 In the event of over-generation, the excess price shall be determined as the offer price floor.**	excess pricing is based on the historical impact of congestion on market prices.	• TC: When performing market pricing re-run, the MO should not use the same set of input data noting that the original data is already erroneous. Suggest to revise the provisions to clearly differentiate which data will be used for the market pricing re-run and which data will be updated. • TC: Propose to consider defining 'shortage price' and 'excess price'. • AP: We would like to propose that the determination of the price cap (process) should already be included in this PDM. This is for more transparency of the process of determination.	Note: Used market runs as used in 4.12.1. 5.3.1 **Notwithstanding the application of automatic pricing re-run, the Market Operator shall issue a pricing error notice and perform a market pricing re-run,** in the event where: **a)** no real time dispatch prices can be determined or communicated as specified by the timetable; or **b)** the calculated prices are believed to be in error due to erroneous, inconsistent, or inappropriate input data; ~~**notwithstanding the application of automatic pricing re-run, the Market Operator shall issue a pricing error notice and perform a market pricing re-run.**~~ 5.3.2 The Market Operator shall perform the market pricing re-run using the same set of input data used in the original **real-time** dispatch market run and **in** the appropriate solution **while** taking into consideration the applicable solutions for the various causes of erroneous, inconsistent and inappropriate input data.		**5.2.7 The market projections and real-time dispatch market runs shall be reflective of prices determined from automatic pricing re-runs.** **5.3 Market Pricing Re-Run to address Pricing Errors** **5.3.1 Notwithstanding the application of automatic pricing re-run, the Market Operator shall issue a pricing error notice and perform a market pricing re-run, in the event where ~~no real time dispatch prices can be determined or communicated as specified by the timetable or~~ the calculated prices are believed to be in error due to erroneous, inconsistent, or inappropriate input data.[29]** *(Footnote 29: **WESM Rules clause 3.10.5**)* Renumbering of footnote resulting from the addition of footnote in section 4.12.3. On TC comment **5.3.2 The Market Operator shall perform the market pricing re-run using ~~appropriately revised inputs for the relevant dispatch market run.~~** The process for determining the offer price cap and floor is subject to the approval of the WESM Tripartite Committee (DOE, ERC, and PEMC).	On the Technical Committee's proposal to define the "shortage price" and "excess price", Atty. Lopez-Mateo opined that the text already provides its definition.
		NEW	**SECTION 6 PRICE SUBSTITUTION METHODOLOGY DUE TO CONGESTION** **6.1 Scope**	• Consolidate the provisions of the PSM Manual in the PDM, which will abolish the PSM Manual.		• DOE: 6.1.1 This section provides the price substitution methodology, which shall be implemented by the Market Operator~~,~~ to **in** address**ing** the undesirable market pricing situations that	• DOE: For clarity	Adopt DOE's rewording: **6.1.1 This section provides the price substitution methodology, which shall be implemented by the Market Operator in addressing the undesirable market pricing**	

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			6.1.1 This section provides the price substitution methodology, which shall be implemented by the Market Operator to address the undesirable market pricing situations that arise from the effects of network congestion in the power system, in particular, the occurrence of extreme nodal price separation.[30] ***(Footnote 30: WESM Rules clause 3.12.7)*** **6.2 Criteria for Determining Extreme Nodal Price Separation Arising Due To Network Congestion** **6.2.1 If a dispatch interval is reflective of extreme nodal price separation due to network congestion, then prices shall be substituted for the affected generators and customers.** **6.2.2 The following constraints shall not be considered as network congestion:** **a. Constraint indicated in the market run is caused by erroneous input data.** **b. Localized constraint, such as but not limited to, constraint on a radially-connected line or load-end transformer, which is the source of the load connected to it or of the step-up transformer in a generating plant.**	• Reflect current proposed changes to WESM Rules clause 3.12.7	• SNAP: there is no 3.12.7 in the WESM Rules copy as of 13 June 2016 (6.1.1) • AP: Is the PSM included in the new software? Will the determination of the value and the trigger be automatic as well (like the rerun)? Or will this be a separate calculation to be done by WESM?	arise from the effects of network congestion in the power system, ~~in particular,~~ **particularly during** the occurrence of extreme nodal price separation. 6.2 Criteria for Determining Extreme Nodal Price Separation ~~Arising~~ Due To Network Congestion 6.2.2 The following constraints shall not be considered as network congestion: a. Constraint indicated in the market run is caused by erroneous input data; **and** b. Localized constraint, such as but not limited to, constraint on a radially-connected line or load-end transformer, which is the source of the load connected to it or of the step-up transformer in a generating plant.		**situations that arise from the effects of network congestion in the power system, particularly during the occurrence of extreme nodal price separation.[30]** Renumbering of footnote resulting from the addition of footnote in section 4.12.3. The new clause 3.12.7 is included in the PEMB-Approved WESM Rules amendments. Please refer to RCC Resolution 2016-05, which as approved as submitted. Retain PEMC proposal. **6.2 Criteria for Determining Extreme Nodal Price Separation ~~Arising~~ Due To Network Congestion** **xxx** **6.2.2 The following constraints shall not be considered as network congestion:** **a. Constraint indicated in the market run is caused by erroneous input data; and** **b. Localized constraint, such as but not limited to, constraint on a radially-connected line or load-end transformer, which is the source of the load connected to it or of the step-up transformer in a generating plant.** Yes, PSM is part of the new MMS and the determination of the value and the trigger will be automatic. Yes, the PSM Manual will be repealed.	

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					We would just like to clarify whether the PSM Manual will be repealed by this manual? If so, kindly re-define the formula for constrained-on and unconstrained solution in this manual. If localized constraint is not considered, where will it be considered? Moreover, will a localized constraint event not affect the trigger factor formula?			Localized constraint does not result in spring washer effect, which is the main issue that PSM addresses. If the trigger factor is breached and there is no network congestion, but there is localized constraint, PSM is not triggered. Localized constraints will result in prices within the offer price cap and will be settled normally.	
			6.2.3 A dispatch interval shall be identified to be reflective of extreme nodal price separation through the use of a trigger factor, which is formulated as follows:		• SNAP: What is the rationale for the change in the formula of the trigger factor? For better appreciation, there should be a comparison of the existing formula and the proposed formula using actual WESM data.			The current trigger factor formulation is based on highest market clearing price (MCP) while the proposed formulation is based on weighted average price of all resources. This is to consider the integration of reserves into the WESM, wherein market results are based on a co-optimized solution. PEMC will be presenting its study on PSM.	
			$\text{Price Trigger Factor}_i = \frac{\sum_{j \in J}\left[EDS_{j,i} * (EDP_{j,i} - NWAP_i)^2\right]}{\sum_{j \in J}(EDS_{j,i})}}{NWAP_i}$			• PEMC: Please see revised Price Trigger Factor formula. Typographical error. $\text{Price Trigger Factor}_i = \frac{\sqrt{\frac{\sum_{j \in J}\left[EDS_{j,i} * (EDP_{j,i} - NWAP_i)^2\right]}{\sum_{j \in J}(EDS_{j,i})}}}{NWAP_i}$			
			Where: **J refers to the set of all resources** **$EDS_{j,i}$ refers to the energy dispatch schedule of resource j at dispatch interval i** **$EDP_{j,i}$ refers to the nodal energy dispatch price of resource j at dispatch interval i** **$NWAP_i$ refers to the weighted average price of all resources and computed as:** $NWAP_i = \frac{\sum_{j \in J}(EDP_{j,i} * EDS_{j,i})}{\sum_{j \in J}(EDS_{j,i})}$		• TC: Propose to provide the basis for the threshold, 1.40. • AP: There seem to be a disconnection between the proposed trigger factor of 1.4 and the proposed formula. The proposed formula uses the average difference between the NWAP and the EDP and then divided it by the NWAP. But then NWAP is the weighted average price. What is the basis of the proposed formula? At first glance, it is similar to variance/standard deviation formula, however divided by NWAP. Why not use the standard deviation formula	• TC: The price substitution methodology set forth in this section shall apply to a *dispatch interval* when the trigger factor reaches the threshold, **which is currently set at of** 1.40.	• TC: enhancement	Retain original proposal. PEMC will be presenting its study on PSM.	

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Annex A- Discussions on the Proposed Price Determination Methodology Manual

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Proposed Revised Wording in relation to Comment	Rationale for the Proposed Revised Wording	PEMC Response and RCC proposal	RCC Discussion
			6.2.4 The price substitution methodology set forth in this section shall apply to a dispatch interval when the trigger factor reaches the threshold of 1.40.		instead and adjust the trigger factor accordingly? Why is it that only resources are considered in the formula? How about loads? What if the difference is large from resource to load due to congestion? Comparing the current formula with the proposed- for no congestion event, the current formula will result to 1. While for the proposed formula, it will result to 0 value. The 1.4 and 1.2 may not be comparable. How did we ensure that 1.4 is the correct benchmark then? • AP: Considering the proposed formula to compare with the trigger factor, the 1.2 is not comparable to the 1.4 Was the proposed trigger factor of 1.4 calculated using the proposed new formula? Moreover, we would like to clarify if the formula will be calculated using both Luzon and Visayas grids. As we know, the Visayas grid is more radial compared to Luzon, and may not experience congestion. The inclusion of both grids will further decrease the value of proposed formula. We would also like to clarify whether the secondary price caps were included in coming up with the proposed trigger factor. The secondary price cap should be ignored in this case if the reference is historical data of congestion.			The application of the PSM shall be on a system basis, with exceptions when the Luzon and Visayas Grids are not electrically connected. No. The trigger factor will be determined based on original prices.	
		NEW	**6.3 Price Substitution Methodology for Generator Energy Prices**	• Ensure price certainty, near real-time				In relation to AP's earlier comment in section 6.2, revised section 6.3.2 for clarity.	

*Agreements during the RCC meeting and PEMC's reponse to the comments received are inked in **red.***

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Title	Section	Provision	Proposed Amendment	Rationale	Comments	Proposed Revised Wording in relation to Comment	Rationale for the Proposed Revised Wording	PEMC Response and RCC proposal	RCC Discussion
			6.3.1 An unconstrained solution shall be used for determining the generator energy prices. 6.3.2 Constrained-on generators shall be paid at their offer price, while all the other generating units shall be paid at the unconstrained solution's marginal price. 6.4 Price Substitution Methodology for Customer Energy Prices 6.4.1 All loads shall have the same price and shall be calculated as follows:					6.3.2 Constrained-on generators shall be paid at their offer price corresponding to their last MW offer block that was scheduled. 6.3.3 All other generators shall be paid at the unconstrained solution's marginal price.	
			$SEDP_{b,i} = \frac{\sum_{k \in K}\left(SEDP_{k,i} * EDS_{k,i}\right)}{\sum_{b \in B}\left(EDS_{b,i}\right)}$					Adopted by the RCC	
		NEW	Where: $SEDP_{b,i}$ refers to the substitute nodal energy dispatch price for of customer b in the affected pricing region atat dispatch interval i $SEDP_{k,i}$ refers to the substitute nodal energy dispatch price of generator k at dispatch interval i $EDS_{k,i}$ refers to the energy dispatch schedule of generator k in the constrained solution at dispatch interval i $EDS_{b,i}$ refers to the energy dispatch schedule of customer b at dispatch interval i 6.4.2 In cases where the HVDC is on outage or there is no interconnection between the Luzon, Visayas, and Mindanao regions, Section 6.4.1 will apply only to the region/s with congestion.	Ensure price certainly, near real-time and mitigate impact of congestion to the congestion affected region/s.	• AP: We would like to clarify the intent of this provision (6.4.2) that if the congestion only occurs in Luzon, does it mean that Visayas will also be under PSM?			Adopted by the RCC Yes, except for cases that both regions are electrically disconnected. It has been observed that congestion in one region could result in congestion costs in the other region even if the HVDC is binding. Refer to presentation on PSM.	

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Title	Section	Provision	Proposed Amendment	Rationale	Comments	Proposed Revised Wording in relation to Comment	Rationale for the Proposed Revised Wording	PEMC Response and RCC proposal	RCC Discussion
			6.5 Price Substitution Methodology for Reserve Prices **6.5.1 Aside from normalizing the energy prices due to the congestion, the price substitution methodology shall also consider the impact of the extreme nodal price separation on the resulting reserve prices.** **6.5.2 In cases where price substitution methodology is applied, the reserve price for a certain reserve category in a reserve region shall be calculated as the sum of the constrained solution's marginal reserve offer price and the opportunity cost calculated based on the unconstrained solution. It shall be calculated as follows:**		Will the generators know at the onset that the interval will be under PSM? Also, we would like to inquire whether the HVDC flow will still be scheduled before the run or will it already follow the economic schedule as per the MMS? • SNAP: (on 6.5.2) There would be a case where the constrained solution would have opportunity costs but that opportunity cost may not be present in the unconstrained solution. In this case, the generator who is forced to provide reserve to minimize constraint violations (by virtue of co-optimization) is deprived of the revenue the generator is supposed to get in the energy market. The generator should be made whole. (e.g. BPPC issue on RTD/RTX in 2012)			No, TPs shall be informed after the relevant dispatch interval. HVDC is similar to any equipment, such as a line or transformer. Therefore, the HVDC flow is a result of the optimization process. This is for further testing.	
			$SRP_{j,r,a,i} = MROP_{CONS\text{-}r,a,i} + OppCost_{UNCD\text{-}r,a,i}$						
			Where: **$SRP_{j,r,a,i}$ refers to the substitute reserve price of reserve category r in reserve region a for dispatch interval i** **$MROP_{CONS\text{-}r,a,i}$ refers to the marginal reserve offer price in reserve category r in reserve region a for dispatch interval i during the constrained solution** **$OppCost_{UNCD\text{-}r,a,i}$ refers to the opportunity cost based on the unconstrained solution in reserve category r in reserve region a for dispatch interval i**					Adopted by the RCC	

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Appendix A – Customer Satisfaction Rating

Meter Service Provider Customer Satisfaction Rating Sheet: NGCP-Metering Services		LEVELS OF SATISFACTION			
		Below 90%	Above 90%	Above 95%	Above 99%
A. Corporate Image: Does the MSP's Company/Employee maintain good representation at all times?	Wearing ID at all times				
	Tidy and neat appearance/attire of personnel				
	General appearance of service vehicle				
	Upkeep of tools and equipment				
B. Punctuality/Responsiveness: Does the MSP arrive/act on time?	Emergency breakdown				
	On time during appointment/meeting				
Does the MSP submit report/s on time?	Metering Information Registration Form				
	Notice of Metering Installation Changes				
	Metering Equipment Test/Calibration Report/s				
Does the MSP submit approved documents for new metering installations?	*if applicable*				
Does the MSP notify for periodic metering equipment testing?	*Instrument Transformers – every 5 years*				
	Grid Revenue Meter - annually				
C. Safety: Does the MSP observe safety at all times?	Wearing safety helmet				
	Wearing safety shoes				
	Wearing gloves when needed				
	Secure clearance during metering activities				
D. Behavioral/ General Impression Does the MSP conduct themselves in a professional manner?	Courteous				
	Accommodating				
	Knowledgeable/Competent				
Does the MSP regularly perform the PGC prescribed meter and instrument transformer testing?					
E. Remarks (suggestions, recommendations, improvements, etc.)					

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