



**Philippine Electricity
Market Corporation**

NOV 1 2017

OF THE PRESIDENT

**WHOLESALE ELECTRICITY SPOT MARKET
RULES CHANGE COMMITTEE**

NOV 16 2017

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RESOLUTION NO. 2017-10

**Proposed Amendments to the WESM Rules and Various WESM Manuals
regarding Metering Standards and Procedures and Metering Point Location**

WHEREAS, the Proposal for the Amendment of the WESM Rules and Various WESM Manuals regarding Metering Standards and Procedures is a consolidation of four (4) separate proposals received by the Rules Change Committee (RCC) from various proponents;

WHEREAS, the said proposals were duly deliberated by the RCC, with the course of action taken by the RCC from the receipt of the proposal up to approval, herein outlined as follows:

- a) *Proposed Amendments to the WESM Rules and WESM Manual on Metering Standards and Procedures relative to Back-up Meters and Audit Findings*

The proposal is a consolidation of proposed amendments submitted by the Technical Committee and the Philippine Electricity Market Corporation (PEMC) in June and July 2014, respectively. After due deliberation, the Rules Change Committee (RCC) eventually approved these proposals, as revised, for endorsement to the PEM Board through RCC Resolution No. 2014-18 dated 01 October 2014.

The proposal aims to address possible instances when main revenue meters fail, and enhance documentation and metering processes to address Market Operator audit findings.

The PEM Board remanded the proposal to the RCC with the instruction to address the following recommendations/issues:

1. that pertinent provisions relating to RCOA such as "distribution revenue meter" (e.g. Section 2.4.2) be deleted if the Proposal intends to be applicable only to the WESM;
2. whether or not it is mandatory to have a backup meter for all WESM participants; and
3. the cost impact of the metering equipment required by the Proposal (i.e., *who shall bear the cost, etc.*)

The RCC again discussed and revised the proposal during its 95th and 96th meetings on 03 December 2014 and 14 January 2015, so as to make the same applicable solely to the wholesale level, including the mandatory installation of back-up meters. However, no consensus was made to address the issue on who should bear the cost of installing back-

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up meters. The body ultimately decided to defer re-submitting the proposal to the PEM Board to await the findings of the 2nd Metering Audit, which was on-going at that time, to consider audit recommendations regarding back-up meters.

With the conclusion of the 2nd Metering Audit in March 2016, and considering that its findings have no relevant impact to the subject proposal, the RCC discussed the proposal anew during its 113th Meeting on 27 April 2016. The body agreed to have the proposal, as revised, published in the market information website to seek further comments from WESM Members and stakeholders.

The RCC re-deliberated on the proposal during its 117th Meeting on 03 August 2016 considering the comments received from the Technical Committee, NGCP and MERALCO. The body agreed to retain its original proposal to make the installation of back-up meters in WESM metering points mandatory, including those serving Feed-In-Tariff generators. The RCC also agreed to propose having the costs for the installation shouldered by the Metering Services Provider (i.e., NGCP) since there is already a cost recovery mechanism in place such that seeking the approval of the ERC for additional capital expenditure will not be necessary.

The proposed changes to the WESM Rules and WESM Manual on Metering Standards and Procedures were adopted on 07 December 2016 during the RCC's 122nd Meeting. It was agreed that the same shall be submitted to the PEM Board together with other proposals to amend the WESM Metering Manual.

b) Proposed Amendments to the WESM Manual on Metering Standards and Procedures relative to Metering Service Provider (MSP) Performance Rating

During the 112th RCC Meeting on 30 March 2016, PEMC presented its proposed amendments to Section 10 of the WESM Manual on Metering Standards and Procedures, which aim to add new categories for the new MSP rating computation. This proposal emanated from discussions between PEMC and the NGCP which resulted to the recommendation to adjust the percentage weights of the different performance factors in order to follow the requirements of the Philippine Grid Code on the accuracy of monthly meter data and testing of metering installation.

The proposal was then approved by the RCC for publication in the market information website to seek comments from Market Participants.

Following a 30-working day commenting period from 01 April to 16 May 2016, comments received from the Technical Committee and MERALCO were considered in the initial deliberation of the proposal during the 115th RCC Meeting on 01 June 2016. Upon its request, the NGCP was granted a two-week extension to submit its comments to the proposal.

During the RCC's 117th Meeting on 03 August 2016 when the body resumed the deliberation of the proposal, an RCC Sub-committee was created composed of an independent member and three sector representatives from the RCC, as well as the representatives from the NGCP and PEMC-MO to work out the details of the changes to

the percentage weights and performance factors. The results of said RCC Sub-committee meeting was considered by the RCC during the continuation of the deliberations during its 118th and 119th regular meetings held on 07 September and 05 October 2016, respectively, as regards the appropriate formula and criteria to be used to assess the performance of the MSP.

The RCC approved the proposal, as revised, for endorsement to the PEM Board. The proposal's submission to the PEM Board was deferred subject to the finalization of other proposed amendments to the same Manual relative to back-up meters and WESM design enhancements.

c) *Proposed Amendments to the WESM Manual on Metering Standards and Procedures on the Implementation of WESM Design Enhancements*

During the RCC's 122nd Meeting on 07 December 2016, PEMC presented the Proposed Amendments to the WESM Manual on Metering Standards and Procedures, among other Rules and Manuals, for the Implementation of Enhancements to WESM Design and Operations¹.

With the approval of the changes to the WESM Rules regarding enhancements to WESM design and operations as embodied under DOE Department Circular Nos. 2015-10-0015 and 2016-10-0014 dated 23 October 2015 and 14 October 2016 respectively, the proposed revisions intend to:

- (i) revise the capability of the mass memory of meters from recording 15-minute demand interval to 5-minute demand interval;
- (ii) require load profiles to be submitted by the Trading Participant upon registration of metering installation to include 5-minute data;
- (iii) revise the resolution of meter data submitted by MSPs to the Market Operator from fifteen (15) minutes to five (5) minutes;
- (iv) revise the resolution of meter data used by the Market Operator for data validation, estimation and editing from fifteen (15) minutes to five (5) minutes; and
- (v) revise the calculation of site-specific loss adjustment to consider 5-minute meter data.

Following the RCC's initial review, the proposal was published in the market information website on 21 December 2016 to solicit comments from Market Participants and stakeholders, giving them until 06 February 2017, 30-working days from the date of

¹ ORCP-WR-RR-WM-16-26 – *Proposed Amendments to the WESM and Retail Rules and Manuals for the Implementation of Enhancements to WESM Design and Operations*

- (a) WESM Rules, as amended by DOE DC 2016-10-0014;
- (b) Dispatch Protocol Manual, Issue 12, as approved by the PEM Board on 29 November 2016;
- (c) WESM Manual on Billing and Settlements, Issue 4;
- (d) WESM Manual on Load Forecasting Methodology, Issue 2;
- (e) WESM Manual on Metering Standards and Procedures, Issue 10
- (f) Retail Rules, as approved by DOE DC 2013-01-0002
- (g) Retail Manual on Metering Standards and Procedures, Issue 2

publication, to submit comments. Upon the request of Market Participants, the deadline for the submission of comments was extended until 08 February 2017², after which comments were received from the DOE, MERALCO and Aboitiz Power Corporation.

Deliberations on the proposal were held during the 126th and 129th through 132nd RCC meetings held on 02 March, 19 May, 09 June, 07 July and 10 August 2017, wherein the body considered the comments received and PEMC's responses to the same, specifically regarding the required submissions to the Market Operator and on the revised formula for the calculation of site-specific loss factor and adjustment. The RCC agreed to include in the Manual a sample calculation of site-specific loss adjustment using actual 5-minute meter data in view of the shorter dispatch interval.

As with the agreement on the proposed amendments to the Retail Manual on Metering Standards and Procedures, the RCC agreed to likewise recommend that transitory arrangements be included in the Department Circular to be promulgated by the DOE, stating that MSPs may submit 5-minute interval meter data by dividing the current 15-minute interval meter data by three (3), until such time that MSPs are able to upgrade their meters to comply with the 5-minute interval meter data requirement.

The body adopted the proposal as revised for clarity, clerical corrections and the inclusion of sample calculations for the 5-minute dispatch interval environment.

d) Proposed Amendments to the WESM Rules and Various WESM Manuals regarding Metering Point Location

The proposal aims to clarify the location of metering points in the WESM and improve the accounting of losses in the transmission system. The proposal specifically called for the following:

- (i) indicate that Trading Participants' metering points should be located at their connection points instead of at associated market trading nodes;
- (ii) provide that corresponding adjustments shall take into account losses up to the connection point only;
- (iii) provide that Metering Service Providers shall perform the adjustment on the metered quantities and submit the same to the Market Operator for use during settlement; and
- (iv) provide that market trading nodes shall be classified into either *scheduling nodes*, which would be associated with remote telemetering facilities, and *settlement nodes*, which would represent connection points and have associated revenue metering.

² Upon the request of Market Participants, the PEMC-MO conducted two (2) forums on 03 February 2017 for Customers and Generators, respectively, to provide them with an overview and better appreciation of the proposed amendments. Following the forums, Market Participants were given an extension until 08 February 2017 within which to submit their respective comments.

Aside from the WESM Rules, the WESM Manuals proposed to be amended were:

- (i) Metering Standards and Procedures Issue 11.0;
- (ii) Market Network Model Development and Maintenance – Criteria and Procedures Issue 3.0; and
- (iii) Registration, Suspension and De-registration Criteria and Procedures Issue 3.0

The proposal was presented to the RCC by PEMC, the proponent, on 07 July 2017 and, upon the body's initial discussion, was approved for publication in the market information website for comments of Market Participants and stakeholders. The period of submission of comments was set until 24 August 2017, 30 working days from the date of publication.

The RCC proceeded to deliberate on the proposal during its 133rd Meeting on 14 September 2017, giving due consideration to the comments received from the DOE and MERALCO and the responses of the proponent to said comments. The RCC agreed to convene a Sub-committee meeting to address the issues raised by the DOE, MERALCO, NGCP and the Billing, Settlement and Metering Department of PEMC.

The RCC Sub-committee Meeting, held on 22 September 2017, was attended by representatives from the RCC, the DOE, PEMC, NGCP-MSP and MERALCO. The Sub-Committee recommended the following changes to the original proposal:

Original Proposal	Revised Proposal by RCC Sub-committee	Rationale
<p>Indicate that Trading Participants' <i>metering points</i> should be located at their <i>connection points</i> instead of at associated <i>market trading nodes</i> (MTN).</p>	<ul style="list-style-type: none"> • Retain the current provision stating that <i>metering points</i> should be located at the MTNs. • Re-define the term MTN to disassociate it with the location of remote telemetering facilities used in determining dispatch schedules. MTNs shall hence only refer to a designated point in the market network model from where settlement will be determined (i.e., location of revenue meters) and likewise represent the connection point. 	<ul style="list-style-type: none"> • The current provision is more consistent with the DOE's policy (i.e. DC2016-05-0007) on the appropriate location of metering points and MTNs, which is that both should be co-located. Likewise, per the DOE's directive, MSPs must relocate their revenue meters if these are not currently at the MTN. • Disassociating MTNs from the location of remote telemetering facilities would consider cases where a Trading Participant must be scheduled at a different location other than in the connection point. The location of remote telemetering facilities

Original Proposal	Revised Proposal by RCC Sub-committee	Rationale
		shall instead be modelled as <i>scheduling points</i> in the market network model (see below).
Classify market trading nodes as either <i>scheduling node</i> to be associated with a remote telemetering facility (used for scheduling), or <i>settlement node</i> to be associated with a connection point (used for settlement)	Change the proposed new term <i>scheduling node</i> into <i>scheduling point</i> defined as a point in the market network model associated with remote telemetering facilities where dispatch schedules will be determined.	Introducing the term <i>settlement node</i> as a classification of <i>market trading node</i> might cause confusion since MTN is internationally understood to represent a point in the system where settlement and price are determined. The term <i>scheduling point</i> would be a better term referring to a point in the market network model associated with the location of remote telemetering facilities used in forecasting and scheduling.
Provide that corresponding adjustments shall take into account losses up to the connection point only	Retain the current provision stating that site-specific loss adjustments shall be applied to the meter data if the metering points and the market trading nodes are not co-located	To be consistent with retaining the provision stating that metering points should be located at the MTNs, SSLA shall be applied to account for losses up to the MTN as currently done.
Metering Service Providers shall perform the adjustment on the metered quantities and submit the same to the Market Operator to be used in settlement	Retain the task of applying SSLA with the Market Operator	Retain the task with the Market Operator, but MSPs shall also be coordinated with in addition to Trading Participants and Network Service Providers in determining appropriate adjustments to account for losses

On 06 October 2017 during the RCC's 134th Meeting, the Sub-committee presented to the RCC the revisions made to the original proposal. The RCC, following due deliberation, subsequently adopted and approved the proposed amendments for endorsement to the PEM Board.

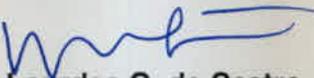
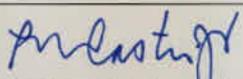
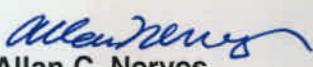
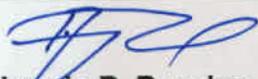
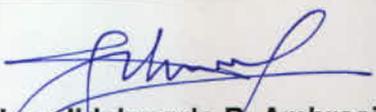
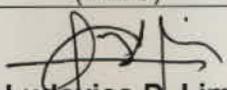
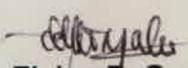
WHEREAS, there being no further matter for deliberation, the RCC approved the consolidated proposals, as revised, for endorsement to the PEM Board on 06 October 2017 during its 134th Meeting;

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

RESOLVED, that the Proposed Amendments to the WESM Rules and Various WESM Manuals regarding Metering Standards and Procedures are hereby approved by the RCC;

RESOLVED FURTHER, that the attached Annexes A to D of the Proposed Amendments to the WESM Rules and Various WESM Manuals regarding Metering Standards and Procedures are hereby endorsed to the PEM Board for approval and endorsement to the DOE.

Done this 10 November 2017, Pasig City.

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

Proposed Amendments to WESM Rules on Metering and Location of Metering Point

Title	Section	Original Clause	Proposed Amendments	Rationale
Generation Company	2.3.1.9 (new)	(blank)	<u>A Generation Company shall register each of its connection points with the Market Operator.</u>	The proposed change in the location of the metering point to the connection point of a trading participant would require the identification of connection points during registration.
Customer	2.3.2.4 (new)	(blank)	<u>A Customer shall register each of its connection points with the Market Operator. For contestable customers, there shall be one registration for each certificate of contestability from ERC.</u>	The proposed change in the location of the metering point to the connection point of a trading participant would require the identification of connection points during registration.
Market Trading Nodes	3.2.2.1	A market trading node is a designated point in the market network model where energy is bought or sold based on the dispatch schedules and prices determined by the Market Dispatch Optimization Model.	A <i>market trading node</i> is a designated point in the <i>market network model</i> where <i>energy</i> is bought or sold based on the dispatch schedules and prices determined by the <i>Market Dispatch Optimization Model</i> .	It is proposed that the settlement quantities and prices of trading participants be determined at their connection points. Since some cases require that a participant be scheduled in a different location (e.g., generator at its plant, modelled DU at withdrawal points within its system), the “market trading node” is proposed to refer to the

Title	Section	Original Clause	Proposed Amendments	Rationale
				connection point of the trading participant where it is also settled in the WESM.
Market Trading Nodes	3.2.2.2	Each market trading node defined under clause 3.2.2.1 shall: (a) Be assigned to a Trading Participant that intends to buy or sell energy and is capable of complying with the dispatch and settlement requirements in the WESM; (b) Be associated with a revenue metering and remote telemetering facilities capable of measuring all relevant incoming and outgoing energy deliveries for the purpose of dispatch and settlement in the WESM; and (c) As much as possible, represent the connection point between the Network Service Provider and the Trading Participant.	Each <i>market trading node</i> defined under clause 3.2.2.1 shall: (a) Be assigned to a <i>Trading Participant</i> that intends to buy or sell <i>energy</i> and is capable of complying with the dispatch and settlement requirements in the WESM; (b) Be associated with a revenue metering and remote telemetering facilities capable of measuring all relevant incoming and outgoing energy deliveries for the purpose of dispatch and settlement in the WESM; and (c) As much as possible, represent the <i>connection point</i> between the <i>Network Service Provider</i> and the <i>Trading Participant</i> .	It is proposed that the settlement quantities and prices of trading participants be determined at their connection points. Since some cases require that a participant be scheduled in a different location (e.g., generator at its plant, modelled DU at withdrawal points within its system), the “market trading node” is proposed to refer to the connection point of the trading participant where it is also settled in the WESM.
Market Trading Nodes	3.2.2.3	If the connection point of the Trading Participant could not be represented in the market network model or if a particular market trading node must be assigned to more than one Trading Participant because the conditions set	<u>A scheduling point is a designated point in the market network model where dispatch schedules are determined by the Market Dispatch Optimization Model. The scheduling</u>	Some cases require that a participant be scheduled at a location other than its connection points (e.g., generator at its plant, modelled DU at withdrawal

Title	Section	Original Clause	Proposed Amendments	Rationale
		<p>in Clause 3.2.2.2 are not met, the affected Trading Participants, the Metering Services Provider and the Network Service Provider will mutually agree on adjustments that will be implemented by the Market Operator and the System operator.</p>	<p><u>point of a generating unit shall be at the location of its remote telemetering facility. The scheduling points of a customer shall be at its connection points; however, if the system of a customer is included in the market network model, the scheduling points of the customer shall be at the withdrawal points within its system.</u></p> <p>If the connection point of the Trading Participant could not be represented in the market network model or if a particular market trading node must be assigned to more than one Trading Participant because the conditions set in Clause 3.2.2.2 are not met, the affected Trading Participants, the Metering Services Provider and the Network Service Provider will mutually agree on adjustments that will be implemented by the Market Operator and the System operator.</p> <p>If the connection point of the Trading Participant could not be represented in the market network model or if a particular market trading node must be assigned to more than one Trading Participant because the conditions set in Clause 3.2.2.2 are not met, the affected Trading Participants, the Metering</p>	<p>points within its system). These points are proposed to be referred to as “scheduling points”. For a customer, its scheduling point and market trading node would both correspond to its connection point.</p>

Title	Section	Original Clause	Proposed Amendments	Rationale
			Services Provider and the Network Service Provider will mutually agree on adjustments that will be implemented by the Market Operator and the System operator.	
Market Trading Nodes	3.2.2.5	The Market Operator shall maintain, publish, and continuously update a register of market trading nodes, defined in accordance with clause 3.2.2.1 so as to accurately reflect changes in the market network model and the WESM member responsible for each market trading node.	The <i>Market Operator</i> shall maintain, publish, and continuously update a register of <i>market trading nodes</i> <u>and scheduling points</u> , defined in accordance with clause 3.2.2.1 <u>and clause 3.2.2.3</u> so as to accurately reflect changes in the market network model and the <i>WESM member</i> responsible for each <i>market trading node</i> <u>and scheduling point</u> .	It is proposed that the list of scheduling points also be published for transparency.
Customer Pricing Zones	3.2.3.4	The Market Operator shall, in consultation with WESM Participants, continuously review the procedures for determining the market network model, market trading nodes, and customer pricing zones set out in this chapter 3 and, to the extent the Market Operator considers it to be reasonably necessary to promote the WESM objectives, the Market Operator may recommend changes to these procedures in accordance with the rule change process set out in chapter 8.	The <i>Market Operator</i> shall, in consultation with <i>WESM Participants</i> , continuously review the procedures for determining the <i>market network model</i> , <i>market trading nodes</i> , <u>scheduling points</u> , and <i>customer pricing zones</i> set out in this chapter 3 and, to the extent the <i>Market Operator</i> considers it to be reasonably necessary to promote the <i>WESM</i> objectives, the <i>Market Operator</i> may recommend changes to these procedures in accordance with the rule change process set out in chapter 8.	It is proposed that scheduling points also be included in the review to ensure efficiency.

Title	Section	Original Clause	Proposed Amendments	Rationale
Load Forecasting	3.5.4	All load forecasts at each Customer market trading node in the market network model shall be specified in units of megawatt (MW) and will apply to the end of the relevant dispatch interval unless otherwise stated.	All <i>load forecasts</i> at each <i>Customer market trading scheduling point</i> in the <i>market network model</i> shall be specified in units of megawatt (MW) and will apply to the end of the relevant <i>dispatch interval</i> unless otherwise stated.	With the proposal, forecasts will be made on scheduling points.
Load Forecasting	3.5.4.1	XXX If the Customer fails to submit a forecast of his load facilities in accordance with the timetable, the forecast prepared by the Market Operator at the node where the Customer is located shall be used.	XXX If the <i>Customer</i> fails to submit a forecast of his load facilities in accordance with the timetable, the forecast prepared by the <i>Market Operator</i> at the <i>scheduling point</i> where the <i>Customer</i> is located shall be used.	With the proposal, forecasts will be made on scheduling points.
MARKET DISPATCH OPTIMIZATION MODEL – Model Definition	3.6.1.4(c)	Energy balance equations for each node in the market network model ensuring that the net load forecast for the end of the dispatch interval at each market trading node as determined by the Market Operator is met;	Energy balance equations for each node in the market network model ensuring that the net load forecast for the end of the <i>dispatch interval</i> at each <i>scheduling point</i> as determined by the <i>Market Operator</i> is met;	With the proposal, schedules will be determined at scheduling points instead of market trading nodes where settlement is performed.
MARKET PROJECTIONS – Published Information	3.7.5.1(a)	The assumed net load forecast at each market network node, plus required reserves for each reserve region;	The assumed <i>net load forecast</i> at each <i>scheduling point</i> , plus required reserves for each <i>reserve region</i> ;	With the proposal, forecasts will be made on scheduling points.
MARKET PROJECTIONS –	3.7.5.1(d)	Projected aggregate dispatch of scheduled generating units, must	Projected aggregate dispatch of <i>scheduled generating units</i> , must	With the proposal, schedules will be determined at

Title	Section	Original Clause	Proposed Amendments	Rationale
Published Information		dispatch generating units, priority dispatch generating units, non-scheduled generating units, and scheduled load at each market network node;	<i>dispatch generating units, priority dispatch generating units, non-scheduled generating units, and scheduled load at each <u>scheduling point</u>;</i>	scheduling points instead of market trading nodes where settlement is performed.
SCHEDULING AND DISPATCH IMPLEMENTATION – Responsibilities of the Market Operator	3.8.1(b)	Prepare a forecast of the unrestrained net load expected at each market trading node for the end of that dispatch interval;	Prepare a forecast of the <i>unrestrained net load</i> expected at each market trading node <u>scheduling point</u> for the end of that <i>dispatch interval</i> ;	With the proposal, forecasts will be made on scheduling points.
Market Operator Advice on Nodal Loss of Load	3.9.2(b)	dispatch optimization performed under Clause 3.8, indicates that nodal loads are expected to be reduced by the presence of non-zero nodal energy constraint violation variables or nodal energy dispatch prices which are expected to be equal to, or exceed, nodal value of lost load at any Customer market trading node in the market network model, then the Market Operator shall immediately inform the System Operator of the presence of nodal loss of load.	<i>dispatch optimization</i> performed under Clause 3.8, indicates that nodal loads are expected to be reduced by the presence of non-zero nodal <i>energy constraint</i> violation variables or <i>nodal energy dispatch prices</i> which are expected to be equal to, or exceed, <u>the nodal value of lost load</u> at any Customer <u>scheduling point</u> in the <i>market network model</i> , then the <i>Market Operator</i> shall immediately inform the <i>System Operator</i> of the presence of nodal loss of load.	Since schedules are determined at the scheduling points, scheduled loss of load would also be reflected on those points.
Defining the Gross Energy Settlement Quantity for Market Trading Nodes	3.13.6(e) (new)	(blank)	<u>If a market trading node is associated with a single revenue meter and is shared by multiple generating units, the gross energy settlement quantity for each generating unit at that</u>	It has been observed that there are some generating units that share a connection point. Since generating units are settled on a per-unit

Title	Section	Original Clause	Proposed Amendments	Rationale
			<u><i>market trading node shall be the net metered flow into the power system operated by the System operator through the associated meter of the market trading node pro-rated to each generating unit based on the measurements of the remote telemetering facility of each generating unit at the end of the dispatch interval. For purposes of settlement, each generating unit shall be considered to have individual market trading nodes at the shared market trading node.</i></u>	basis, this amendment is proposed to provide basis in allocating metered quantities to the generating units sharing connection points.
Determining the Energy Trading Amount	3.13.7.1	For settlement purposes, the energy trading amount for each market trading node and settlement interval will be determined as the aggregate of the: (a) Final nodal energy dispatch prices multiplied by the gross energy settlement quantity (in MWh); less (b) Reference final nodal energy dispatch price multiplied by the corresponding bilateral contract quantity (in MWh) as determined under Clause 3.13.1.1 for that node in all dispatch intervals within that	For <i>settlement</i> purposes, the <i>energy trading amount</i> for each <u>trading participant</u> and <i>settlement interval</i> will be determined as the aggregate <u>in all dispatch intervals within that settlement interval</u> of the: (a) <u>Sum of the product of the final nodal energy dispatch prices multiplied by—and the gross energy settlement quantity (in MWh) of all market trading nodes of the trading participant,</u> less (b) Reference final <i>nodal energy dispatch price</i> multiplied by the	Clarify that quantities and prices that would be used for settlement are those that are determined at market trading nodes.

Title	Section	Original Clause	Proposed Amendments	Rationale
		settlement interval.	corresponding <i>bilateral contract</i> quantity (in MWh) as determined under Clause 3.13.1.1 for that node in all dispatch intervals within that settlement interval of <u>all bilateral contract declarations associated with the trading participant.</u>	
Settlement Amounts for Trading Participants	3.13.11.2(a)	the energy trading amounts for each market trading node for which that Trading Participant is responsible calculated in accordance with Clause 3.13.7 (which may be positive or negative for any Trading Participant); plus	the <i>energy trading amounts</i> for each market trading node for which that Trading Participant is responsible calculated in accordance with Clause 3.13.7 (which may be positive or negative for any <i>Trading Participant</i>); plus	Calculation of energy trading amounts in Clause 3.13.7 is already per Trading Participant and not per market trading node
Rights of Access to Metering Data	4.8.3	The only entities entitled to have either direct or remote access to <i>metering data</i> on a read only basis from the <i>metering database</i> or the <i>metering register</i> in relation to a <i>metering point</i> are: (a) Each <i>Trading Participant</i> whose <i>settlement</i> amounts are determined by reference to quantities of <i>energy</i> flowing through that <i>metering point</i> , (b) The <i>Metering Services Provider</i> who is responsible for the	The only entities entitled to have either direct or remote access to <i>metering data</i> on a read only basis from the <i>metering database</i> or the <i>metering register</i> in relation to a <i>metering point</i> are: xxx (g) The ERC; <u>and</u> <u>(h) The DOE.</u>	To harmonize with changes made in the Manual to include the DOE in the list.

Title	Section	Original Clause	Proposed Amendments	Rationale
		<p><i>metering installation at that metering point,</i></p> <p>(c) A Network Service Provider associated with the <i>metering point,</i></p> <p>(d) The Market Operator and its authorized agents; and</p> <p>(e) Any Customer with respect to the <i>metering data</i> in relation to the <i>metering point</i> registered to it; <u>(As amended by DOE DC No. 2006-01-0001 dated 10 January 2006)</u></p> <p>(f) The Market Surveillance Committee; and</p> <p>(g) The ERC.</p>		
Glossary	Chapter 11	<p>Active Energy: A measure of electrical energy flow, being the time integral of the product of voltage and the in-phase component of current flow across a connection point, expressed in Watt hours (Wh) and multiples thereof.</p>	<p>Active Energy. A measure of electrical energy flow, being the time integral of the product of voltage and the in-phase component of current flow across a connection point, expressed in Watt hours (Wh) and multiples thereof. <u>The integral of the Active Power with respect to time, measured in Watthour (Wh) or multiples thereof. Unless otherwise qualified, the term “Energy” refers to Active Energy.</u></p>	<p>To be consistent with the Philippine Grid Code.</p>
		<p>New</p>	<p><u>Metering Equipment: The apparatus necessary for measuring electrical</u></p>	<p>To be consistent with the Philippine Grid Code.</p>

Title	Section	Original Clause	Proposed Amendments	Rationale
			<u>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.</u>	
		<i>Metering Point:</i> The point of physical connection of the device measuring the current in the power conductor.	<i>Metering Point.</i> The point of physical connection of the device measuring the current in the power conductor. <u>Location where the Metering Equipment is installed, which should be located at the Market Trading Node.</u>	This is to clearly state that the Metering Point should be in the same location as the Market Trading Node, i.e. physical location of the Metering Equipment.
		<i>National Transmission Corporation or "TRANSCO":</i> The corporation organized pursuant to the Act to acquire all the transmission assets of the NPC.	<i>National Transmission Corporation or "TRANSCO".</i> The corporation organized pursuant to the Act to acquire all the transmission assets of the NPC. <u>The government-owned and controlled corporation created pursuant to RA 9136 to acquire all transmission assets of the National Power Corporation.</u>	To be consistent with the Philippine Grid Code.

Title	Section	Original Clause	Proposed Amendments	Rationale
		Reactive Energy: A measure in varhours (varh) of the alternating exchange of stored energy in inductors and capacitors which is the time integral product of voltage and the quadrature component of current flow across a connection point.	Reactive Energy. A measure in varhours (varh) of the alternating exchange of stored energy in inductors and capacitors which is the time integral product of voltage and the quadrature component of current flow across a connection point. <u>The integral of the Reactive Power with respect to time, measured in VARh or multiples thereof.</u>	To be consistent with the Philippine Grid Code.
Glossary	Scheduling Point (new)	(blank)	A designated point in the market network model where dispatch schedules are determined by the Market Dispatch Optimization Model.	Provide definition of new defined term

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Section/Title	Original Provision	Proposed Amendment	Rationale
1 - WESM Metering Manual	WESM Metering Manual	WESM Metering Manual <u>INTRODUCTION</u>	General Comment : Spell out MO to Market Operator
1.1	INTRODUCTION	<u>INTRODUCTION BACKGROUND</u>	Consistent with the format of Market Manuals
1.1.1 - About this Manual	<p>About this Manual</p> <p>This manual consolidates the pertinent metering procedures, flowcharts, policies and standards intended generally for WESM Participants and more particularly for Metering Services Providers (MSP) to be used in the commercial operation of the WESM. These procedures are divided into topics integrated into chapters which formulate detailed guidelines, descriptions of the equipment, the steps involved with its significant periods, and tables, etc. This manual shall form part and parcel of the supplementary requirements on metering for the WESM rules.</p>	<p>1.1.1 About this Manual</p> <p>This <i>Market mManual</i> consolidates the pertinent metering procedures, flowcharts, policies and standards intended generally for <i>WESM Participants</i> and more particularly for <i>Metering Services Providers (MSP)</i> to be used in the commercial operation of the WESM. These procedures are divided into topics integrated into chapters which formulate detailed guidelines, descriptions of the equipment, the steps involved with its significant periods, and tables, etc. This <i>Market mManual</i> shall form part and parcel of the supplementary requirements on metering for the WESM.</p> <p><u>This Market Manual, in compliance with Chapter 4 of the WESM Rules:</u></p> <p><u>a. defines the minimum standards of the metering installations (MI) that the WESM and the WESM Participants must comply with;</u></p> <p><u>b. prescribes the manner of labeling and identification of a revenue metering installation with a site equipment identification (SEIN);</u></p> <p><u>c. describes the procedures that -</u></p>	<ul style="list-style-type: none"> • To provide a high-level summary of the purpose and contents of the Market Manual, as recommended by PA Consulting. • Clerical revisions

Section/Title	Original Provision	Proposed Amendment	Rationale
		<ul style="list-style-type: none"> i. <u>the Metering Services Provider must follow when registering a WESM Participant's metering installation; and</u> ii. <u>the procedures that the Market Operator (MO) and Metering Services Provider must follow to ensure that the metering data is collected in a timely and efficient manner.</u> d. <u>describes the procedures -</u> <ul style="list-style-type: none"> i. <u>for the validation, estimation and editing being used by the Metering Services Provider and the Market Operator upon collection of metering data;</u> ii. <u>where there are errors associated with metering data or meter trouble;</u> iii. <u>in performing site - specific loss adjustment;</u> iv. <u>of the Market Operator for the measurement and monitoring of the annual performance of a WESM Metering Services Provider in accordance with WESM Rules Clause 4.3.3; and</u> v. <u>for the deregistration of metering installations in the WESM.</u> 	
1.1.2 - Purpose	1.1. 2 Purpose The intention of this manual is to: 1. Provide for the process for the registration of a Metering Services Provider 2. Provide for the process of registration of Metering Installation (MI) of any delivery point which will participate in the WESM.	1.1. 2 Purpose The intention of this manual is to: 1. Provide for the process for the registration of a Metering Services Provider 2. Provide for the process of registration of Metering Installation (MI) of any delivery point which will participate in the WESM.	Deleted since this is a repetition of the proposed Section 1.1 above.

Section/Title	Original Provision	Proposed Amendment	Rationale
	3. Provide for the smooth interfacing of Meter Data Collection process in accordance with WESM rules. 4. Provide for the efficient Validation, Estimating and Editing of Meter-Settlement Ready Data. 5. Provide for a prompt procedural manner of reporting in cases where Meter Trouble exists. 6. Provide for the Metering Standards to augment the harmonized version of the Grid and Distribution Codes and WESM rules. 7. Provide the procedures for a unique numbering system for the Site and Equipment Identification System of the metering facilities.	3. Provide for the smooth interfacing of Meter Data Collection process in accordance with WESM rules. 4. Provide for the efficient Validation, Estimating and Editing of Meter-Settlement Ready Data. 5. Provide for a prompt procedural manner of reporting in cases where Meter Trouble exists. 6. Provide for the Metering Standards to augment the harmonized version of the Grid and Distribution Codes and WESM rules. 7. Provide the procedures for a unique numbering system for the Site and Equipment Identification System of the metering facilities.	
1.1.3 - Scope	1.1.3 Scope This manual covers the procedural steps from the registration of the MSP and the Metering Installations they serve, to the meter data collection and the Validation, Estimating and Editing (VEE) processes as well as the publishing of meter data into the MO website, up to the maintenance and security aspect of the metering facilities with basis coming from the <i>Metering Installation Standards</i> and the <i>Site Equipment and Identification (SEIN)</i> .	4.1.3 1.2 Scope of Application This <i>Market mManual</i> covers the procedural steps from the registration of the MSP and the Metering Installations they serve, to the meter data collection and the Validation, Estimating and Editing (VEE) processes as well as the publishing of meter data into the MO website, up to the maintenance and security aspect of the metering facilities with basis coming from the <i>Metering Installation Standards</i> and the <i>Site Equipment and Identification (SEIN)</i> . <u>metering procedures and standards for metering installations of WESM Participants. This Market Manual does not cover the procedure for the registration of WESM Metering Services Providers, which is covered by the WESM Manual on Registration, Suspension and De-Registration Criteria and Procedures.</u>	<ul style="list-style-type: none"> • Revised for clarity • Clerical revisions
1.1.4. Intended Audience	1.1.4 Intended Audience	4.1.4 Intended Audience	This section is deemed unnecessary.

Section/Title	Original Provision	Proposed Amendment	Rationale
	<p>This manual shall be used as a guide for the Network Service Provider (NSP), the Distribution Utilities, the Metering Services Providers and their respective Trading Participants which in this case are the Generator Companies and End Customers.</p>	<p>This manual shall be used as a guide for the Network Service Provider (NSP), the Distribution Utilities, the Metering Services Providers and their respective Trading Participants which in this case are the Generator Companies and End Customers.</p>	
1.1.5 - Conventions	<p>1.1.5 Conventions</p> <p>The standard conventions to be followed in this <i>manual</i> are as follows:</p> <ol style="list-style-type: none"> 1. The word 'shall' denotes a mandatory requirement; 2. Terms and acronyms used in this <i>manual</i> including all Parts thereto that are italicized have the meanings ascribed thereto in the WESM Rules, the Grid Code, the Distribution Code and in this manual; 3. Double quotation marks are used to indicate titles of publications, legislation, forms and other documents. 4. Any procedure-specific convention(s) shall be identified within the specific document itself. 	<p>1.1.5 Conventions</p> <p>The standard conventions to be followed in this manual are as follows:</p> <ol style="list-style-type: none"> 1. The word 'shall' denotes a mandatory requirement; 2. Terms and acronyms used in this manual including all Parts thereto that are italicized have the meanings ascribed thereto in the WESM Rules, the Grid Code, the Distribution Code and in this manual; 3. Double quotation marks are used to indicate titles of publications, legislation, forms and other documents. 4. Any procedure-specific convention(s) shall be identified within the specific document itself. 	Deleted since this is already provided under Section 1.3, as revised
1.1.6 Background	<p>1.1.6 Background</p> <p>Pursuance to Section 2.3.6 of the WESM rules, any aspiring Metering Services Provider (MSP) who wants to join the WESM shall register with the Market Operator provided it should have passed the requirements of section 4.4 of the WESM. In addition, the Trading Participant/MSP should register the desired Metering Facilities to be declared as WESM participants in accordance to section 4.3.1 (c) of the WESM rules.</p>	<p>1.1.6 Background</p> <p>Pursuance to Section 2.3.6 of the WESM rules, any aspiring Metering Services Provider (MSP) who wants to join the WESM shall register with the Market Operator provided it should have passed the requirements of section 4.4 of the WESM. In addition, the Trading Participant/MSP should register the desired Metering Facilities to be declared as WESM participants in accordance to section 4.3.1 (c) of the WESM rules.</p>	This is already a duplication of the purpose, as stated in the proposed Section 1.1 above. Further, the relevant WESM Rules as discussed in this portion will be covered in the succeeding chapters.

Section/Title	Original Provision	Proposed Amendment	Rationale
	<p>As stipulated under section 4.8.2 of the WESM rules, Market Operator should create and maintain a metering database which composed of energy (kilowatt) data, reactive (kilovar) energy, etc of Trading Participants that shall be used for settlement and for resolution in cases of disputes.</p> <p>Likewise, said metering data shall undergo the procedural steps of Validation and substitution process as per section 4.9 of the WESM rules.</p>	<p>As stipulated under section 4.8.2 of the WESM rules, Market Operator should create and maintain a metering database which composed of energy (kilowatt) data, reactive (kilovar) energy, etc of Trading Participants that shall be used for settlement and for resolution in cases of disputes.</p> <p>Likewise, said metering data shall undergo the procedural steps of Validation and substitution process as per section 4.9 of the WESM rules.</p>	
1.2	1.2 Definition of Terms	<p>4.2 1.3 Definition of Terms</p> <p><u>1.3.1 Unless otherwise defined or the context implies otherwise, the italicized terms used in this Market Manual shall bear the same meaning as defined in the WESM Rules and other Market Manuals.</u></p> <p><u>1.3.2 The following words and phrases as used in this Market Manual shall have the following meaning</u></p> <p>=</p>	<ul style="list-style-type: none"> • Renumbering • To be consistent with the format of Market Manuals
	<i>Accuracy Class:</i> A designation assigned to an instrument transformer the errors of which remain within specified limits under prescribed conditions of use.	a. <i>Accuracy.</i> xxx	Rearranged alphabetically
	<i>Accuracy:</i> The extent to which a given measurement agrees with the defined value.	b. <i>Accuracy Class.</i> xxx	Rearranged alphabetically
	<i>New</i>	c. <i>Active Energy:</i> The integral of the Active Power with respect to time, measured in Watthour (Wh) or multiples thereof. Unless otherwise qualified, the term “Energy” refers to Active Energy.	As defined in the Philippine Grid Code

Section/Title	Original Provision	Proposed Amendment	Rationale
	New	<u>d. Back- up Meter: A registered revenue meter identical to the main meter connected at the same metering point. In case of defective main meter data, the back-up registered meter data may be used.</u>	Additional Definition of Backup Meter
	<i>Basic Insulation Level (BIL):</i> A specific insulation level in kilovolts of the crest value of a standard lightning impulse.	<u>e. Basic Insulation Level (BIL).</u> xxx	Renumbering
	<i>Blondel's Theorem:</i> In a system of N conductors, N-1 meter elements, properly connected, will measure the active power or energy taken. The connection must be such that all voltages coils have a common tie to the conductor in which there is no current coil.	<u>f. Blondel's Theorem.</u> xxx	Renumbering
	<i>Bottom-connected:</i> Having a bottom-connected terminal assembly.	Bottom-connected. Having a bottom-connected terminal assembly.	Term not used in this Market Manual
	<i>Burden:</i> For a voltage transformer, the total volt-ampere load, with specified power factor, applied to the secondary terminals. For a current transformer, the total apparent impedance, expressed in ohms, connected to the secondary terminals.	<u>g. Burden.</u> xxx	Renumbering
	<i>Business Day:</i> Any day on which is open for business, which is usually 24 hours a day and 7 days a week.	Business Day: Any day on which is open for business, which is usually 24 hours a day and 7 days a week.	Already defined under the WESM Rules
	<i>Channel:</i> Individual input, output and intervening circuitry required to record time-tagged data.	<u>h. Channel.</u> xxx	Renumbering
	<i>Class Designation:</i> The maximum specified continuous load in amperes.	Class Designation. The maximum specified continuous load in amperes.	Term not used in this Market Manual
	<i>Commissioning Test:</i> A procedural test on a new Metering Installation (MI) prior to its operation which consists of the visual check and safety of the surroundings of the new MI; continuity test; insulation test; instrument transformer ratio-check and the recordings of the required information on the meters and instrument transformers.	<u>i. Commissioning Test.</u> is a <u>A</u> procedural test on a new M metering I nstallation (MI) prior to its operation which consists of the visual check and safety of the surroundings of the new MI; continuity test; insulation test; instrument transformer ratio-check and the recordings of the required information on the meters and instrument transformers.	Renumbering; Clerical revisions

Section/Title	Original Provision	Proposed Amendment	Rationale
	<i>Connection Point:</i> The point of connection of the User System or Equipment to the Grid (for Users of the Grid) or to the Distribution System (for Users of the Distribution System).	j. <i>Connection Point.</i> xxx	Renumbering
	<i>Current Transformer:</i> An instrument transformer intended to have its primary winding connected in series with the conductor carrying the current to be measured or controlled.	k. <i>Current Transformer.</i> xxx	Renumbering
	<i>Customer Alert:</i> A switching output used to indicate events or conditions.	Customer Alert. A switching output used to indicate events or conditions.	Not used in this Market Manual
	<i>Customer:</i> Any person/entity supplied with electric service under a contract with a Distributor or Supplier.	Customer. Any person/entity supplied with electric service under a contract with a Distributor or Supplier.	Already defined under the WESM Rules
	<i>Demand Interval:</i> The specified interval of time on which a demand measurement is based.	l. <i>Demand.</i> xxx	Alphabetically rearranged
	<i>Demand:</i> The average power or a related quantity over a specified interval of time.	m. <i>Demand Interval.</i> xxx	Alphabetically rearranged
	<i>Display:</i> A means of visually identifying and presenting measured or calculated quantities and other information.	n. <i>Display.</i> xxx	Renumbering
	<i>Distribution Code:</i> The set of rules, requirements, procedures, and standards governing Distributor Utilities and Users of Distribution System in the operation, maintenance and development of the Distribution System. It also defines and establishes the relationship of the Distribution System with the facilities or installations of the parties connected thereto.	Distribution Code. The set of rules, requirements, procedures, and standards governing Distributor Utilities and Users of Distribution System in the operation, maintenance and development of the Distribution System. It also defines and establishes the relationship of the Distribution System with the facilities or installations of the parties connected thereto.	Already defined under the WESM Rules
	<i>Distributors:</i> An Electric Cooperative, private corporation, government-owned utility or existing local government unit that has an exclusive franchise to operate a Distribution System.	o. <i>Distributors. An Electric Cooperative, private corporation, government-owned utility or existing local government unit that has an exclusive franchise to operate a Distribution System.</i>	Renumbering

Section/Title	Original Provision	Proposed Amendment	Rationale
	<i>Double Secondary Current Transformer (Double Core): One which has two secondary coils each on a separate magnetic circuit with both magnetic circuits excited by the same primary winding.</i>	p. <i>Double Secondary Current Transformer (Double Core). xxx</i>	Renumbering
	<i>Double Secondary Potential Transformer (Double Core): One which has two secondary windings on the same magnetic circuit insulated from each other and the primary.</i>	q. <i>Double Secondary Potential Transformer (Double Core). xxx</i>	Renumbering
	<i>Embedded Generator: A person or entity that generates electricity using a Generating Plant that is connected to a Distribution System of any User and has no direct connection to the Grid.</i>	Embedded Generator. A person or entity that generates electricity using a Generating Plant that is connected to a Distribution System of any User and has no direct connection to the Grid.	Already defined under the WESM Rules
	<i>Emergency Restoration Plan: Sometimes called the Emergency Instrument Transformer Restoration Plan, are plans which the Metering Services Provider must take in case of any failures on the meters or the Instrument Transformers.</i>	r. <i>Emergency Restoration Plan. xxx</i>	Renumbering
	<i>End-User: A person or entity that requires the supply and delivery of electricity for its own use.</i>	End-User. A person or entity that requires the supply and delivery of electricity for its own use. —	Already defined under the WESM Rules
	<i>Energy: The integral of active power with respect to time.</i>	s. <i>Energy. xxx</i>	Renumbering
	<i>Flicker: The impression of unsteadiness of visual sensation induced by a light stimulus whose luminance or special distribution fluctuates with time.</i>	t. <i>Flicker. xxx</i>	Renumbering
	<i>Frequency: The value of the frequency on which the requirements of this standard are based.</i>	Frequency. The value of the frequency on which the requirements of this standard are based.	Already defined under the WESM Rules

Section/Title	Original Provision	Proposed Amendment	Rationale
	<i>Generator: Any person or entity authorized by the ERC to operate a facility used in the Generation of Electricity</i>	u. Generator. xxx	Renumbering
	<i>Grid Code: The set of rules, requirements, procedures, and standards to ensure the safe, reliable, secured and efficient operation, maintenance, and development of the high voltage backbone Transmission System and its related facilities.</i>	Grid Code: The set of rules, requirements, procedures, and standards to ensure the safe, reliable, secured and efficient operation, maintenance, and development of the high voltage backbone Transmission System and its related facilities.	Already defined under the WESM Rules
	<i>Grid: The high voltage backbone System of interconnected transmission lines, substations, and related facilities for the purpose of conveyance of bulk power. Also known as the Transmission System.</i>	Grid: The high voltage backbone System of interconnected transmission lines, substations, and related facilities for the purpose of conveyance of bulk power. Also known as the Transmission System.	Already defined under the WESM Rules
	<i>Grid Owner: The party that owns the high voltage backbone Transmission System and is responsible for maintaining adequate Grid capacity in accordance with the provisions of the Grid Code.</i>	Grid Owner: The party that owns the high voltage backbone Transmission System and is responsible for maintaining adequate Grid capacity in accordance with the provisions of the Grid Code	Under the Philippine Grid Code 2016 – definition of ‘Grid Owner’ was removed and the term ‘Grid Owner’ is referred to as TRANSCO.
	<i>New</i>	v. Ground: The Earth	Adopted from Philippine Electrical Code 2009.
	<i>Grounding: An instrument transformer which has the neutral end of the high-voltage winding connected to the case or mounting base.</i>	w. Grounding. An instrument transformer which has the neutral end of the high-voltage winding connected to the case or mounting base. A conducting connection by which an electrical circuit or equipment is connected to earth or to some conducting body of relatively large extent that serves as ground.	

Section/Title	Original Provision	Proposed Amendment	Rationale
	<i>Harmonics: Sinusoidal voltages and currents having frequencies that are integral multiple of the fundamental frequency.</i>	x. Harmonics. xxx	Renumbering
	<i>New</i>	y. <u>Instrument Transformers: A general term for Current Transformers and Voltage Transformers.</u>	<ul style="list-style-type: none"> To define the <i>Instrument Transformer</i> in the Manual. Renumbering
	<i>Interval Data: The recorded demand data based on specified demand time interval.</i>	z. Interval Data. xxx	Renumbering
	<i>Line-loss Compensation: A method that adds to or subtracts from the meter registration to compensate for predetermined energy losses of transmission/distribution lines.</i>	aa. Line-loss Compensation. xxx	Renumbering
	<i>Low-Voltage Winding of an Instrument Transformer: The winding that is intended to be connected to the measuring or control devices.</i>	bb. Low-Voltage Winding of an Instrument Transformer. xxx	Renumbering
	<i>Philippine Electricity Market Corporation (PEMC): An independent group, with equitable representation from the electric power industry participants, whose task includes the operation and administration of the Wholesale Electricity Spot Market in accordance with the Market Rules.</i>	<i>Philippine Electricity Market Corporation (PEMC): An independent group, with equitable representation from the electric power industry participants, whose task includes the operation and administration of the Wholesale Electricity Spot Market in accordance with the Market Rules.</i>	Already defined under the WESM Rules
	<i>Mass Memory: An electronic storage circuit where data is stored for display and/or retrieval.</i>	cc. Mass Memory. xxx	Renumbering

Section/Title	Original Provision	Proposed Amendment	Rationale
	<p><i>Market Trading Node: Those nodes at which electricity will either be bought (Load Customer) or sold (Generator) from the spot market and at which energy bought or sold in the market is required to be measured.</i></p>	<p>Market Trading Node: Those nodes at which electricity will either be bought (Load Customer) or sold (Generator) from the spot market and at which energy bought or sold in the market is required to be measured.</p>	<p>Already defined under the WESM Rules</p>
	<p>Meter. A device, which measures and records the consumption or production of electricity.</p>	<p><u>dd. Meter:</u> A device, which measures and records the consumption or production of electricity. <u>This refers to the Revenue Meter unless specified otherwise.</u></p>	<ul style="list-style-type: none"> • To clarify that <i>Meter</i> refers to <i>Revenue Meter</i> unless specified otherwise. • Renumbering
	<p>New</p>	<p><u>ee. Metering Equipment:</u> <u>The apparatus necessary for measuring electrical real and reactive power and energy, inclusive of a multi-function meter and the necessary instrument potential and phase shifting transformers and all wiring and communication devices as provided.</u></p>	<ul style="list-style-type: none"> • Adopted from Philippine Grid Code, 2016 Edition • Renumbering
	<p><i>Metering Installation:</i> The meter and associated equipment and installations installed or to be installed for the collection of metering data required for settlement purposes.</p>	<p>Metering Installation: The meter and associated equipment and installations installed or to be installed for the collection of metering data required for settlement purposes.</p>	<p>Already defined under the WESM Rules</p>
	<p><i>Metering Point:</i> The point of physical connection of the device measuring the current in the power conductor.</p>	<p>Metering Point: The point of physical connection of the device measuring the current in the power conductor.</p>	<p>Already defined under the WESM Rules</p>

Section/Title	Original Provision	Proposed Amendment	Rationale
	<i>Metering Services Provider (MSP):</i> A person or entity authorized by the ERC to provide metering services and registered with the Market Operator in that capacity in accordance with section 2.3.6 of the WESM rules.	Metering Services Provider (MSP): A person or entity authorized by the ERC to provide metering services and registered with the Market Operator in that capacity in accordance with section 2.3.6 of the WESM rules.	Already defined under the WESM Rules
	<i>Multi-Ratio Current Transformer:</i> One from which more that one ratio can be obtained by the use of taps on the secondary winding.	ff. Multi-Ratio Current Transformer. xxx	Renumbering
	<i>Negative Sequence Unbalance Factor:</i> The ratio of the magnitude of the negative sequence component of the voltages to the magnitude of the positive sequence component of the voltages, expressed in percent.	gg. <i>Negative Sequence Unbalance Factor:</i> The ratio of the magnitude of the negative sequence component of the voltages to the magnitude of the positive sequence component of the voltages, expressed in percent.	Sorted alphabetically; transferred as applicable
	<i>TRANSCO:</i> The corporation that assumed the authority and responsibility of planning, maintaining, constructing, and centrally operating the high-voltage Transmission System, including the construction of Grid interconnections and the provision of Ancillary Services.	<i>TRANSCO:</i> The corporation that assumed the authority and responsibility of planning, maintaining, constructing, and centrally operating the high-voltage Transmission System, including the construction of Grid interconnections and the provision of Ancillary Services.	Sorted alphabetically; transferred as applicable
	<i>Optical Port:</i> A communications interface on metering products which allows the transfer of information, while providing electrical isolation and metering security. The communications medium is typically infrared light transmitted and received through the meter cover.	hh. <i>Optical Port:</i> A communications interface on metering products which allows the transfer of information, while providing electrical isolation and metering security. The communications medium is typically infrared light transmitted and received through the meter cover.	Sorted alphabetically; transferred as applicable
	<i>Phasor:</i> A complex number, associated with sinusoidally varying electrical quantities, such that the absolute value (modulus) of the complex number corresponds to either the peak amplitude or rms value of the quantity, and the phase (argument) to the phase angle at zero time. By extension, the term “phasor” can also be applied to impedance and	jj. Phasor. xxx	Renumbering

Section/Title	Original Provision	Proposed Amendment	Rationale
	related complex quantities that are not time-dependent.		
	<i>Power Quality</i> : The quality of the voltage, including its frequency and resulting current that are measured in the Grid, Distribution System, or any User System.	jj. <i>Power Quality</i> . xxx	Renumbering
	<i>Power, Active (KW)</i> : The time average of the instantaneous power over one period of the wave.	kk. <i>Power, Active (KW)</i> . xxx	Renumbering
	<i>Power, Apparent (KVA)</i> : The product of rms current and rms voltage for any wave form in a two-wire circuit. For sinusoidal quantities, apparent power is equal to the square root of the sum of the squares of the active and reactive powers in both two-wire and polyphase <i>circuits</i> .	ll. <i>Power, Apparent (KVA)</i> . xxx	Renumbering
	<i>Power, Reactive (KVAR)</i> : For sinusoidal quantities in a two-wire circuit, reactive power is the product of the voltage, the current, and the sine of the phase angle between them, using the current as reference.	mm. <i>Power, Reactive (KVAR)</i> . xxx	Renumbering
	<i>Rated Primary Current</i> : The current selected for the basis of performance specifications of a current transformer.	nn. <i>Rated Primary Current</i> . xxx	Renumbering
	<i>Rated Secondary Current</i> : The rated current divided by the marked ratio.	oo. <i>Rated Secondary Current</i> .xxx	Renumbering
	<i>Rated Secondary Voltage</i> : The rated voltage divided by the marked ratio.	pp. <i>Rated Secondary Voltage</i> . xxx	Renumbering
	<i>Rating</i> : The nameplate voltage, current and frequency for a meter to which it is operating.	qq. <i>Rating</i> . xxx	Renumbering

Section/Title	Original Provision	Proposed Amendment	Rationale
	<i>Ratio (Marked)</i> : The ratio of the rated primary value to the rated secondary value as stated on the nameplate.	rr. <i>Ratio (Marked)</i> . xxx	Renumbering
	<i>New</i>	ss. <u>Reactive Energy</u> : The integral of the Reactive Power with respect to time, measured in VARh or multiples thereof.	To be consistent with the Philippine Grid Code
	<i>New</i>	tt. <u>Site – Specific Loss Adjustment (SSLA). Procedure developed for determining the amount of electrical losses between the metering point and the market trading node.</u>	To provide definition of the concept that is expounded in Section 9 of the Manual
	<i>New</i>	uu. <u>Snapshot Quantity</u> . The actual instantaneous injection, withdrawal, or line flow of power, in MW, at the end of a dispatch interval.	Adopted definition of the term from the Price Determination Methodology Manual. This will be used in the disaggregation of adjusted active power in the determination of the SSLA.
	<i>Stator</i> : An assembly of an induction watt-hour meter, which consists of a voltage circuit, one or more current circuits, so arranged that their joint effect, when energized, is to exert a driving torque on the rotor.	vv. <i>Stator</i> . xxx	Renumbering
	<i>System Operator</i> : The party responsible for generation Dispatch, the provision of Ancillary Services, and operation and control to ensure safety, Power Quality, Stability, Reliability, and Security of the Grid.	System Operator: The party responsible for generation Dispatch, the provision of Ancillary Services, and operation and control to ensure safety, Power Quality, Stability, Reliability, and Security of the Grid.	Already defined under the WESM Rules
	<i>Test Amperes</i> : The load current specified by the manufacturer for the main calibration adjustment.	ww. <i>Test Amperes</i> . xxx	Renumbering
	<i>Time-of-Use</i> : A selected period of time during which a specified rate will apply to the energy usage or demand, typically designated as A, B, C, and D.	xx. <i>Time-of-Use</i> . xxx	Renumbering

Section/Title	Original Provision	Proposed Amendment	Rationale
	<i>Totalizing</i> : A device used to receive and sum pulses from two or more sources for proportional transmission to another totalizing relay or to a receiver.	yy. Totalizing. xxx	Renumbering
	<i>TRANSCO</i> : The corporation that assumed the authority and responsibility of planning, maintaining, constructing, and centrally operating the high-voltage Transmission System, including the construction of Grid interconnections and the provision of Ancillary Services.	zz. <u>Transmission Corporation or TRANSCO</u> : The corporation that assumed the authority and responsibility of planning, maintaining, constructing, and centrally operating the high-voltage Transmission System, including the construction of Grid interconnections and the provision of Ancillary Services. The government-owned and controlled corporation created pursuant to RA 9136 to acquire all transmission assets of the NPC.	Renamed as National Transmission Corporation and sorted accordingly
	<i>Transformer-loss Compensation</i> : A method that adds to or subtracts from the meter registration to compensate for predetermined iron and/or copper losses of transformers.	aaa. Transformer-loss Compensation. xxx	Renumbering
	<i>User</i> : A person or entity that uses the Grid or Distribution System and related facilities. Also, a person or entity to whom the Grid Code or Distribution Code applies.	bbb. User. xxx	Renumbering
	<i>Voltage Fluctuation</i> : The systematic variations of the voltage envelope or random amplitude changes where the RMS value of the voltage is between 90 percent and 110 percent of the nominal value.	ccc. Voltage Fluctuation. xxx	Renumbering
	<i>Voltage Transformer</i> : A device that scales down primary voltage supplied to a meter while providing electrical isolation.	ddd. Voltage Transformer. xxx	Renumbering

Section/Title	Original Provision	Proposed Amendment	Rationale
	<p><i>WESM Participants:</i> All Generation Companies, Distribution Utilities, Suppliers, Aggregators, End-Users, the TRANSCO or its Buyer or Concessionaire, IPP Administrators and other entities authorized by the ERC to participate in the WESM in accordance with the Act.</p>	<p>WESM Participants: All Generation Companies, Distribution Utilities, Suppliers, Aggregators, End-Users, the TRANSCO or its Buyer or Concessionaire, IPP Administrators and other entities authorized by the ERC to participate in the WESM in accordance with the Act.</p>	<p>Already defined under the WESM Rules</p>
	<p><i>WESM Rules:</i> The rules that govern the administration and operation of the Wholesale Electricity Spot Market.</p>	<p>WESM Rules: The rules that govern the administration and operation of the Wholesale Electricity Spot Market.</p>	<p>Already defined under the WESM Rules</p>
	<p><i>Zero Sequence Unbalance Factor:</i> The ratio of the magnitude of the zero sequence components of the voltages to the magnitude</p>	<p>eee. Zero Sequence Unbalance Factor. xxx</p>	<p>Renumbering</p>
	<p>Note: Any other concepts herein found in this metering manual shall also adopt the definitions integrated in the WESM rules, the Grid Code and the Distribution Code.</p>	<p>Note: Any other concepts herein found in this metering manual shall also adopt the definitions integrated in the WESM rules, the Grid Code and the Distribution Code.</p>	<p>Already covered in Section 1.3 of this Manual</p>
		<p>1.4 References</p> <p><u>This Market Manual shall be read in association with the WESM Rules and other relevant Market Manuals.</u></p>	

Section/Title	Original Provision	Proposed Amendment	Rationale
		<p><u>1.5 Interpretation</u></p> <p><u>1.5.1 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.</u></p> <p><u>1.5.2 Standards and policies appended to, or referenced in, this Market Manual shall provide a supporting framework.</u></p>	
<p>1.3 Responsibilities</p>	<p>1.3 Responsibilities</p> <p>1.3.1 The Market Operator shall be responsible for the development, validation, maintenance, publication and revision of this document in coordination with WESM Participants;</p> <p>1.3.2 The Metering Services Provider/Trading Participant shall provide the necessary information and references for subsequent revisions and validation of this document;</p> <p>1.3.3 The Philippine Electricity Market Board shall be responsible for the approval of this document and subsequent revisions and issuances;</p> <p>1.3.4 The Enforcement and Compliance Officer shall be responsible for the investigations on any infractions of the Trading Participants/Metering Services Provider or in cases where disputes which</p>	<p>1.3 <u>1.6 Responsibilities</u></p> <p>1.3.1 <u>1.6.1.</u> The <i>Market Operator</i> shall be responsible for the development, validation, maintenance, publication and revision <u>regular review</u> of this document <u>Market Manual</u> in coordination with <i>WESM Participants</i>;</p> <p>1.3.2 <u>1.6.2.</u> The Metering Services Provider/Trading Participant shall provide the necessary information and references for <u>the implementation and review</u> subsequent revisions and validation of this document <u>Market Manual.</u>;</p> <p>1.3.3. The Philippine Electricity Market Board shall be responsible for the approval of this document and subsequent revisions and issuances;</p>	<p>Re-numbering; for clarity</p> <p>Re-numbering; for clarity</p> <p>Approval and revision of this Market Manual is provided in the proposed Section 11 (Amendment, Publication, and Effectivity)</p>

Section/Title	Original Provision	Proposed Amendment	Rationale
	<p>may arise involving meter data or tampering of any metering facilities that is detrimental to the integrity of the meter data;</p> <p>1.3.5. And any other responsibilities of technical or legal committees or groups as stated in the WESM rules, the Grid Code or the Distribution Code which may affect the relevant provision of this manual.</p>	<p>4.3.4 1.6.3. The <i>Enforcement and Compliance Officer</i> shall be responsible for the investigations on any infractions of the Trading Participants/Metering Services Providers or in cases where disputes which may arise involving meter data or tampering of any metering facilities that is detrimental to the integrity of the meter data;</p> <p>1.3.5 And any other responsibilities of technical or legal committees or groups as stated in the WESM rules, the Grid Code or the Distribution Code which may affect the relevant provision of this manual.</p> <p><u>1.6.4 The Market Operator shall periodically review, at least once a year, the provisions of the WESM Rules Chapter 4 in accordance with the public consultation procedure, as needed, including but not limited to:</u></p> <p>a. <u>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;</u></p> <p>b. <u>contestability in the provision and types of meters used; and</u></p> <p>c. <u>whether the provisions of WESM Rules Chapter 4 have the effect of eliminating the use of alternative types of meters.</u></p>	<p>Re-numbering</p> <p>Deleted for lack of clarity.</p> <p>To enhance the Market Operator process of manual review by considering the provisions stated in the Chapter 4 of the WESM Rules.</p>
<p>2. METERING INSTALLATIONS AND STANDARDS</p>	<p>2.1 INTRODUCTION</p> <p>These standards pertain to all metering facilities, such as devices and miscellaneous equipment, etc of a Metering Installation (MI) among and between all</p>	<p>2.1-INTRODUCTION COVERAGE</p> <p>These standards <u>set forth in this section shall pertain be applicable for</u> to all metering facilities, such as devices and miscellaneous equipment, etc. of a</p>	<p>To correct/update the list of entities identified as Grid Users</p>

Section/Title	Original Provision	Proposed Amendment	Rationale
	<p>Grid Users like the Grid Owner (TRANSCO), System Operator, Market Operator, Generators, Distributors, Suppliers, Customers and any entity who will participate in the WESM. It also describes certain electrical, dimensional and mechanical characteristics and designs and takes into consideration certain safety features of current and inductively coupled voltage transformers of types generally used in the measurement of electricity associated with revenue metering.</p>	<p>Metering Installation among and between all Grid Users like the Network Service Provider, Metering Services Provider, the Grid Owner (TRANSCO) System Operator, Market Operator, Generators, Distributors, Suppliers, Customers and any entity who will participate in the WESM. It also describes certain electrical, dimensional and mechanical characteristics and designs and takes into consideration certain safety features of current and inductively coupled voltage transformers of types generally used in the measurement of electricity associated with revenue metering.</p> <p><u>This section provides the following:</u></p> <ol style="list-style-type: none"> a. <u>the general and technical requirements for metering equipment such as current transformer, voltage transformer and other associated devices;</u> b. <u>the safety requirements and grounding equipment, as well as the location of primary terminals including the distances and clearances between instrument transformers;</u> c. <u>the requirements for the connection to the power system of instrument transformers, communication links for the meter data and security of metering installations; and</u> d. <u>the conditions for redundant and existing metering installations.</u> 	<p>Clerical revisions</p> <p>Added to introduce a brief summary of Section 2</p>

Section/Title	Original Provision	Proposed Amendment	Rationale
2.1.2. - Applicability	This standard shall be observed by metered Trading Participants in the WESM.	This standard shall be observed apply apply by metered to all Trading Participants to all Trading Participants in the WESM for the settlement of their transactions in the WESM.	
2.2 - Location of the Metering Point	<p>The location of the Metering Point is ideally at the Market Trading Node and shall be in accordance with the WESM Rules, the Grid Code, and the Distribution Code.</p> <p>If the Metering Point is not located at the Market Trading Node, an agreed Site Specific Loss Adjustment (SSLA) shall be applied to the meter data representing the energy supplied by the Generator or consumed by the Customer at that Metering Point for determining the quantities to be settled in the WESM.</p>	<p>2.2 Location of the Metering Point</p> <p>The location of the <i>metering point</i> is ideally shall be located located at the <i>market trading node</i> and shall be in accordance with the <i>WESM Rules</i>, the <i>Grid Code</i> and the <i>Distribution Code</i>, <u>unless the installation of the metering equipment is physically difficult, uneconomical or not practical.</u></p> <p>If the <i>metering point</i> is not located at the <i>market trading node</i>, an agreed Site Specific Loss Adjustment (SSLA) shall be applied to the meter data representing the energy supplied by the Generator or consumed by the <i>Customer</i> at that <i>metering point</i> for determining the quantities to be settled in the WESM.</p>	Requires the metering point and market trading node to be at the same location unless the installation of the metering equipment is physically difficult, uneconomical or impractical.
2.3 METERING INSTALLATIONS	2.3 METERING INSTALLATIONS	2.3 METERING INSTALLATIONS	
2.3.1 - Applicability to Equipment	<p>This standard applies to the following metering equipment, devices and accessories:</p> <ul style="list-style-type: none"> 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 	<p>This standard applies to the following metering equipment, devices and accessories:</p> <ul style="list-style-type: none"> a. Meters; b. Instrument transformers Current transformer (CT); c. Voltage transformer (VT); d. e. Meter Enclosure; e. f. Meter Test Switch/Block; f. g. Secondary Cabling for Instrument Transformers Metering; g. h. Grounding System; 	<p>To include all the components of the metering installation.</p> <p>To be consistent with the requirements provided in Clauses 4.5.1 (g) and (h) of the WESM Rules.</p>

Section/Title	Original Provision	Proposed Amendment	Rationale
	i. Meter Seals and Padlock j. Metering Perimeter ---xxx---	gh. Rigid Conduit System in accordance with the Philippine Electrical Code (PEC); hi. Communication Link i.j. Meter Seals and Padlock Facility to seal and secure the meter; k. Other components for checking the voltage and current; and jl. Metering Perimeter.	
2.3.2 - Applicability to Installations	This standard applies to Metering Installation in the WESM market for: a) Connection between utility control areas b) Connection to the WESM controlled grid system c) Points of connection between local distribution companies d) Connection of registered Trading Participants embedded within the local distribution companies. e) Designated interties with other grid systems. f) Any other locations as required by the WESM for settlement purposes.	2.3.2. This standard applies to Mmetering iinstallations in the WESM market for 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 local distribution utilities companies; d) c) Connection of registered Trading Participants embedded within the local distribution companies utilities. e) Designated interties with other grid systems. f) d) Any other locations as required by the WESM for settlement purposes.	Revised for clarity.
2.3.3 - Registration of Metering Installations	All WESM Metering Installations, consisting of the Revenue Meter, Metering Instrument Transformers, Meter Enclosure, and other Metering Accessories, shall be registered with the MO prior to deployment in the WESM.	2.3.3 In accordance with Section 4 of this Market Manual, all WESM Participants shall register their Mmetering iinstallations, consisting of the Revenue Meter, Metering Instrument Transformers, Meter Enclosure, and other Metering Accessories, shall be registered with the MO Market Operator prior to deployment in the WESM. injection to or withdrawal from the Grid.	Revised, for clarity.

Section/Title	Original Provision	Proposed Amendment	Rationale																																							
2.4 METERS	METERS	METERS																																								
2.4.1 Requirements for Grid Revenue Meters	Requirements for Grid Revenue Meters	Requirements for Grid <u>Transmission Grid</u> Revenue Meters	To remove distinction between grid and distribution revenue meters since this Manual already has an Applicability section.																																							
	<p>Meters installed as the main revenue meter, shall meet the minimum requirements listed below:</p> <table border="1"> <thead> <tr> <th>ITEMS</th> <th>SPECIFICATIONS</th> <th>REFERENCE DOCUMENTS</th> </tr> </thead> <tbody> <tr> <td>Accuracy Class</td> <td>IEC 687 Class 0.2 / ANSI 12.20 Class 0.3 or better</td> <td rowspan="2">Grid Code 9.3.3.1</td> </tr> <tr> <td>No. of Stator</td> <td>Blondel's Theorem compliant / 3-element</td> </tr> <tr> <td>Rating</td> <td>115V 1 A or 5 A 60 Hz</td> <td>The rating should be suitable to the secondary rating of the instrument transformers.</td> </tr> <tr> <td>No. of Quadrants (Measurement)</td> <td>Active Energy/Power Measurement: Bi-directional Reactive Power Measurement: 4 Quadrant</td> <td>Grid Code 9.3.3.2</td> </tr> <tr> <td>Interval Data</td> <td>Programmable to 1, 5, 15, 30, and 60 minute interval</td> <td>Grid Code 9.3.4.1</td> </tr> </tbody> </table>	ITEMS	SPECIFICATIONS	REFERENCE DOCUMENTS	Accuracy Class	IEC 687 Class 0.2 / ANSI 12.20 Class 0.3 or better	Grid Code 9.3.3.1	No. of Stator	Blondel's Theorem compliant / 3-element	Rating	115V 1 A or 5 A 60 Hz	The rating should be suitable to the secondary rating of the instrument transformers.	No. of Quadrants (Measurement)	Active Energy/Power Measurement: Bi-directional Reactive Power Measurement: 4 Quadrant	Grid Code 9.3.3.2	Interval Data	Programmable to 1, 5, 15, 30, and 60 minute interval	Grid Code 9.3.4.1	<p><u>There shall be a main and a back-up revenue meter preferably of different brand (make and model).</u> Meters installed as the main revenue meter <u>and back-up meter</u> shall meet the minimum requirements listed below:</p> <table border="1"> <thead> <tr> <th rowspan="2">ITEMS</th> <th colspan="2">SPECIFICATIONS</th> <th rowspan="2">REFERENCE DOCUMENTS</th> </tr> <tr> <th>MAIN METER</th> <th>BACK- UP METER</th> </tr> </thead> <tbody> <tr> <td>Accuracy Class</td> <td>IEC 687 Class 0.2 / ANSI 12.20 Class 0.3 or better</td> <td><u>Same as the main meter</u></td> <td>Grid Code <u>9.2.3.3</u> 9.3.3.4</td> </tr> <tr> <td>No. of Stators</td> <td>Blondel's Theorem compliant /3-element</td> <td><u>Same as the main meter</u></td> <td><u>Grid Code 9.2.2.1</u></td> </tr> <tr> <td>Rating</td> <td>115V 1 A or 5 A 60 Hz</td> <td><u>Same as the main meter</u></td> <td>The rating should be suitable to the secondary rating of the instrument transformers.</td> </tr> <tr> <td>No. of Quadrants (Measurement)</td> <td>Active Energy/Power Measurement: Bi-directional Reactive Power Measurement:</td> <td><u>Bi-directional or as required by its application</u></td> <td>Grid Code <u>9.2.2.2</u> 9.3.3.2 <u>Grid Code 9.2.3.3</u></td> </tr> </tbody> </table>	ITEMS	SPECIFICATIONS		REFERENCE DOCUMENTS	MAIN METER	BACK- UP METER	Accuracy Class	IEC 687 Class 0.2 / ANSI 12.20 Class 0.3 or better	<u>Same as the main meter</u>	Grid Code <u>9.2.3.3</u> 9.3.3.4	No. of Stators	Blondel's Theorem compliant /3-element	<u>Same as the main meter</u>	<u>Grid Code 9.2.2.1</u>	Rating	115V 1 A or 5 A 60 Hz	<u>Same as the main meter</u>	The rating should be suitable to the secondary rating of the instrument transformers.	No. of Quadrants (Measurement)	Active Energy/Power Measurement: Bi-directional Reactive Power Measurement:	<u>Bi-directional or as required by its application</u>	Grid Code <u>9.2.2.2</u> 9.3.3.2 <u>Grid Code 9.2.3.3</u>	<ul style="list-style-type: none"> To prescribe back-up metering installation requirements. To update references in accordance with latest amendments to the Philippine Grid Code (2016).
ITEMS	SPECIFICATIONS	REFERENCE DOCUMENTS																																								
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Section/Title	Original Provision			Proposed Amendment				Rationale
	No. of Channels	At least eight (8)	Grid Code 9.2.4.1 Grid Code 9.2.4.2	Interval Data	4 Quadrant Programmable to 1, 5, 15, 30, and 60 minute interval	Same as the main meter	Grid Code 9.2.3.3 9.3.4.4	
	Mass Memory	Minimum 60 day recording of a 5-minute time-stamped demand interval for 8 recording channels	WESM 4.5.1 (g) Grid Code 9.3.4.3 Grid Code 9.2.5.3	No. of Channels	At least eight (8) The 8-channels are as follows: 1. KWH (Delivered) 2. KWH (Received) 3. KVARH (Quadrant 1) 4. KVARH (Quadrant 2) 5. KVARH (Quadrant 3) 6. KVARH (Quadrant 4) 7. KVAH (Delivered) 8. KVAH (Received)	Minimum requirements of 4 channels as follows: 1. KWH (Delivered) 2. KWH (Received) 3. KVARH (Quadrant 1) 4. KVARH (Quadrant 2)	Grid Code 9.2.2.2 9.2.4.4 Grid Code 9.2.3.2 9.2.4.2	
	Billing Function	The meter shall be capable of measuring and recording the following electrical parameters per dispatch interval: <ul style="list-style-type: none"> • Kwh (Delivered) • Kwh (Received) • Kvarh (Quadrant 1) • Kvarh (Quadrant 2) • Kvarh (Quadrant 3) • Kvarh (Quadrant 4) • Kvah (Delivered) • Kvah (Received) • Max Kw (Delivered) • Max Kw (Received) • Kvar (Quadrant 1) • Kvar (Quadrant 2) • Kvar (Quadrant 3) • Kvar (Quadrant 4) • Kva (Delivered) • Kva (Received) A. Power Factor <ul style="list-style-type: none"> • Frequency • Per Phase Current • Per Phase Voltage 	Grid Code 9.2.4.1 Grid Code 9.2.4.2 Grid Code 9.3.3.1 Grid Code 9.3.3.2 Grid Code 9.5.4 Grid Code 9.5.5	Mass Memory	Minimum 60 day recording of a 5 minute time-stamped demand interval for 8 recording channels		WESM 4.5.1 (g) Grid Code 9.3.4.3 Grid Code 9.2.3.3 9.2.5.3	

Section/Title	Original Provision		Proposed Amendment				Rationale
	Loss Compensation	A flexible transformer loss compensation for both copper and iron losses and transmission/distribution line loss compensation with a simple user set-up for Site Specific adjustments. Losses can be measured and segregated separately from other billing parameters.	Grid Code 9.2.3.1 WESM 4.5.2.2	Billing Function Meter Registers	The meter shall be capable of measuring, registering and recording the following electrical parameters per billing interval: <ul style="list-style-type: none"> • KWH (Delivered) • KWH (Received) • KVARH (Quadrant 1) • KVARH (Quadrant 2) • KVARH (Quadrant 3) • KVARH (Quadrant 4) • KVAH (Delivered) • KVAH (Received) • Max KW (Delivered) • Max KW (Received) 	Minimum requirements KWH (Delivered) KWH (Received) KVARH (Quadrant 1) KVARH (Quadrant 2) KVARH (Quadrant 3) KVARH (Quadrant 4) KVAH (Delivered) KVAH (Received) Max KW (Delivered) Max KW (Received)	Grid Code 9.2.2.2 9.2.4.4 Grid Code 9.2.3.3 9.2.4.2 Grid Code 9.3.3.1 Grid Code 9.3.3.2 Grid Code 9.5.4 Grid Code 9.5.5
	Security	The meter shall have provisions for securing the meter data, meter configurations and programs by electronic means and/or passwords. It shall also be secured physically by way of security seals.	WESM 4.5.6 Grid Code 9.4.5				
	Communication Capability	The meter shall have at least minimum of three (3) independent communication ports that could operate independently. Each port can communicate simultaneously, with each one using a different protocol. It should be capable of a two-way communication.	WESM 4.5.7.1 WESM 4.5.1(c) Grid Code 9.3.4.2 Grid Code 9.5.1.1 Grid Code 9.5.1.4				
	Internal Clock	The meter shall have an internal clock with an allowable error of +/-	WESM 4.5.8.1 Grid Code 9.3.4.4				
				Loss Compensation	Optional A flexible transformer loss compensation for both copper and iron losses and transmission/distribution line	Optional	Grid Code 9.2.3.1 WESM 4.5.2.2

Section/Title	Original Provision		Proposed Amendment				Rationale
		1 second per demand interval.					
Time Synchronization	Line frequency or crystal synchronization. The internal clock shall be capable of being reset set by the data collection software during normal collection operations.	WESM 4.5.8.1 Grid Code 9.3.4.4			less compensation with a simple user set-up for Site Specific adjustments. Losses can be measured and segregated separately from other billing parameters.		
Digital Display	The meter shall have a digital display with a minimum of 5 digits.	WESM 4.5.1 (c) Grid Code 9.3.3.1	Security	The meter shall have provisions for securing the meter data, meter configurations and programs by electronic means and/or passwords. It shall also be secured physically by way of security seals.	Same as the main meter	WESM 4.5.6 Grid Code 9.3.8.1 Grid Code 9.3.8.2 Grid Code 9.3.8.3 9.4.5	
Codes and Standards Compliance	The meter shall adhere to established International Standards (IEC, etc.).	Grid Code 9.3.3.1					
Applicable and Compliance Tests	These tests shall include material tests and established practice and/or other approved standards. Routine tests prescribed by the applicable standards shall be performed. In particular, the following tests shall be performed for the revenue meters: a. Power frequency tests (insulation) b. Impulse voltage test (insulation).	Grid Code 9.3.3.3. IEC 255-1 IEC 255-A (Class III) IEC 245-4	Communication Capability	The meter shall have at least a minimum of three (3) two (2) independent communication ports that could operate independently. Each port can communicate simultaneously, with each one using a different protocol. It should be capable of a two-	Same as the main meter	WESM 4.5.7.1 WESM 4.5.1 (c) Grid Code 9.3.3.3 9.3.4.2 Grid Code 9.5.1.1 Grid Code 9.5.1.4	

Section/Title	Original Provision			Proposed Amendment				Rationale
		c. HF interference test d. Surge withstand and fast transient tests			way communication.			
	Battery	Capable of retaining readings and time of day for at least two days without external power source	Grid Code 9.2.5.3 Grid Code 9.3.3.2 WESM 4.5.1 (g)	Internal Clock	The meter shall have an internal clock with an allowable error of +/-1 second	<u>Same as the main meter</u>	WESM 4.5.8.1 Grid Code 9.2.3.3 9.3.4.4	
	Enclosure	The meter shall be provided with the necessary cover to protect the internal component against the harmful elements of environment that may affect its measuring circuit and operation.	ANSI 12.1 4.3.4	Time Synchronization	Crystal synchronization. The internal clock shall be capable of being reset set by the data collection software during normal collection operations.	<u>Same as the main meter</u>	WESM 4.5.8.1 Grid Code 9.2.3.3 9.3.4.4	
		Digital Display			The meter shall have a digital display with a minimum of 5 digits.	<u>Same as the main meter</u>	WESM 4.5.1 (c) Grid Code 9.2.3.3 9.3.3.1	
	Codes and Standards Compliance				The meter shall adhere to established International Standards	<u>Same as the main meter</u>	Grid Code 4.2.10.1 9.3.3.1 IEC, ANSI/IEEE	
	Applicable and Compliance Tests				These tests shall include material tests and established practice and/or other approved standards. Routine tests prescribed by the applicable standards shall be performed. In particular, the following tests	<u>Same as the main meter</u>	Grid Code 9.2.5.2 Grid Code 9.2.5.3 Grid Code 9.2.8.1 Grid Code 8.3.3.3 IEC 255-1 IEC 255-A (Class III) IEC 245-4	

Section/Title	Original Provision	Proposed Amendment			Rationale	
			shall be performed for the revenue meters: a. Power frequency tests (insulation) b. Impulse voltage test (insulation). c. HF interference test d. Surge withstand and fast transient tests			
		Battery	Capable of retaining readings and time of day for at least two days without external power source	Same as the main meter	WESM 4.5.1 (g) Grid Code 9.2.3.3 9.2.5.3 Grid Code 9.3.3.2	
		Enclosure	Minimum requirements Indoor: Protected against dust limited ingress (no harmful deposit) and Protection against vertically falling drops of water e.g. condensation Outdoor: Totally protected against dust and Protection	Same as the main meter	ANSI 12.1 4.3.4 Grid Code 9.2.2.3 Grid Code 9.2.2.4 Grid Code 9.3.8	

Section/Title	Original Provision	Proposed Amendment				Rationale
			against vertically falling drops of water e.g. condensation			
2.4.2. Requirements for Distribution Revenue Meters	2.4.2 Requirements for Distribution Revenue Meter Meters installed as the main revenue meter shall meet the minimum requirements listed below:	<p>2.4.2. Requirements for Distribution Revenue Meters <u>for Embedded Generators Registered as WESM Participants:</u></p> <p><u>For Embedded Generators Registered as WESM Participants, M</u>eters installed as the main revenue meter <u>and backup meter</u> shall meet the minimum requirements listed below:</p>				<p>There is already an applicable Retail Manual for distribution meters.</p> <p>To ensure that the provisions also apply to embedded generators registered in the WESM.</p>

Section/Title	Original Provision			Proposed Amendment			Rationale
	ITEMS	SPECIFICATIONS	REFERENCE DOCUMENTS	ITEMS	SPECIFICATIONS		REFERENCE DOCUMENTS
	Accuracy Class	IEC 687 Class 0.2 / ANSI 12.20 Class 0.3 or better	IEC 687 4.6	Accuracy Class	MAIN METER	BACK-UP METER	IEC 687 4.6
	No. of Stator	Corresponds to the service type and complying with Blondell's Theorem	Dist. Code 8.4.3.1 ANSI C12.1	No. of Stators	IEC 687 Class 0.2 / ANSI 12.20 Class 0.3 or better	Same as the main meter	IEC 687 4.6
	Voltage Rating	Corresponds to the secondary voltage rating of voltage transformers used	Dist. Code 5.5.1.1	Voltage Rating	Corresponds to the service type and complying with Blondel's Theorem	Same as the main meter	Dist. Code 8.4.3.1 ANSI C12.1
	Current Rating	Corresponds to the secondary current rating of current transformers used (typically 1A or 5A)	ANSI or IEC Standard	Voltage Rating	Corresponds to the secondary voltage rating of voltage transformers used	Same as the main meter	Dist. Code 5.5.1.1
	Frequency	60 Hz	Dist. Codes 3.2.2.1 -	Current Rating	Corresponds to the secondary current rating of current transformers used (typically 1A or 5A)	Same as the main meter	ANSI or IEC Standard
	Measurement	Bi-directional active metering (delivered & received) and 4-quadrant reactive metering	Dist Codes 8.3.3.1 Dist. Codes 8.3.4.2 Dist. Code 8.4.3.2	Frequency	60 Hz	Same as the main meter	Dist. Codes 3.2.2.1
	Interval Data	Programmable to 5, 15, 30 minute interval	Dist. Code 8.4.4.1	Measurement	Bi-directional active metering (delivered & received) and 4-quadrant reactive metering Uni-directional active metering (delivered) and 2-quadrant reactive metering)	Same as the main meter	Dist Codes 8.3.3.1 Dist. Codes 8.3.4.2 Dist. Codes 8.4.3.2
	No. of Channels	At least Six (6) Channels	This satisfies the minimum requirements as stated under: Dist. Codes 8.3.3.2 Dist. Codes 8.3.4.3	Mass Memory	At least 60 days	Dist Code 8.3.5.3	
	Recording Billing Quantities	Display and record TOU energy and power parameters (kWh, kVarh, max. kW & cum. kW) for all rates	Dist. Code 8.4.3.1	Loss Compensation (if applicable)	A flexible transformer loss compensation for both copper and iron losses and transmission/ distribution line loss compensation with a simple user set-up for Site Specific adjustments. Losses can be measured and segregated separately from other billing parameters.	WESM 4.5.2.2	

Section/Title	Original Provision			Proposed Amendment				Rationale																								
	<table border="1"> <thead> <tr> <th data-bbox="423 304 546 336">ITEMS</th> <th data-bbox="546 304 824 336">SPECIFICATIONS</th> <th data-bbox="824 304 1016 336">REFERENCE DOCUMENTS</th> </tr> </thead> <tbody> <tr> <td data-bbox="423 336 546 448">Security</td> <td data-bbox="546 336 824 448">The meter shall have provisions for securing the meter data, meter configurations and programs by electronic means and/or passwords. It shall also be secured physically by way of security seals.</td> <td data-bbox="824 336 1016 448">WESM 4.5.6</td> </tr> <tr> <td data-bbox="423 448 546 571">Communication Capability</td> <td data-bbox="546 448 824 571">The meter shall be equipped with a means of communication channel capable of electronic data transfer. Either an integrated telephone modem, and/or RS-232 communication port for interface to an external communication medium are considered acceptable..</td> <td data-bbox="824 448 1016 571">WESM 4.5.7.1 WESM 4.5.1(c) Dist. Code 8.4.4.2</td> </tr> <tr> <td data-bbox="423 571 546 616">Internal Clock/Battery</td> <td data-bbox="546 571 824 616">With long life lithium battery for clock/ calendar maintenance</td> <td data-bbox="824 571 1016 616">WESM 4.5.8.1 Dist Code 8.4.4.6</td> </tr> <tr> <td data-bbox="423 616 546 668">Time Synchronization</td> <td data-bbox="546 616 824 668">The meter can be programmed to synchronize time without change in measured billing parameters.</td> <td data-bbox="824 616 1016 668"></td> </tr> <tr> <td data-bbox="423 668 546 721">Digital Display</td> <td data-bbox="546 668 824 721">The meter shall have a digital display with a minimum of 5 digits.</td> <td data-bbox="824 668 1016 721">WESM 4.5.1(c) Dist Code 8.4.3.1</td> </tr> <tr> <td data-bbox="423 721 546 783">Codes and Standards Compliance</td> <td data-bbox="546 721 824 783">The meter shall adhere to the IEC Standards or their equivalent national standards for metering</td> <td data-bbox="824 721 1016 783"></td> </tr> <tr> <td data-bbox="423 783 546 874">Enclosure</td> <td data-bbox="546 783 824 874">The meter shall be provided with the necessary cover to protect the internal component against the harmful elements of environment that may affect its measuring circuit and operation.</td> <td data-bbox="824 783 1016 874">ANSI 12.1 4.3.4</td> </tr> </tbody> </table>	ITEMS	SPECIFICATIONS	REFERENCE DOCUMENTS	Security	The meter shall have provisions for securing the meter data, meter configurations and programs by electronic means and/or passwords. It shall also be secured physically by way of security seals.	WESM 4.5.6	Communication Capability	The meter shall be equipped with a means of communication channel capable of electronic data transfer. Either an integrated telephone modem, and/or RS-232 communication port for interface to an external communication medium are considered acceptable..	WESM 4.5.7.1 WESM 4.5.1(c) Dist. Code 8.4.4.2	Internal Clock/Battery	With long life lithium battery for clock/ calendar maintenance	WESM 4.5.8.1 Dist Code 8.4.4.6	Time Synchronization	The meter can be programmed to synchronize time without change in measured billing parameters.		Digital Display	The meter shall have a digital display with a minimum of 5 digits.	WESM 4.5.1(c) Dist Code 8.4.3.1	Codes and Standards Compliance	The meter shall adhere to the IEC Standards or their equivalent national standards for metering		Enclosure	The meter shall be provided with the necessary cover to protect the internal component against the harmful elements of environment that may affect its measuring circuit and operation.	ANSI 12.1 4.3.4				or bi-directional depending on the purpose			
ITEMS	SPECIFICATIONS	REFERENCE DOCUMENTS																														
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Enclosure	The meter shall be provided with the necessary cover to protect the internal component against the harmful elements of environment that may affect its measuring circuit and operation.	ANSI 12.1 4.3.4																														
		Interval Data	Programmable to 5, 15, 30 minute interval	Same as the main meter	Dist. Code 8.4.4.1																											
		No. of Channels	At least four (4) channels for bi-directional meters: a. kWh (Delivered) b. kVARh (Delivered) c. kWh (Received) d. kVARh (Received) At least two (2) channels for unidirectional meters: a. kWh (Received) b. kVARh (Received)	Same as the main meter	This satisfies the minimum requirements as stated under: Dist. Codes 8.3.3.2 Dist. Codes 8.3.4.3																											
		Mass Memory	Minimum of 60-day recording of a 5-minute time-stamped demand interval for 4 recording channels for bi-directional meters or 2 recording channels for uni-directional meters	Same as the main meter	Dist. Code 8.3.5.3																											

Section/Title	Original Provision	Proposed Amendment		Rationale		
		Recording Billing Quantities	Display and record TOU energy and power parameters (kWh, kVarh, max. kW & cum. kW) for all rates	Same as the main meter	Dist. Code 8.4.3.1	
		Loss Compensation	Optional A flexible transformer loss compensation for both copper and iron losses and transmission /distribution line loss compensation with a simple user set-up for Site Specific adjustments. Loss can be measured and segregated separately from other billing parameters.	Optional	WESM 4.5.2.2	
		Security	The meter shall have provisions for securing the meter data, meter configurations and programs by electronic means and/or passwords. It	Same as the main meter	WESM 4.5.6	

Section/Title	Original Provision	Proposed Amendment		Rationale		
			shall also be secured physically by way of security seals.			
		Communication Capability	<p>The meter shall have one (1) independent communication port in addition to the optical port.</p> <p>The meter shall be equipped with a means of communication channel capable of electronic data transfer. Either an integrated telephone modem, and/or RS-232 communication port for interface to an external communication medium are considered acceptable.</p>	<p>Minimum requirement: Optical port</p>	<p>WESM 4.5.7.1 WESM 4.5.1(c) Dist. Code 8.4.4.2</p>	
		Internal Clock/Battery	With long life lithium battery for clock/calendar maintenance	<p>Same as the main meter</p>	<p>WESM 4.5.8.1 Dist. Code 8.4.4.6</p>	

Section/Title	Original Provision	Proposed Amendment			Rationale	
		Time Synchronization	<p>Shall be crystal synchronized on time-based. The internal clock shall be capable of being reset/set by the data collection software during normal collection operations.</p> <p>The meter can be programmed to synchronize time without change in measured billing parameters.</p>	<u>Same as the main meter</u>		
		Digital Display	The meter shall have a digital display with a minimum of 5 digits.	<u>Same as the main meter</u>	WESM 4.5.1 (c) Dist. Code 8.4.3.1	
		Codes and Standards Compliance	The meter shall adhere to the IEC Standards or their equivalent national standards for metering to established International Standards	<u>Same as the main meter</u>	<u>IEC, ANSI/IEEE</u>	

Section/Title	Original Provision	Proposed Amendment		Rationale	
		Enclosure	The meter shall be provided with the necessary cover to protect the internal component against the harmful elements of environment that may affect its measuring circuit and operation.	Same as the main meter ANSI 12.1 4.3.4	
2.5 INSTRUMENTS TRANSFORMERS	2.5 INSTRUMENTS TRANSFORMERS	2.5 INSTRUMENTS TRANSFORMERS			
2.5.2 Use of Instrument Transformers	Instrument transformers supplying the revenue meter shall be used solely for the purposes of revenue metering and not for any other purposes, including, but not limited to, the attachment of other devices.	Instrument transformers supplying the revenue meter shall be used solely for the purposes of revenue metering and not for any other purposes, including, but not limited to, the attachment of other devices. <u>The following schemes shall not be allowed:</u> a. <u>The use of an instrument transformer for meters other than the registered WESM Meters; and</u> b. <u>Paralleling of current transformers.</u>		To ensure that any failure of an instrument transformer or set of instrument transformers will not affect the reading of more than one metering point.	
2.5.4 Accuracy Requirements	2.5.4.3 Proof of compliance with Section 4.4 shall be provided in the form of factory test cards complete with serial numbers.	2.5.4.3 Proof of compliance with Section 4.4 5.3.2 shall be provided in the form of factory test cards complete with serial numbers.		Correction in the reference cited	

Section/Title	Original Provision	Proposed Amendment	Rationale
2.5.6 - Safety Requirements and Grounding System	Safety Requirements and Grounding System	Safety Requirements and Grounding System <u>General Requirements for Grounding System</u>	New section title for grounding system. <i>Note: The proposed amendments to the figures for grounding is provided at the end of this matrix (DRAWINGS, FIGURES AND PERTINENT SKETCHES).</i>
	The installation shall conform to the requirements of: a. Philippine Electrical Code; and	<u>2.5.6.1. The installation shall be in accordance but not limited to the following provisions of the Philippine Electrical Code :</u> a. Philippine Electrical Code; and <u>a. Electrical systems that are grounded shall be connected to earth in a manner that will limit the voltage imposed by lightning, line surges, or unintentional contact with higher voltages and that will stabilize the voltage to earth during normal operation.</u> <u>b. Normally non-current carrying conductive materials enclosing electrical conductors or equipment, or forming part of such equipment, shall be connected to earth so as to limit the voltage to ground on these materials.</u> <u>c. Normally non-current carrying conductive materials enclosing electrical conductors or equipment, or forming part of such equipment, shall be connected together and to the electrical</u>	To provide a whole section regarding grounding system for metering installation. Generic principles in grounding were lifted from PEC Part 1 2009 Article 2.50.1.4 (a)1- 5. For safety of personnel, it is deemed vital to know why, where and what grounding and bonding are. As such, provisions on the general principles for grounding were lifted from PEC verbatim.

Section/Title	Original Provision	Proposed Amendment	Rationale
		<p><u>supply source in a manner that established an effective ground-fault current path.</u></p> <p>d. <u>Normally non-current carrying conductive materials that are likely to become energized shall be connected together and to the electrical supply source in a manner that establishes an effective ground-fault current path.</u></p> <p>e. <u>Electrical equipment, wiring, and other electrically conductive material likely to become energized shall be installed in a manner that creates a low-impedance circuit facilitating the operation of the overcurrent device. It shall be capable of safely carrying the maximum ground fault-current likely to be imposed on it from any point on the wiring system where a ground fault occurs to the electrical supply source. The earth shall not be considered as an effective ground fault current path.</u></p> <p>f. <u>The minimum size of copper conductor to be used for metering grounding shall be 8 mm².</u></p> <p>g. <u>Connections to all bonded parts shall be made in accordance to Article 2.50.1.8 of the Philippine Electrical Code 2009 Part 1.</u></p>	
	<p>b. The IEC or ANSI/IEEE C57.13-1983 IEEE Guide for Grounding of Instrument Transformer Secondary Circuits and Cases.</p>	<p>b. <u>2.5.6.2</u> The <u>installation shall likewise conform to the IEC or ANSI/IEEE C57.13-1983 IEEE Guide for Grounding of Instrument Transformer Secondary Circuits and Cases and IEEE Std. 80-2000 or IEEE Guide for Safety in AC Substation Grounding.</u></p>	<p>Original provision was revised to form part of the new subsection.</p>

Section/Title	Original Provision	Proposed Amendment	Rationale																																													
	New	2.5.6.3 The ground resistance of the metering grounding system shall not be more than five (5) ohms.	To specify the ground resistance in accordance with ANSI/IEEE Std. 142-1982 IEEE																																													
2.5.7. - Current Transformer	Current Transformer Current Transformer installed as the main metering, shall meet the minimum requirements listed below:	2.5.7 Current Transformer Requirements Current Transformers installed as the main metering, shall meet the minimum requirements listed below:	To update references in accordance to latest amendments to the Philippine Grid Code (2016).																																													
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Section/Title	Original Provision			Proposed Amendment			Rationale
			IEC 4.2 Standard values of rated secondary currents	Secondary Current	1A or 5A	Grid Code 9.3.2.2 9.2.3.2	
	Rating Factor	Minimum of 1.0 at 30°C				IEC 4.2 Standard values of rated secondary currents	
	Frequency	60 Hz					
	Ambient Air Temperature	-5°C and 50°C for very hot climate	IEC 3.2.1 1996	Rating Factor	Minimum of 1.0 at 30°C		
	BIL	Refer to Table 2 for applicable BIL		Frequency	60 Hz		
	Creepage Distance	Refer to Table 3 for applicable creepage distance		Ambient Air Temperature	-5°C and 50°C for very hot climate	IEC 3.2.1 1996	
	Number of Core	Preferably Two (2) metering core	Grid Code 9321 Grid Code 9.3.2.2	BIL	Refer to Table 2 for applicable BIL		
	Mounting	Depend on the applications		Creepage Distance	Refer to Table 3 for applicable creepage distance		
	Grounding		Grid Code 9.3.2.2	Number of Core	Preferably Two (2) metering cores	Grid Code 9324 Grid Code 9.3.2.2 9.2.3.2	
	Security	Seal holder shall be provided to the CT secondary terminal box (see Figure 1)	Grid Code 9.4.5 Meter Equipment Security	Mounting	Depend on the applications		
				Grounding		Grid Code 9.3.2.2 9.2.2.1 (g)	
				Security	Seal holder shall be provided to the CT secondary terminal box (see Figure 1)	Grid Code 9.4.5 Meter Equipment Security 9.2.4.1	

Section/Title	Original Provision	Proposed Amendment	Rationale																																																																								
2.5.8. - Voltage Transformer	Voltage Transformer Voltage Transformer installed as the main metering, shall meet the minimum requirements listed below: <table border="1" data-bbox="405 443 1028 1342"> <thead> <tr> <th>ITEMS</th> <th>SPECIFICATIONS</th> <th>REFERENCE DOCUMENTS</th> </tr> </thead> <tbody> <tr> <td>Type</td> <td>Outdoor Type; Minimum oil filled, Dry Type or Gas-filled</td> <td></td> </tr> <tr> <td>Cooling</td> <td>Oil immersed, Self-cooled; Butyl, Cast resin</td> <td></td> </tr> <tr> <td>Construction</td> <td>Single phase, Inductive type, single bushing</td> <td></td> </tr> <tr> <td>Termination</td> <td>Line-to-ground</td> <td>Grid Code 9.3.1.</td> </tr> <tr> <td>Accuracy Class</td> <td>IEC 6044-2 Class 0.2 /ANSI C57.13 Class 0.3 or better</td> <td>Grid Code 9.3.1.1</td> </tr> <tr> <td>Burden</td> <td>Shall not exceed the rated burden limit for the IEC 6044-2 Class 0.2 /ANSI C57.13 Class 0.3 or better. (see Table 4)</td> <td>Grid Code 9.4.1.2</td> </tr> <tr> <td>Ratio</td> <td>See Table 5</td> <td></td> </tr> <tr> <td>Secondary Voltage</td> <td>See Table 5</td> <td></td> </tr> <tr> <td>Frequency</td> <td>60 Hz</td> <td></td> </tr> <tr> <td>Operating Temperature</td> <td>55°C average ambient temperature, with max ambient temperature not exceeding 65°C</td> <td></td> </tr> <tr> <td>BIL</td> <td>Refer to Table 2 for applicable BIL</td> <td></td> </tr> </tbody> </table>	ITEMS	SPECIFICATIONS	REFERENCE DOCUMENTS	Type	Outdoor Type; Minimum oil filled, Dry Type or Gas-filled		Cooling	Oil immersed, Self-cooled; Butyl, Cast resin		Construction	Single phase, Inductive type, single bushing		Termination	Line-to-ground	Grid Code 9.3.1.	Accuracy Class	IEC 6044-2 Class 0.2 /ANSI C57.13 Class 0.3 or better	Grid Code 9.3.1.1	Burden	Shall not exceed the rated burden limit for the IEC 6044-2 Class 0.2 /ANSI C57.13 Class 0.3 or better. (see Table 4)	Grid Code 9.4.1.2	Ratio	See Table 5		Secondary Voltage	See Table 5		Frequency	60 Hz		Operating Temperature	55°C average ambient temperature, with max ambient temperature not exceeding 65°C		BIL	Refer to Table 2 for applicable BIL		2.5.8 Voltage Transformer Requirements Voltage Transformer installed as the main metering, shall meet the minimum requirements listed below: <table border="1" data-bbox="1055 443 1722 1342"> <thead> <tr> <th>ITEMS</th> <th>SPECIFICATIONS</th> <th>REFERENCE DOCUMENTS</th> </tr> </thead> <tbody> <tr> <td>Type</td> <td>Outdoor Type; Minimum oil filled, Dry Type or Gas-filled</td> <td></td> </tr> <tr> <td>Cooling</td> <td>Oil immersed, Self-cooled; Butyl, Cast resin</td> <td></td> </tr> <tr> <td>Construction</td> <td>Single phase, Inductive type, single bushing</td> <td></td> </tr> <tr> <td>Termination</td> <td>Line-to-ground</td> <td>Grid Code 9.3.1.</td> </tr> <tr> <td>Accuracy Class</td> <td>IEC 6044-2 Class 0.2 /ANSI C57.13 Class 0.3 or better</td> <td>Grid Code 9.3.1.1 9.2.3.2 Grid Code Appendix 2</td> </tr> <tr> <td>Burden</td> <td>Shall not exceed the rated burden limit for the IEC 6044-2 Class 0.2 /ANSI C57.13 Class 0.3 or better. (see Table 4)</td> <td>Grid Code 9.4.1.2 9.2.3.2 Grid Code Appendix 2</td> </tr> <tr> <td>Ratio</td> <td>See Table 5</td> <td></td> </tr> <tr> <td>Secondary Voltage</td> <td>See Table 5</td> <td></td> </tr> <tr> <td>Frequency</td> <td>60 Hz</td> <td></td> </tr> <tr> <td>Operating Temperature</td> <td>55°C average ambient temperature, with max ambient temperature not exceeding 65°C</td> <td></td> </tr> <tr> <td>BIL</td> <td>Refer to Table 2 for applicable BIL</td> <td></td> </tr> </tbody> </table>	ITEMS	SPECIFICATIONS	REFERENCE DOCUMENTS	Type	Outdoor Type; Minimum oil filled, Dry Type or Gas-filled		Cooling	Oil immersed, Self-cooled; Butyl, Cast resin		Construction	Single phase, Inductive type, single bushing		Termination	Line-to-ground	Grid Code 9.3.1.	Accuracy Class	IEC 6044-2 Class 0.2 /ANSI C57.13 Class 0.3 or better	Grid Code 9.3.1.1 9.2.3.2 Grid Code Appendix 2	Burden	Shall not exceed the rated burden limit for the IEC 6044-2 Class 0.2 /ANSI C57.13 Class 0.3 or better. (see Table 4)	Grid Code 9.4.1.2 9.2.3.2 Grid Code Appendix 2	Ratio	See Table 5		Secondary Voltage	See Table 5		Frequency	60 Hz		Operating Temperature	55°C average ambient temperature, with max ambient temperature not exceeding 65°C		BIL	Refer to Table 2 for applicable BIL		To update references in accordance to latest amendments to the Philippine Grid Code (2016).
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Section/Title	Original Provision			Proposed Amendment			Rationale
	Creepage distance	Refer to Table 3 for applicable creepage distance		Creepage distance	Refer to Table 3 for applicable creepage distance		
	Number of Core	Preferably Two (2)		Number of Core	Preferably Two (2)		
	Mounting	Depend on the applications		Mounting	Depend on the applications		
	Grounding		Grid Code 9.3.1.1	Grounding		Grid Code 9.3.1.1 9.2.2.1 (g)	
	Security	Seal holder shall be provided to the CT secondary terminal box (see Figure 1)	Grid Code 9.4.5 Meter Equipment Security	Security	Seal holder shall be provided to the CT secondary terminal box (see Figure 1)	Grid Code 9.4.5 Meter Equipment Security 9.2.4.1	
2.5.9 - Lightning Arrester	Lightning Arrester Lightning Arrester installed (if necessary) at the main metering, shall meet the minimum requirements listed below: xxx			2.5.9 Lightning Surge Arrester 2.5.9.1 Lightning Surge Arresters installed (if necessary) at the main metering, shall meet the minimum requirements listed below: xxx			For consistency, the term lightning arrester should be replaced with surge arrester in the whole Manual. Global change on lightning arrester to surge arrester
	New			2.5.9.2 The surge arrester shall be located at the line side, as close as possible to the instrument transformers in the Metering Point. Refer to Figure 2(a) and 2(b).			To specify the location of surge arrester. Surges come from the line side thus the Surge Arrester should be located before the instrument transformers for protection.
2.6.2 - Location of Primary Terminals	The primary terminals of each current transformer shall be located as close as practicable to the Metering Point.			The primary terminals of each current voltage transformer shall be located as close as practicable to the Metering Point.			As indicated in the Section title, current transformer

Section/Title	Original Provision	Proposed Amendment	Rationale
of Voltage Transformer			should be replaced with voltage transformer.
2.6.5 - Location/Arrangement of Instrument Transformers	With respect to the physical arrangement of the instrument transformers, the current transformer shall be located at the load side based on the normal flow of current. Refer to Figure 3.	With respect to the physical arrangement of the instrument transformers, the current transformer shall be located at the load side based on the normal flow of current. Refer to Figure 3 Figure 2(a) and 2(b) .	To correctly reference the corresponding Figure for <i>Location/Arrangement of Instrument Transformers</i> . Instrument Transformers should be in the load side since surges are expected to come from the line side.
2.6.6 - Distances, clearances between Instrument Transformers	The distances between instrument transformers and the prescribed clearances were shown in Table 6 and Figure 4.	The distances between instrument transformers and the prescribed clearances were are shown in Table 6 and Figure 4-3 .	To correctly reference the corresponding Figure for <i>Distances, clearances between Instrument Transformers</i> .
2.7.3 - Codes and Conditions	<p>---xxx---</p> <p>2.7.3.4. voltage transformers with More than one secondary winding shall have one winding dedicated to the main metering and shall be used for no other purpose;</p> <p>2.7.3.5. electrical connection to the instrument transformer secondary terminals shall not be possible outside of the meter box;</p> <p>---xxx---</p>	<p>---xxx---</p> <p>2.7.3.4. voltage transformers with More more than one secondary winding shall have one winding dedicated to the main metering and shall be used for no other purpose;</p> <p>2.7.3.5. electrical connection to the instrument transformer secondary terminals shall not be possible outside of the meter box;</p> <p>---xxx---</p>	Minor corrections.

Section/Title	Original Provision	Proposed Amendment	Rationale
2.8. - COMMUNICATION LINKS FOR THE METER	The communication link to be installed shall be a dedicated line for metering purposes (e.g. PLDT, Bayantel, Digitel lines or GSM Modem) which must be compatible with the meter and the remote meter data collection system of MO and the MSP.	2.8 The communication link to be installed shall be a dedicated line for metering purposes (e.g. PLDT, Bayantel, Digitel lines or GSM Modem) which must be compatible with the meter and the remote meter data collection system of MO and of the MSP.	To specify that this communication link is a dedicated and used only for the MSP.
2.9.1 Physical Security of Metering Equipment	Metering Installation shall be secure and tamper proof and conforms to the following applicable security requirements:	Metering Installation shall be secure and tamper- resistant proof and conforms to the following applicable security requirements:	For clarification
2.9.1.1. Instrument transformers connections	Secondary cabling shall be secured, tamper proof and compliant with the WESM Rules and the Grid and Distribution Code requirements on security of registered revenue metering Installations and metering data.	2.9.1.1 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.	For clarification
2.9.1.2 - Conduit Systems	All wiring from the instrument transformers' secondary terminal box to the meter installation enclosure (meter box) shall be placed in a conduit which is compliant with environmental requirements to ensure that the connections to cabling is secure, tamper proof 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. See Figure 5.	2.9.1.2 All wiring from the instrument transformers' secondary terminal box to the meter installation enclosure (meter box) shall be placed in a rigid conduit which is compliant with environmental requirements to ensure that the connections to cabling is are secure and 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 conduit used for the instrument transformer shall be surface mounted. See Figure 5 4 .	Only rigid conduits are recommended to be used for conduit systems for metering. Installation of rigid conduits should be surface-mounted to prevent possible tampering.
2.9.1.7 - Metering Perimeter	The Metering Installation shall be secured by a perimeter fence similar to Figure 7 if applicable and its gate properly padlock, sealed and secured. Metering perimeter shall also be well lighted and free from any unwanted materials, equipment, vegetation, etc. (refer Table 7)	The Metering Installation shall be secured by a perimeter fence similar to Figure 7 if applicable and its gate properly padlocked , sealed and secured. Metering perimeter shall also be well lighted and free from any unwanted materials, equipment, vegetation, etc. (refer Table 7)	Clerical revision

Section/Title	Original Provision	Proposed Amendment	Rationale
2.10 - Redundant Metering Installation	<p>2.10 Redundant Metering Installation</p> <p>A redundant Metering Installation can be achieved in one of two ways:</p> <p>2.10.1 Dual metering using two independent sets of instrument transformers approved by the Market Operator, where the main instrument transformers are connected to the main meter, the alternate instrument transformers are connected to the alternate meter; or</p> <p>2.10.2 Partial redundant metering using a single set of instrument transformers approved by the Market Operator where both the main and alternate meters are connected to either common or separate core.</p> <p>(new)</p> <p>(new)</p>	<p>2.10 Redundant Metering Installation</p> <p><u>2.10.1</u> A redundant metering installation can be achieved in one of two ways:</p> <p><u>2.10.1.a.</u> Dual metering using two independent sets of instrument transformers approved by the Market Operator, where the main instrument transformers are connected to the main meter, the alternate instrument transformers are connected to the alternate meter; or</p> <p><u>2.10.2. b</u> Partial redundant metering using a single set of instrument transformers approved by the Market Operator where both the main and alternate meters are connected to either common or separate core.</p> <p><u>2.10.2 The minimum requirement is partial redundant metering using a single set of instrument transformers where the main and back-up meters are in series or in parallel and connected to a common core.</u></p> <p><u>2.10.3 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.</u></p>	<p>To prescribe redundant metering installations.</p> <p>To prescribe the maximum difference that will prompt the MSP to check whether the calibration and other settings are within the requirements.</p>

Section/Title	Original Provision	Proposed Amendment	Rationale
2.11 - METERING INSTALLATION - EXISTING	<p>2.11 A Metering Installation installed and commissioned before the WESM comes into effect, and that does not comply with the requirement of this standard will be permitted by the Market Operator to remain in service subject to the following condition:</p> <p>2.11.1 The meter shall have a mass memory capable of recording 15-minute demand interval and have communication ports for remote and manual data retrieval,</p> <p>2.11.2 ERC has tested/verified and sealed the meter,</p> <p>2.11.3 Accuracy class of the meter and instrument transformers shall be 0.5 or better, and</p> <p>2.11.4 All non-compliant meters and instrument transformers shall be replaced within one year after the WESM come into effect.</p>	<p>2.11 An existing Metering Installation installed and commissioned before the WESM comes into effect, and that does not fully comply with the requirement of this standard will be permitted by the Market Operator to remain in service subject to the following conditions:</p> <p>a. 2.11.1The meter shall have a mass memory capable of recording the 15-minute 5-minute required demand interval data for a period of at least 60 days and have communication ports for remote and manual data retrieval;</p> <p>b. 2.11.2 xxx</p> <p>2.11.3 Accuracy class of the meter and instrument transformers shall be 0.5 or better, and</p> <p>c. 2.11.4 All non-compliant meters and instrument transformers shall be replaced within six (6) months from the effectivity of registration in the WESM; one year after the WESM come into effect.</p> <p>d. All non-compliant instrument transformers shall be replaced within the period of two (2) years from the effectivity of registration in the WESM.</p> <p><u>Continued non-compliance of metering installations shall be subject to sanctions or penalties.</u></p>	<ul style="list-style-type: none"> • Revised in order to: <ul style="list-style-type: none"> ○ prescribe the maximum period for metering installation compliance upon registration in the WESM, and ○ ensure continued compliance of metering installations • To be consistent with the implementation of 5-minute dispatch interval and the determination of trading amounts every settlement interval from the aggregate of trading amounts per dispatch interval

Section/Title	Original Provision	Proposed Amendment	Rationale
3.1. - Introduction	<p>This chapter describes all the Metering Installations (MI) up to the specific detail at the Connection Points between all Grid Users like The Grid Owner (TRANSCO), The System Operator, The Market Operator, Generators, Distributors, Suppliers, Customers and Any entity with a User System connected to the Grid.</p> <p>The objectives of identifying Metering Installations are as follows:</p> <p>a) To prescribe the manner of developing a Standard Identification Equipment Labeling Systems for Metering Installation for the entities participating in the Wholesale Electricity Spot Market as prescribed in the Grid Code and Distribution Code.</p> <p>b) To ease in locating and identifying equipment and make the location symbol more reflective of the name of the Metering Installation (MI).</p> <p>c) To guide and direct the Market Operator, System Operator, Trading Participants, Metering Services Provider (MSP) and Operation and Maintenance (O &M) in the operation and maintenance of Metering Installations.</p> <p>d) To assist in the planning, documentation, spare management, maintenance, defect statistics, budgeting and control of Metering Installation.</p> <p>e) To help in the establishment of Metering Installation database management system</p> <p>f) To ensure the safety of maintenance personnel.</p>	<p>This chapter describes all the components and equipment of the Metering Installations (MI) up to the specific detail at the Connection Points between all Grid Users like the Grid Owner (NGCP), the System Operator, the Market Operator, Generators, Distributors, Suppliers, Customers and any entity with a User System connected to the Grid.</p> <p><u>This section prescribes the standard numbering system that the <i>Metering Services Provider</i> shall follow when numbering and identifying their metering installations and its individual equipment.</u></p> <p>The objectives of identifying <u>assigning Site Equipment Identification Number (SEIN)</u> for metering installations are as follows:</p> <p>a) To prescribe the manner of developing a Standard Identification Equipment Labeling Systems for Metering Installation for the entities participating in the Wholesale Electricity Spot Market as prescribed in the Grid Code and Distribution Code.</p> <p>b) a. <u>to ease in locating and identifying easily locate and identify</u> equipment and make the location symbol more reflective of the name of the Metering Installation (MI);</p> <p>c) b. <u>to guide and direct the <i>Market Operator, System Operator, Trading Participants, Metering Services Providers</i> (MSP) and <i>Network Service Providers</i> Operation and Maintenance (O &M) in the operation and maintenance of metering installations;</u></p>	To state the scope of this section; revised for clarity

Section/Title	Original Provision	Proposed Amendment	Rationale						
		<p>d) To assist in the planning, documentation, spare management, maintenance, defect statistics, budgeting and control of Metering Installation.</p> <p>e) <u>c.</u> to help in the establishment of <u>a</u> Metering Installation database management system; and</p> <p>f) <u>d.</u> to ensure the safety of maintenance personnel.</p>							
3.2. - GENERAL PROCEDURES	The following procedures for labeling and identification of revenue Metering Installation and its equipment, devices, auxiliaries, etc. is detailed below:	<p><u>The assignment of the Site Equipment Identification Number (SEIN) shall be done by the Metering Service Provider. For embedded generators and load customers to be registered in the WESM, the responsibility to assign the SEIN is with the Market Operator.</u></p> <p>The following procedures for labeling and identification of revenue Metering Installation and its equipment, devices, auxiliaries, etc. are detailed below:</p>	To specify the responsibility of the MSP.						
3.2.5 - Current Transformer	<p>Current Transformer shall be labeled as:</p> <p style="text-align: center;">DEE-(A-BBB-CCCC-XX)</p> <p>where:</p> <table border="1" data-bbox="405 1043 1021 1337"> <tr> <td style="width: 10%; text-align: center;">D</td> <td>Shall be a one (1) letter initial designation for phase of the current transformer: <ul style="list-style-type: none"> ▫ "A" for Phase A ▫ "B" for Phase B ▫ "C" for Phase C ▫ "Z" for Three Phase (3Φ) </td> </tr> </table>	D	Shall be a one (1) letter initial designation for phase of the current transformer: <ul style="list-style-type: none"> ▫ "A" for Phase A ▫ "B" for Phase B ▫ "C" for Phase C ▫ "Z" for Three Phase (3Φ) 	<p>Current Transformer shall be labeled as:</p> <p style="text-align: center;">DEE-(A-BBB-CCCC-XX)</p> <p>where:</p> <table border="1" data-bbox="1061 1043 1653 1377"> <tr> <td style="width: 10%; text-align: center;">D</td> <td>Shall be a one (1) letter initial designation for phase of the current transformer: <ul style="list-style-type: none"> ▫ "A" for Phase A ▫ "B" for Phase B ▫ "C" for Phase C ▫ "Z" for Three Phase (3Φ) </td> </tr> <tr> <td style="width: 10%; text-align: center;">EE</td> <td>Shall be a two (2) letter initial designation for the current transformer. Please refer to</td> </tr> </table>	D	Shall be a one (1) letter initial designation for phase of the current transformer: <ul style="list-style-type: none"> ▫ "A" for Phase A ▫ "B" for Phase B ▫ "C" for Phase C ▫ "Z" for Three Phase (3Φ) 	EE	Shall be a two (2) letter initial designation for the current transformer. Please refer to	<p>Same rationale for Section 2.5.9</p> <p>In accordance with the PGC, the term voltage transformer shall be used and thus replace the term potential transformer in the Manual.</p>
D	Shall be a one (1) letter initial designation for phase of the current transformer: <ul style="list-style-type: none"> ▫ "A" for Phase A ▫ "B" for Phase B ▫ "C" for Phase C ▫ "Z" for Three Phase (3Φ) 								
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Section/Title	Original Provision		Proposed Amendment		Rationale
	EE	Shall be a two (2) letter initial designation for the current transformer. Please refer to Table 11 for the standard designation of Metering equipment, devices and auxiliaries, etc.		Table 11 for the standard designation of Metering equipment, devices and auxiliaries, etc.	
	(A-BBB-CCCC-XX)	See identification procedure for Revenue Metering Installation.	(A-BBB-CCCC-XX)	See identification procedure for Revenue Metering Installation.	
	NOTE	The above identification procedure applies to the following equipment: <ul style="list-style-type: none"> ▫ Potential Transformer ▫ Lighting Arrester 	NOTE	The above identification procedure applies to the following equipment: <ul style="list-style-type: none"> ▫ Potential Voltage Transformer ▫ Lighting Surge Arrester 	
3.3 BASIS FOR ESTABLISHING THE SEIN 3.3.1. 3.3.2. 3.3.3. 3.3.4. 3.3.5.	The specific details of this Standards and Procedures comprise the Site and Equipment Identification of Revenue Metering Installations of Trading Participants in the WESM as prescribed in the following provisions of the Philippine Grid Code and Distribution Code: Grid Code 7.11.1.1 Grid Code 7.11.1.2 Grid Code 7.11.1.3 Grid Code 7.11.2.1 Grid Code 7.11.2.2		xxx Grid Code 7.11.1.1 6.13.1.1 Grid Code 7.11.1.2 6.13.1.2 Grid Code 7.11.1.3 6.13.1.3 Grid Code 7.11.2.1 6.13.2.1 Grid Code 7.11.2.2 6.13.2.2 xxx		To update Grid Code references

Section/Title	Original Provision	Proposed Amendment	Rationale
	xxx		
Section 4 Metering Services Provider Registration	METERING SERVICES PROVIDERREGISTRATION xxx	METERING SERVICES PROVIDER REGISTRATION xxx	The entire section is proposed to be deleted. Metering registration is provided in the WESM Manual on Registration, Suspension and De-Registration Criteria and Procedures.
SECTION 5 METERING INSTALLATION REGISTRATION	SECTION 5 METERING INSTALLATION REGISTRATION	SECTION 5 <u>4</u> METERING INSTALLATION REGISTRATION	Renumbering

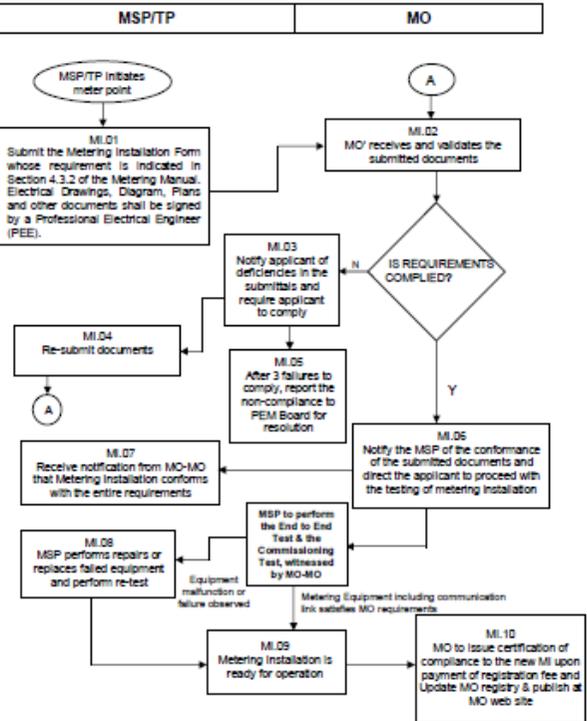
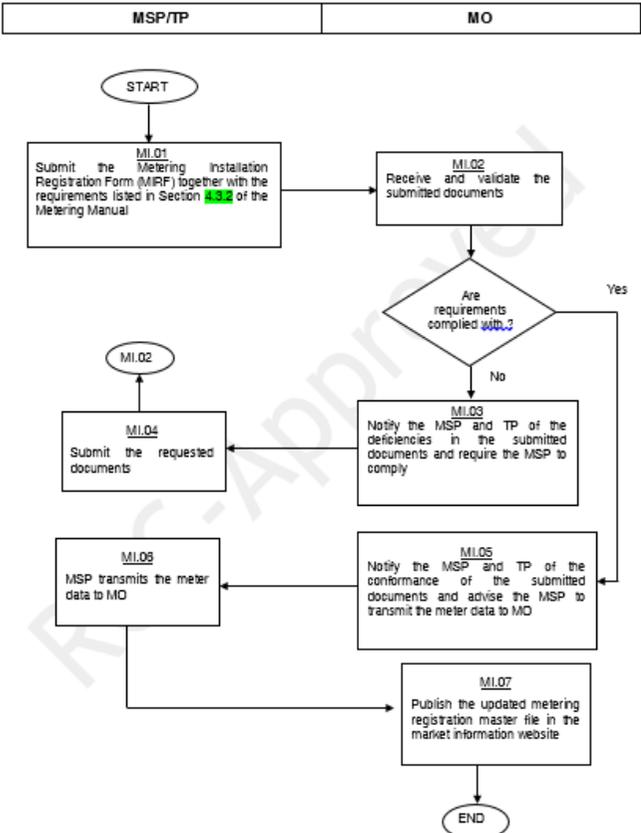
Section/Title	Original Provision	Proposed Amendment	Rationale
5.1 INTRODUCTION	5.1 INTRODUCTION All Trading Participants (Generators and Customers) who are direct WESM members, through their <i>Metering Services Providers</i> are required to register their Metering Installations with the <i>Market Operator</i> before they will be allowed to participate in the WESM.	5.1 4.1 INTRODUCTION. COVERAGE All Trading Participants (Generators and Customers) who are direct WESM members, through their <i>Metering Services Providers</i> are required to register their Metering Installations with the <i>Market Operator</i> before they will be allowed to participate in the WESM <u>Pursuant to <i>WESM Rules</i> Clause 4.3.1.1 (c), each metering installation shall be registered in the WESM.</u> <u>Further, in accordance with <i>WESM Rules</i> Clause 4.3.1.2, the <i>Market Operator</i> may also refuse to permit a <i>Trading Participant</i> who is a <i>Direct WESM Member</i> to participate in the spot market if the metering installation associated with the trading node does not meet the requirements as stated in the <i>WESM Rules</i>, this <i>Market Manual</i>, the <i>Grid Code</i> and the <i>Distribution Code</i>. In such cases, the <i>Market Operator</i> shall promptly advise the <i>ERC</i> of any refusal of applicants.</u> <u>This section provides the procedures to be followed by the <i>Market Operator</i>, <i>Metering Services Provider</i> and <i>Trading Participants</i> for the registration of metering installations of <i>Trading Participants</i> in the WESM.</u>	<ul style="list-style-type: none"> • To prescribe that only registered metering installations are allowed to participate in the WESM. • To include brief summary of the contents in Section 5.

Section/Title	Original Provision	Proposed Amendment	Rationale
5.2 PREPARING FOR METERING INSTALLATION REGISTRATION	<p>5.2 PREPARING FOR METERING INSTALLATION REGISTRATION</p> <p>In order to qualify for the registration of potential delivery points and be allowed to participate in the WESM, the Trading Participant and/or its Metering Services Provider must be able to demonstrate the following requirements prior to registration with the Market Operator (MO):</p> <p>5.2.1 Read and understand relevant sections about the “Metering Installations” detailing the requirements of the harmonized version of relevant sections of the WESM rules, the Philippine Distribution Code and the Philippine Grid Code;</p> <p>5.2.2 Metering installations installed by the Trading Participant/Metering Services Provider shall consist of meters compliant with WESM rules:</p> <p>5.2.3. Demonstrate to the Market Operator that the Trading Participant's MSP has successfully conducted a commissioning test for new Metering Installation. On the other hand, the Trading Participant's MSP shall submit reports of all commissioning test for existing Metering Installation.</p> <p>5.2.4. An End to End Test to satisfy the MO's requirements on the successful examination of the Metering Installation and ensure the accuracy of the meter data shall be performed by the Trading Participant's MSP.</p>	<p>5.2 4.2 PREPARING FOR METERING INSTALLATION REGISTRATION</p> <p><u>In order for a metering installation to be successfully registered in the WESM, the Metering Services Provider must be able to demonstrate the following to the Market Operator:</u></p> <ul style="list-style-type: none"> <u>a. the metering installation for registration is compliant with the WESM Rules and Section 2 of this Manual;</u> <u>b. the metering installation for registration has successfully undergone end-to-end testing; and</u> <u>c. the metering installation for registration has successfully undergone commissioning testing.</u> <p>In order to qualify for the registration of potential delivery points and be allowed to participate in the WESM, the Trading Participant and/or its Metering Services Provider must be able to demonstrate the following requirements prior to registration with the Market Operator (MO):</p> <p>5.2.1 Read and understand relevant sections about the “Metering Installations” detailing the requirements of the harmonized version of relevant sections of the WESM rules, the Philippine Distribution Code and the Philippine Grid Code;</p> <p>5.2.2 Metering installations installed by the Trading Participant/Metering Services Provider shall consist of meters compliant with WESM rules:</p>	<p>To clearly state the requirements of the Market Operator for the MSP's registration of their metering installations.</p>

Section/Title	Original Provision	Proposed Amendment	Rationale
	5.2.5 MSP shall demonstrate or provide proof that the metering equipment and metering data are provided with adequate security system;	<p>5.2.3. Demonstrate to the Market Operator that the Trading Participant's MSP has successfully conducted a commissioning test for new Metering Installation. On the other hand, the Trading Participant's MSP shall submit reports of all commissioning test for existing Metering Installation.</p> <p>5.2.4. An End to End Test to satisfy the MO's requirements on the successful examination of the Metering Installation and ensure the accuracy of the meter data shall be performed by the Trading Participant's MSP.</p> <p>5.2.5 MSP shall demonstrate or provide proof that the metering equipment and metering data are provided with adequate security system;</p>	
5.3	REGISTRATION AND SUBMITTALS	<p>5.3 Registrations and Submittals</p> <p><u>4.3 Requirements for Registration of Metering Installations</u></p>	New section title
Registrations and Submittals	<p>The three types of Metering Installations to be registered are</p> <p>Main and alternate meter, of revenue quality meters, with the same accuracy class and features. The alternate meter is not mandatory;</p> <p>Main and check meter, of revenue quality meters, with the same accuracy class, but the check meter has lesser features than the main meter. The check meter is not mandatory;</p>	<p>The three types of Metering Installations to be registered are:</p> <p>Main and alternate meter, of revenue quality meters, with the same accuracy class and features. The alternate meter is not mandatory;</p> <p>Main and check meter, of revenue quality meters, with the same accuracy class, but the check meter has lesser features than the main meter. The check meter is not mandatory;</p>	To prescribe rules on main and back-up meters that shall be used in the WESM.

Section/Title	Original Provision	Proposed Amendment	Rationale
	Main or Single meter, of revenue quality type.	Main or Single meter, of revenue quality type. <u>4.3.1 The main and back-up meters which are compliant with the requirements set forth in Section 2.2 of this Manual shall be registered in the WESM prior to its deployment.</u>	
5.3 Registration And Submittals	5.3.2 Pertinent Documents that must be submitted by the Trading Participant in coordination with its MSP: 5.3.2.1. Accomplished Metering Installation Form; 5.3.2.2. Metering Installation Specifications; 5.3.2.3. Load Profile (Forecast, Historical Data, including Maximum and Minimum Hourly Demand) 5.3.2.4. Data of Connected Transformers (Core & Copper Loss) 5.3.2.5. Data of Radial Lines from the Market Trading Node to the Metering Point. 5.3.2.6. Drawing of the Location Plan of the Metering Point; 5.3.2.7. Single Line Diagrams from Grid Substation to the Metering Point 5.3.2.8. Detailed Wiring Diagram of the Metering Installation 5.3.2.9. ERC's Certification on Meter Test Results (with ERC Seal) 5.3.2.10. Test and calibration reports of Instrument Transformers and Meters; 5.3.2.11. Pro-forma Agreement between Trading Participant and its MSP; and	4.3.2 Pertinent Documents that must be submitted by the Trading Participant in coordination with its MSP: <u>To initiate the registration of a metering installation, the WESM Metering Services Provider, on behalf of its Trading Participant, shall submit the following to the Market Operator:</u> <u>a.</u> 5.3.2.1 Accomplished Metering Installation Registration Form <u>signed by both the Metering Services Provider and the Trading Participant;</u> <u>b.</u> 5.3.2.2 Metering Installation Specifications; <u>c.</u> 5.3.2.3 Load Profile (Forecast, Historical Data, including Maximum and Minimum Hourly Demand); <u>d.</u> 5.3.2.4 Data of Connected Transformers (Core & Copper Loss); <u>e.</u> 5.3.2.5 Data of Radial Lines from the <i>Market Trading Node</i> to the Metering Point; <u>f.</u> 5.3.2.6 Drawing of the Location Plan of the Metering Point; <u>g.</u> 5.3.2.7 Single Line Diagrams from Grid Substation to the Metering Point; <u>h.</u> 5.3.2.8 Detailed Wiring Diagram of the Metering Installation;	<ul style="list-style-type: none"> • Revised for clarity. • Item (c): To be consistent with the implementation of 5-minute dispatch interval and the determination of trading amounts every settlement interval from the aggregate of trading amounts per dispatch interval

Section/Title	Original Provision	Proposed Amendment	Rationale
	5.3.2.12. Other Special Features of the Meter. Note: All drawings, plans, wiring diagrams shall be signed by a Professional Electrical Engineer (PEE).	<ul style="list-style-type: none"> i. 5.3.2.9 ERC's Certification on Meter Test Results (with ERC Seal); j. 5.3.2.10 Test and calibration reports of Instrument Transformers & Meters; k. 5.3.2.11 Pro-forma Metering Service Agreement between the Trading Participant Metered Entity and its MSP; and l. 5.3.2.12 Other Special Features of the Meter. Note: All drawings, plans, wiring diagrams shall be signed by a Professional Electrical Engineer (PEE).	
5.3 REGISTRATION AND SUBMITTALS	New Provision	<u>4.3.3 In the event where there is a need to install additional metering points, the Trading Participant shall coordinate with the Metering Services Provider its electrical requirements for the implementation of additional metering points. Subsequently, the Metering Services Provider, in coordination with its Trading Participant, shall submit to the Market Operator the documents, as listed in Section 4.3.2 (a) to (l) above.</u>	To prescribe rules on notifying the Market Operator in relation to the modifications of the electrical requirements of the Trading Participant.
5.3 REGISTRATION AND SUBMITTALS	New Provision	<u>4.3.4 The Metering Services Provider shall keep and maintain an updated information as specified in the Metering Installation Registration Form (MIRF) and shall provide the Market Operator with a copy thereof.</u>	To explicitly state the responsibility of the Metering Services Provider in the documentation and maintenance of new and updated MIRFs.
5.4 WORKFLOW AND PROCEDURAL STEPS	WORKFLOW AND PROCEDURAL STEPS The following diagram represents the work flow and information between the interfacing of the MO and the MSP in registering the Metering Installation. Also featured in this manual are the procedural steps to be	5.4 <u>4.4</u> WORKFLOW AND PROCEDURAL STEPS The following diagram represents the work flow and information <u>flow</u> between the interfacing of the <u>Market Operator</u> and the <u>Metering Services Provider</u> in registering the metering installation. Also featured in this manual <u>Market Manual</u> are the procedural steps to be	For consistency

Section/Title	Original Provision	Proposed Amendment	Rationale
	followed by the Metering Services Provider in registering the Metering Installation/facilities.	followed by the <i>Metering Services Provider</i> in registering the Metering Installation/facilities.	
5.4.1. Workflow for Registration of Metering Installation	<p>5.4.1. Workflow for Registration of Metering Installation</p> 		To reflect the current metering practice and for clarity.

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If the MO decides the Metering Installation is not suitable for registration, then proceed to Step MI.05.</td> <td>After the initial evaluation of the MO that requesting to fulfill its requirements (if these circumstances happened)</td> <td>Notification by the MO requesting to fulfill its requirements</td> <td>Fax, mail, or e-mail</td> <td>The MSP receives the MO notification.</td> </tr> </tbody> </table> <table border="1" data-bbox="405 703 1023 1015"> <thead> <tr> <th>Ref.</th> <th>Task Name</th> <th>Task Detail</th> <th>When</th> <th>Resulting Information</th> <th>Method</th> <th>Completion Events</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td>Repeatably proceed to Step MI.05)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>MI.04</td> <td>Resubmit needed documents with clarification.</td> <td>To continue the registration process, the MSP must resubmit to MO all the needed requirements.</td> <td>After receiving the clarification request from the MO.</td> <td>All the required documents with clarifications</td> <td>mail or courier</td> <td>The MO receives the documents.</td> </tr> <tr> <td>MI.05</td> <td>MO-MO reports the non-compliance of the MI to the PEM Board for resolution</td> <td>After 3 failures to comply with the requirements.</td> <td>After MI.03</td> <td>MO Board decides to reject the registration of the MI</td> <td>Fax, mail or courier</td> <td>MI is not included in the rolls of WESM Member</td> </tr> <tr> <td>MI.06</td> <td>Notify MSP the conformance of the entire requirements and request for End to End test</td> <td>MO notifies the MSP that the Metering Installation described in the submitted documents conforms to MO standards and requests the MSP to perform the End to End test.</td> <td>After re-evaluating that the submitted documents conform to MO requirements.</td> <td>Notification by MO stating that the MSP's documents conform to MO requirements.</td> <td>Fax, mail, or e-mail</td> <td>The MSP receives notification.</td> </tr> <tr> <td>MI.07</td> <td>Receive notification of conformance.</td> <td>MSP receives notification of conformance and should pay the necessary registration fees.</td> <td>After Step MI.06.</td> <td></td> <td>Fax, mail, or e-mail</td> <td></td> </tr> </tbody> </table> <table border="1" data-bbox="405 1054 1023 1246"> <thead> <tr> <th>Ref.</th> <th>Task Name</th> <th>Task Detail</th> <th>When</th> <th>Resulting Information</th> <th>Method</th> <th>Completion Events</th> </tr> </thead> <tbody> <tr> <td>MI.08</td> <td>MSP to rectify all uncovered problems</td> <td>MSP has corrected the problems/failures concerning the end to end test</td> <td>After MSP performs the end to end test by and uncovers some failures or problems</td> <td></td> <td></td> <td>MSP's Metering Installation is ready for testing</td> </tr> <tr> <td>MI.09</td> <td>Metering Installation is ready for operation</td> <td>MSP's Metering Installation satisfactorily passed the end to end test as witnessed by MO and ready for operation.</td> <td>After MI.08</td> <td></td> <td></td> <td></td> </tr> <tr> <td>MI.10</td> <td>Updating of the MO's registry and Publishing it at MO's Web site</td> <td>MO to issue a certificate of compliance to the new Metering Installation upon payment of registration fee and Update its registry and published the new Metering Installation of the MSP at MO's Web site.</td> <td>After MI.09</td> <td></td> <td></td> <td>End of registration process of MSP's MI</td> </tr> </tbody> </table>	Ref.	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MI.06	Notify MSP the conformance of the entire requirements and request for End to End test	MO notifies the MSP that the Metering Installation described in the submitted documents conforms to MO standards and requests the MSP to perform the End to End test.	After re-evaluating that the submitted documents conform to MO requirements.	Notification by MO stating that the MSP's documents conform to MO requirements.	Fax, mail, or e-mail	The MSP receives notification.																																																																																																																																																																																			
MI.07	Receive notification of conformance.	MSP receives notification of conformance and should pay the necessary registration fees.	After Step MI.06.		Fax, mail, or e-mail																																																																																																																																																																																				
Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events																																																																																																																																																																																			
MI.08	MSP to rectify all uncovered problems	MSP has corrected the problems/failures concerning the end to end test	After MSP performs the end to end test by and uncovers some failures or problems			MSP's Metering Installation is ready for testing																																																																																																																																																																																			
MI.09	Metering Installation is ready for operation	MSP's Metering Installation satisfactorily passed the end to end test as witnessed by MO and ready for operation.	After MI.08																																																																																																																																																																																						
MI.10	Updating of the MO's registry and Publishing it at MO's Web site	MO to issue a certificate of compliance to the new Metering Installation upon payment of registration fee and Update its registry and published the new Metering Installation of the MSP at MO's Web site.	After MI.09			End of registration process of MSP's MI																																																																																																																																																																																			
Reference	Task Name	Task Detail	When	Resulting Information	Method	Completion Events																																																																																																																																																																																			
MI.01	Submission of Application Form and pertinent documents	Submit the application form with the following documents: Electrical Diagram, Metering Installation Specification and Documents, Metering point Locations, Drawings, Load (Demand) Forecast of Metering Installation, Transformer Data, Agreement between MSP and TP (if any), Pictures of the Installation, Payment of Application Fee (submittals shall be signed by a PEE).	MSP and TP initiate the Metering Installation Registration	Application Forms with the required documents was submitted to MO	By courier	MO receives the documents																																																																																																																																																																																			
MI.02	MO receives and validates the submitted documents	MO validates the application form and the Metering Installation documents for completeness and conformance to standards	Following receipt of MIRF and required documents from MSP and TP																																																																																																																																																																																						
MI.03	Request clarification	The MO requests the MSP and TP to submit	After the initial evaluation of the MO that	Notification by the MO requesting the	Fax, mail, or e-mail	The MSP and TP receive the MO notification																																																																																																																																																																																			
Reference	Task Name	Task Detail	When	Resulting Information	Method	Completion Events																																																																																																																																																																																			
			from MSP and TP about the submitted metering documents.	additional documents, as required or provide further clarifications about the submitted documents for non-conformance to MO requirements	submitted documents were found lacking in substance.	MSP and TP to submit the missing requirements																																																																																																																																																																																			
MI.04	Resubmit needed documents with clarification	To continue the registration process, the MSP and TP must resubmit to MO all the needed requirements	After receiving the clarification request from the MO.	All the required documents with clarifications	Mail or courier	The MO receives the documents																																																																																																																																																																																			
MI.05	Notify MSP and TP of the conformance of requirements and request the MSP to transmit the meter data to MO	MO notifies the MSP that the Metering Installation described in the submitted documents conforms to MO standards and requests the MSP to conduct transmission of meter data to MO	After evaluating the submitted documents which are conformance to MO requirements	Notification by MO stating that the MSP and TP documents are conformance to MO requirements	Fax, mail, or e-mail	The MSP and TP receives notification																																																																																																																																																																																			
MI.06	Transmit meter data	MSP conducts transfer of data to MO. In case of any problems/failures concerning the transmission of data.	After MI.05																																																																																																																																																																																						
Reference	Task Name	Task Detail	When	Resulting Information	Method	Completion Events																																																																																																																																																																																			
				MSP shall correct it immediately.																																																																																																																																																																																					
MI.07	Updating of Metering registration master file	MO updates the metering registration master file and publishes the same in the market information website	After MI.06			End of registration process of MI																																																																																																																																																																																			

Section/Title	Original Provision	Proposed Amendment	Rationale
SECTION 6 METERING DATA COLLECTION	SECTION 6 METERING DATA COLLECTION	SECTION 6 5 METERING DATA COLLECTION	Re-numbering
6.1 Introduction	<p>6.1 INTRODUCTION</p> <p>The Metering Services Provider (MSP) is primarily responsible for and in behalf of the Trading Participant (TP) to collect and deliver Metering data to the Market Management System (MMS) of the Market Operator (MO). Revenue Meters and/or data collection system of the MSP must be capable of electronic, remote communication with the MO's meter Interrogation System to transfer Metering data. The MO will publish on its web site the metering data for the time period covered by the settlement process in accordance to section 4.8 of the WESM rules. If remote acquisition of metering data becomes unavailable, the MO will contact the Metered TP or MSP to arrange an alternate means of transferring the data.</p>	<p>6.1 5.1 INTRODUCTION</p> <p><u>Pursuant to WESM Rules Clause 4.6.2.1, the Metering Services Provider is primarily responsible for and in behalf of the Trading Participant to collect and deliver retrieve the metering data from the meter and transmit the data Market Management System to the metering database of the Market Operator for billing and settlement. Revenue Meters and/or data collection system of the MSP must be capable of electronic, remote communication with the MO's meter Interrogation System to transfer Metering data. The MO will publish on its web site the metering data for the time period covered by the settlement process in accordance to section 4.8 of the WESM rules. If remote acquisition of metering data becomes unavailable, the MO will contact the Metered TP or MSP to arrange an alternate means of transferring the data.</u></p> <p><u>This section provides the procedures to be followed by the Market Operator, Metering Services Provider and WESM Participants in the collection and submission of metering data to the Market Operator.</u></p>	Revised since this will be covered in the next sections of this chapter.

Section/Title	Original Provision	Proposed Amendment	Rationale
6.2 Data Collection	<p>6.2 DATA COLLECTION</p> <p>The meter data collection process shall be done in the following manner:</p>	<p>6.2 5.2 DATA COLLECTION DATABASES</p> <p>The meter data collection process shall be done in the following manner:</p>	<p>Section Renumbering. <i>Data Collection</i> will be Section 6.3.</p>
	<p>6.2.1. The Registered MSP shall collect meter data the previous day (for the 24 hour period) from each Metering Points of their respective TPs (Generators or Customers) including meters which are remotely connected by means of their meter data retrieval systems starting at 12 midnight. Then all configured data shall be transmitted to the MMS every 4 AM the succeeding day. However, the MSP shall not make, cause or allow any alteration to the original stored meter data as retrieved in the metering installation; and</p>	<p>6.2.1. The Registered MSP shall collect meter data the previous day (for the 24 hour period) from each Metering Points of their respective TPs (Generators or Customers) including meters which are remotely connected by means of their meter data retrieval systems starting at 12 midnight. Then all configured data shall be transmitted to the MMS every 4 AM the succeeding day. However, the MSP shall not make, cause or allow any alteration to the original stored meter data as retrieved in the metering installation; and</p>	
	<p>6.2.2. In case of remote communication failure, with prior notice to MO, the MSP shall manually retrieve the meter data and transmit or deliver it to the MMS.</p>	<p>6.2.2. In case of remote communication failure, with prior notice to MO, the MSP shall manually retrieve the meter data and transmit or deliver it to the MMS.</p>	
	<p>6.2.3. However, MO may opt to perform remote data collection on the affected meters using its own MMS's data collection system with prior notice to the MSP.</p> <p>All meter data delivery/transmittal shall be in accordance with established procedures.</p> <p>All meter clocks shall be synchronized by the MSP with the Philippine Standard Time (PST) to ensure accuracy of settlements as per section 4.5.8 of the WESM rules.</p>	<p>6.2.3. However, MO may opt to perform remote data collection on the affected meters using its own MMS's data collection system with prior notice to the MSP.</p> <p>All meter data delivery/transmittal shall be in accordance with established procedures.</p> <p>All meter clocks shall be synchronized by the MSP with the Philippine Standard Time (PST) to ensure accuracy of settlements as per section 4.5.8 of the WESM rules.</p>	
	<p><i>New</i></p>	<p>5.2.1 Metering Database</p> <p>The Market Operator, in accordance with WESM</p>	<p>To provide general provisions regarding the MO's metering database.</p>

Section/Title	Original Provision	Proposed Amendment	Rationale
		<p><u>Rules Clause 4.8.2.1, shall create, maintain and administer a metering database, which shall include a metering registry containing information for each metering installation registered with the Market Operator.</u></p> <p><u>a. Data Inclusions</u></p> <p><u>The metering database shall include metering data, energy data, data substituted and all calculations made for settlement purposes.</u></p> <p><u>b. Storage Duration</u></p> <p><u>The data shall be stored in the metering database¹:</u></p> <p style="padding-left: 40px;"><u>i. for 16 months in accessible format; and</u></p> <p style="padding-left: 40px;"><u>ii. for 10 years in archive.</u></p>	
6.3 Metering Database	<p>6.3 Metering Database</p> <p>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:</p> <p>6.3.1. TP whose settlement statement is determined on the basis of the Metering data recorded in that registered wholesale meter;</p> <p>6.3.2 The MSP for that registered wholesale meter; and</p>	<p>6.3 <u>5.2.2 Market Operator’s</u> Metering Database</p> <p>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: <u>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 a metering point are the following:</u></p> <p>6.3.4 <u>a. Trading Participants</u> TP whose settlement statement amounts is <u>are</u> determined on the basis of the</p>	To include entities which are eligible to have access to the metering data per WESM Rules 4.8.3.

¹ WESM Rules 4.8.2.3

Section/Title	Original Provision	Proposed Amendment	Rationale
	<p>6.3.3 Network Service Provider to whose system a TP is connected using a separate WESM Metering Installation.</p> <p>The TP may query the Metering database for the purpose of reviewing the Metering data to determine its correctness.</p>	<p>Metering data recorded in that registered wholesale meter <u>by reference to quantities of energy flowing through that metering point;</u></p> <p>6.3.2. <u>b. The <i>Metering Services Provider</i> MSP who is responsible for the metering installation at that metering point;</u> for that registered wholesale meter; and</p> <p>6.3.3 <u>c. The Network Service Provider to whose system a TP is connected using a separate WESM Metering Installation.</u> <u>associated with the metering point;</u></p> <p><u>d. The Market Operator and its authorized agents;</u></p> <p><u>e. Any customer with respect to the metering data in relation to the metering point registered to it;</u></p> <p><u>f. The Market Surveillance Committee;</u></p> <p><u>g. The ERC; and</u></p> <p><u>h. The DOE.</u></p> <p>The TP may query the Metering database for the purpose of reviewing the Metering data to determine its correctness.</p>	
	<p><i>New</i></p>	<p><u>5.2.3 Installation Database</u></p> <p><u>Pursuant to WESM Rules Clause 4.8.1.1, the Metering Services Provider shall create, maintain and administer an installation database in relation to all its metering installations.</u></p> <p><u>The installation database shall contain the</u></p>	<p>To reflect the provisions and requirements of WESM Rules Clause 4.8.1.1</p>

Section/Title	Original Provision	Proposed Amendment	Rationale
		<p><u>information specified in Appendix B2 of the <i>WESM Rules</i>.²</u></p> <p><u>The <i>Metering Services Provider</i> shall ensure that the affected Participant and the <i>Market Operator</i> are given access to the information in its installation database at all reasonable times, as may be applicable, as follows:</u></p> <ul style="list-style-type: none"> a. <u>In the case of data sixteen months old or less, within seven (7) business days from receiving written notice from the person or entity seeking access; and</u> b. <u>In the case of data more than sixteen months old, within thirty (30) days from receiving written notice from the person or entity seeking access.</u> 	
	new	<p><u>5.3 Collection and Submission Procedure</u></p> <p><u>This section provides the process for meter data collection and submission to the <i>Market Operator</i>:</u></p>	To provide title and introduction for the section.
	new	<p><u>5.3.1 Requirements</u></p> <p><u>a. Data</u></p> <p><u>The metering data shall contain the following:</u></p>	To itemize the requirements for the contents of metering data for clarity.

² WESM Rules 4.8.1.3

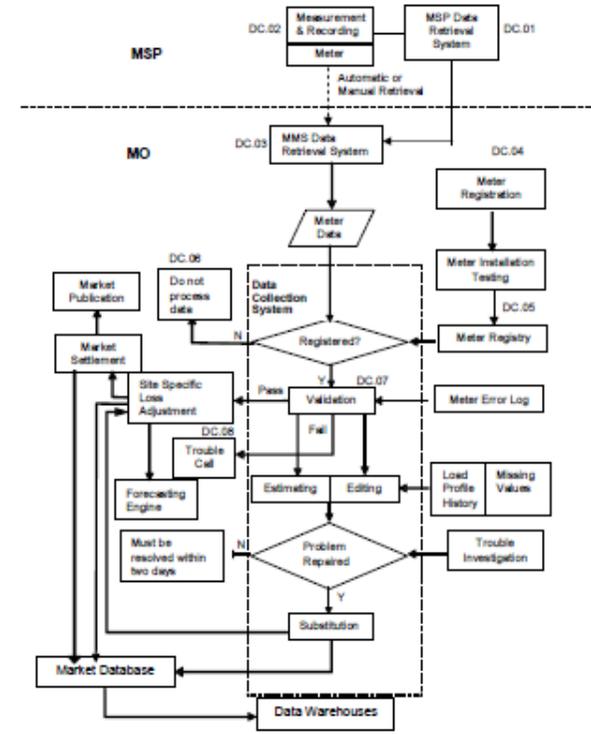
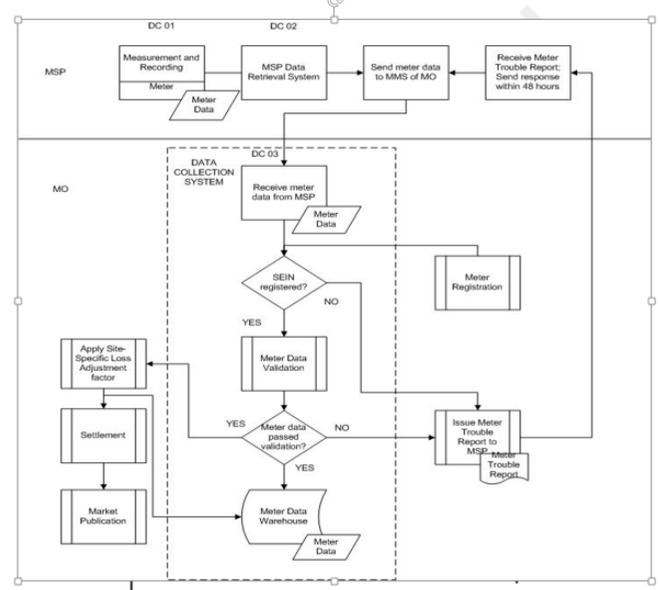
Section/Title	Original Provision	Proposed Amendment	Rationale
		<p>i. <u>Date and time (Time Series) of meter readings received for each meter and the Meter data exchange format;</u></p> <p>ii. <u>The meter data in kWh (Active Energy), kvarh (reactive energy), voltage per phase and current per phase in their assigned channel;</u></p> <p>iii. <u>Site Equipment Identification Number (SEIN) or Recorder ID of Meter (RevMeterID/Meter Point);</u></p> <p>iv. <u>Meter Serial Number;</u></p> <p>v. <u>Substation (Market Node);</u></p> <p>vi. <u>Substation Voltages; and</u></p> <p>vii. <u>Resolution (every 15 minute).</u></p> <p><u>b. Format</u></p> <p><u>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 Market Operator.</u></p> <p><u>c. Timing</u></p> <p><u>In accordance with WESM Rules Clause 4.5.8.1, all meter data shall be synchronized by the Metering Services Provider to Philippine Standard Time to ensure accuracy of settlement process.</u></p>	

Section/Title	Original Provision	Proposed Amendment	Rationale
	<p><i>New</i></p>	<p><u>5.3.2 Daily Process</u></p> <p>a) <u>At a five minute-resolution, the meter at the metering point of the Trading Participant continuously records metering data. Immediately at the end of the trading day (previous day), the Metering Services Provider shall collect the metering data and event log of the whole trading day from each meter of all its associated Trading Participants including meters which are remotely connected by means of their meter data retrieval systems starting at 2400H.</u></p> <p>b) <u>All collected meter data shall be submitted by the Metering Services Provider to the Market Operator's Meter Data Warehouse starting 0400H until 0800H of the succeeding trading day. The Metering Services Provider shall not make, cause or allow any alteration to the original stored meter data as retrieved in the metering installation.</u></p> <p>c) <u>The Meter Data Retrieval System of the Metering Services Provider automatically exports the metering data of all its associated Trading Participants to the Meter Data Warehouse of the Market Operator daily through file transfer protocol.</u></p> <p>d) <u>In the event that no metering data was received by 0800H, the Market Operator shall immediately call the Metering Services Provider to resend the data through the same method.</u></p>	<ul style="list-style-type: none"> • To revise this provision based on the procedural technique as experienced by Market Operator and MSP. • To update the estimation of meter data based on the experience by the Market Operator with the agreement of the trading participants and MSP.

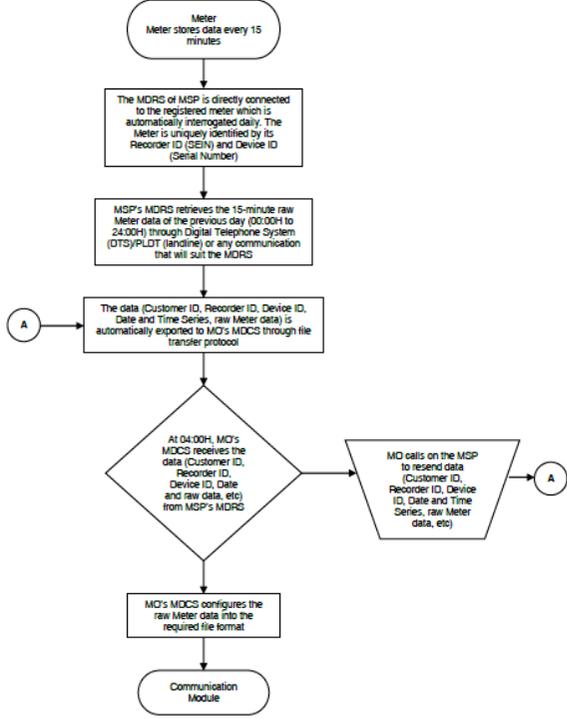
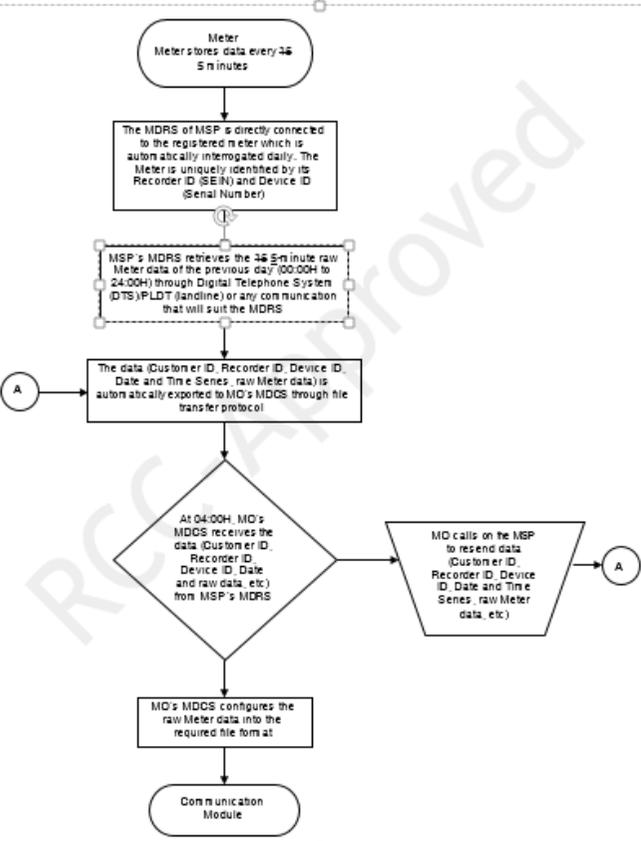
Section/Title	Original Provision	Proposed Amendment	Rationale
		<p>e) <u>Upon receipt, the Meter Data Collection System of the Market Operator converts the metering data to the required file format for use in settlement.</u></p> <p>5.3.3 Monthly Process</p> <p>a) <u>Not later than three (3) business days after the end of the billing period, the Metering Services Provider shall submit, via a compact disk, monthly preliminary metering data of all metering points of its associated Trading Participants. In addition, Metering Services Provider shall submit a transmittal letter that includes a tabulation of all associated metering points and their corresponding total metered quantity for the billing period. The Metering Services Providers shall also report to the Market Operator all discrepancies between the monthly metering data and the daily metering data values with justifications for the discrepancies.</u></p> <p>b) <u>The Market Operator shall validate the monthly metering data relative to its format, the given SEINs, metering data and hourly interval. The Market Operator shall compare the monthly metering data to the values of the daily metering data for each metering point submitted by the Metering Services Provider. If there are discrepancies between the values, the Market Operator shall issue a Meter Trouble Report (MTR) to the Metering Services Provider.</u></p>	<ul style="list-style-type: none"> • To include the current procedure on the submission of monthly meter data by the MSP.

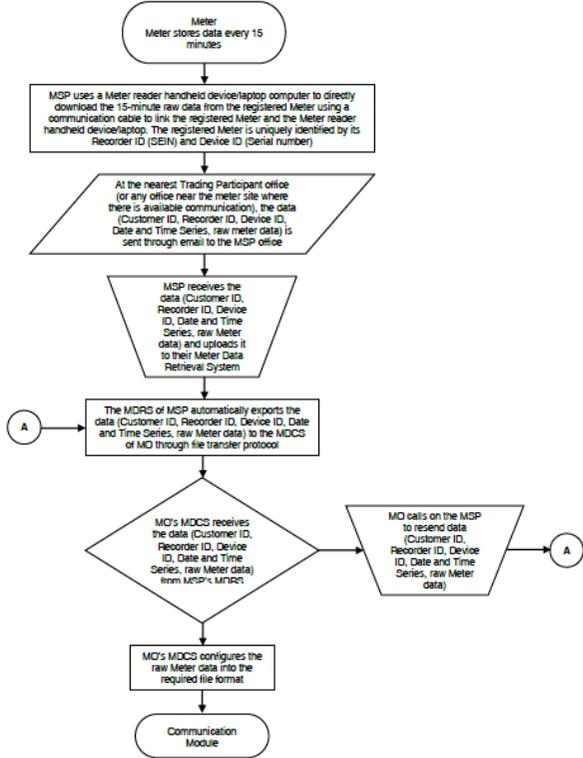
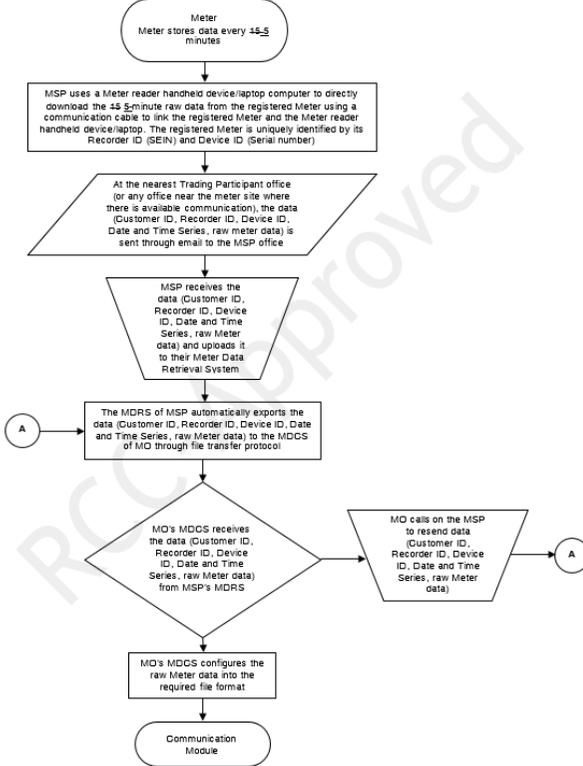
Section/Title	Original Provision	Proposed Amendment	Rationale
		<p>c) <u>Not later than two (2) business days after the issuance of the Meter Trouble Report, the Metering Services Provider shall correct the metering data in accordance with the procedures set forth in Section 6.4.3 of this Manual.</u></p> <p>d) <u>The Metering Services Provider shall submit the corrected and final metering data to the Market Operator four (4) business days before the issuance of the final settlement.</u></p> <p>e) <u>The monthly metering data shall be submitted in a compressed format, encrypted with a password.</u></p>	
<p>6.4 INTERFACE AND DATA FLOW</p>	<p>6.4 INTERFACE AND DATA FLOW</p> <p>Pursuant to Section 4.6 of the WESM Rules, the data that comes in from the Data collection system shall be subjected to Validation, Estimation and Editing (VEE) processes to ensure integrity of the metered data for settlement purposes.</p> <p>This MMS process involves various interfaces which comprises the following:</p> <p>6.4.1. The MSP will collect daily the 24-hour metered data of the previous day and shall transmit/deliver it to the MMS of the MO within the 4th hour of the succeeding day.</p> <p>6.4.2. The following contents shall be needed by the MMS from the metered data:</p>	<p>6.4 INTERFACE AND DATA FLOW</p> <p>Pursuant to Section 4.6 of the WESM Rules, the data that comes in from the Data collection system shall be subjected to Validation, Estimation and Editing (VEE) processes to ensure integrity of the metered data for settlement purposes.</p> <p>This MMS process involves various interfaces which comprises the following:</p> <p>6.4.1. The MSP will collect daily the 24-hour metered data of the previous day and shall transmit/deliver it to the MMS of the MO within the 4th hour of the succeeding day.</p> <p>6.4.2. The following contents shall be needed by the MMS from the metered data:</p>	<p>For deletion since this section is already reflected in the proposed Sections 6.3.1 and 6.3.2.</p>

Section/Title	Original Provision	Proposed Amendment	Rationale
	<p>6.4.2.1. Date and time (Time Series) of meter readings received for each meter and the Meter data exchange format.</p> <p>6.4.2.2. The meter data in kwh (Energy) with assigned channel number.</p> <p>6.4.2.3. Site Equipment Identification Number (SEIN) or Recorder ID of Meter (RevMeterID/Meter Point).</p> <p>6.4.2.4. Meter Serial Number</p> <p>6.4.2.5. Substation (Market Node)</p> <p>6.4.2.6. Substation Voltages</p> <p>6.4.2.7. Resolution (every 15 minute)</p> <p>6.4.2.8. Minimum and Maximum Value of meter data</p>	<p>6.4.2.1. Date and time (Time Series) of meter readings received for each meter and the Meter data exchange format.</p> <p>6.4.2.2. The meter data in kwh (Energy) with assigned channel number.</p> <p>6.4.2.3. Site Equipment Identification Number (SEIN) or Recorder ID of Meter (RevMeterID/Meter Point).</p> <p>6.4.2.4. Meter Serial Number</p> <p>6.4.2.5. Substation (Market Node)</p> <p>6.4.2.6. Substation Voltages</p> <p>6.4.2.7. Resolution (every 15 minute)</p> <p>6.4.2.8. Minimum and Maximum Value of meter data</p>	
<p>6.5 WORKFLOW AND PROCEDURAL STEPS</p>	<p>6.5 WORKFLOW AND PROCEDURAL STEPS</p> <p>The following diagram represents the work flow and procedural steps regarding the interfacing of the MSP and the MO in relation to the metered data.</p>	<p>6.5 5.4 WORKFLOW AND PROCEDURAL STEPS</p> <p>The following diagram represents the work flow and procedural steps regarding the interfacing of the <i>Metering Services Provider</i> and the <i>Market Operator</i> in relation to the metered data.</p>	<p>Re-numbering and for clarity</p>

Section/Title	Original Provision	Proposed Amendment	Rationale
6.5.1 Metering Data System Workflow	<p data-bbox="405 292 788 320">Metering Data System Workflow</p> 	<p data-bbox="1055 292 1570 320">6.5.1 <u>5.4.1</u> Metering Data System Workflow</p> 	<ul data-bbox="1749 292 1971 320" style="list-style-type: none"> • Re-numbering <p data-bbox="1749 427 2112 608">To consolidate metering data collection process in one workflow – in the Metering Data System Workflow</p>
6.5.2 Metering Data Collection Workflow	<p data-bbox="405 1158 882 1187">6.5.2 Metering Data Collection Workflow</p>	<p data-bbox="1055 1158 1532 1187">6.5.2 Metering Data Collection Workflow</p> <p data-bbox="1055 1246 1608 1275"><i>Entire sub-section 6.5.2 (flowchart) for deletion</i></p>	<p data-bbox="1749 1158 2112 1241">To consolidate metering data collection process in one workflow.</p>

Section/Title	Original Provision	Proposed Amendment	Rationale																																																																								
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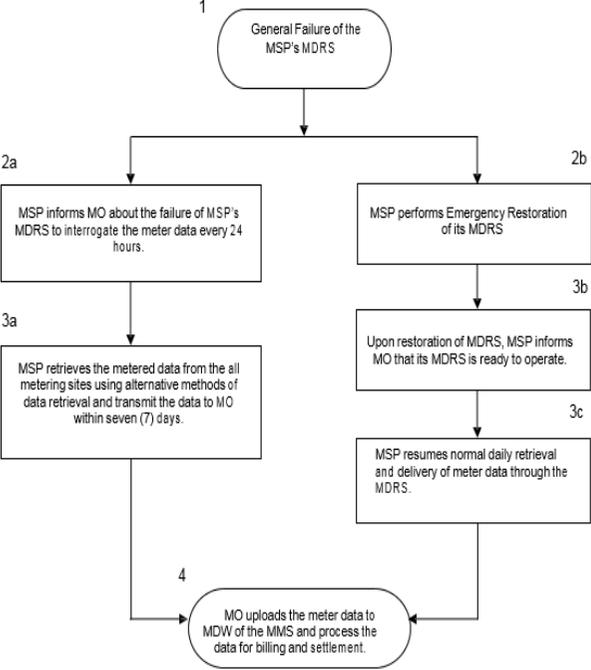
Section/Title	Original Provision	Proposed Amendment	Rationale
	<p data-bbox="405 1278 1025 1337">6.7.1.2. Meter Data Flatfile to Meter Data Collection System of MO:</p>  <pre> graph TD A([Meter stores data every 15 minutes]) --> B[The MDRS of MSP is directly connected to the registered meter which is automatically interrogated daily. The Meter is uniquely identified by its Recorder ID (SEIN) and Device ID (Serial Number)] B --> C[MSP's MDRS retrieves the 15-minute raw Meter data of the previous day (00:00H to 24:00H) through Digital Telephone System (DTS)/PLDT (landline) or any communication that will suit the MDRS] C --> D[The data (Customer ID, Recorder ID, Device ID, Date and Time Series, raw Meter data) is automatically exported to MO's MDCS through file transfer protocol] D --> E{At 04:00H, MO's MDCS receives the data (Customer ID, Recorder ID, Device ID, Date and Time Series, raw Meter data, etc) from MSP's MDRS} E --> F[/MO calls on the MSP to resend data (Customer ID, Recorder ID, Device ID, Date and Time Series, raw Meter data, etc)/] F --> G[MO's MDCS configures the raw Meter data into the required file format] G --> H([Communication Module]) </pre>	<p data-bbox="1055 293 1720 384">5.7.1 Meter Data Retrieval System of the Metering Services Provider to the Meter Data Collection System of the Market Operator</p>  <pre> graph TD A([Meter stores data every 5 minutes]) --> B[The MDRS of MSP is directly connected to the registered meter which is automatically interrogated daily. The Meter is uniquely identified by its Recorder ID (SEIN) and Device ID (Serial Number)] B --> C[MSP's MDRS retrieves the 5-minute raw Meter data of the previous day (00:00H to 24:00H) through Digital Telephone System (DTS)/PLDT (landline) or any communication that will suit the MDRS] C --> D[The data (Customer ID, Recorder ID, Device ID, Date and Time Series, raw Meter data) is automatically exported to MO's MDCS through file transfer protocol] D --> E{At 04:00H, MO's MDCS receives the data (Customer ID, Recorder ID, Device ID, Date and Time Series, raw Meter data, etc) from MSP's MDRS} E --> F[/MO calls on the MSP to resend data (Customer ID, Recorder ID, Device ID, Date and Time Series, raw Meter data, etc)/] F --> G[MO's MDCS configures the raw Meter data into the required file format] G --> H([Communication Module]) </pre>	<p data-bbox="1749 293 2105 379">interval from the aggregate of trading amounts per dispatch interval.</p> <p data-bbox="1749 1251 2105 1369">To be consistent with the implementation of 5-minute dispatch interval and the determination of trading</p>

Section/Title	Original Provision	Proposed Amendment	Rationale
		<p>6.7.1.2 5.7.2 Meter Data Flat File to the Meter Data Collection System of MO: the Market Operator</p> 	<p>amounts every settlement interval from the aggregate of trading amounts per dispatch interval.</p>

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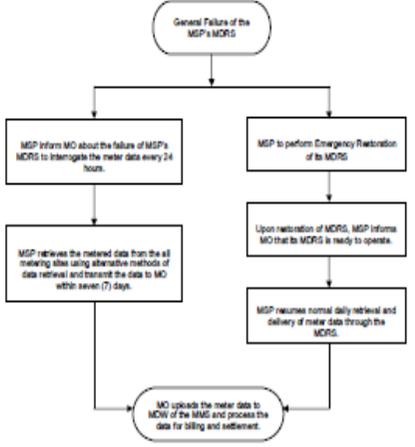
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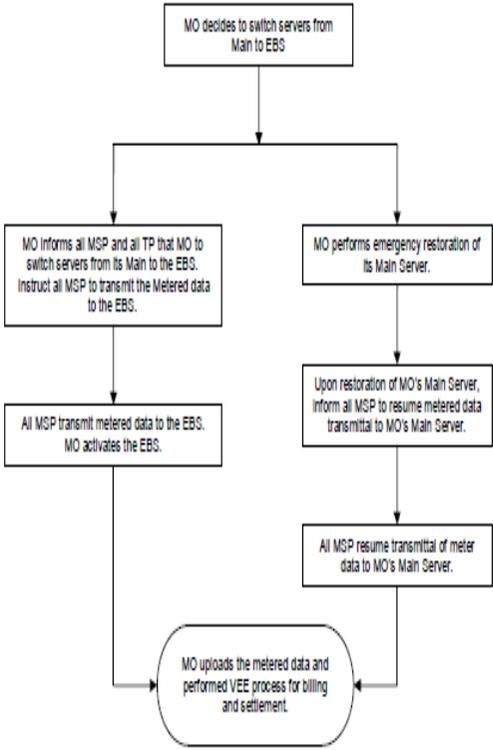
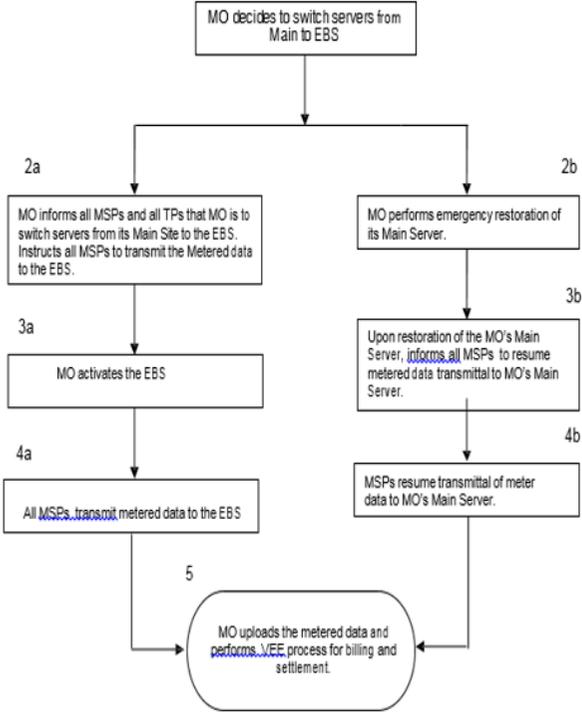
Section/Title	Original Provision	Proposed Amendment	Rationale
	<p>6.9.1.1.1. Inform MO of the occurrence of the failure of its MDRS.</p> <p>6.9.1.1.2. Perform emergency restoration of its MDRS.</p> <p>6.9.1.1.3. While the MDRS is out of service, retrieve all required metered data using alternative methods of retrieval and submit it within seven (7) days to MO in a file format that is compatible with the MO system.</p> <p>6.9.1.1.4. For this purpose, the MSP may use a backup MDRS if it is available, or retrieve the metered data on-site or remotely using the proprietary meter software.</p> <p>6.9.1.2. MO</p> <p>Upon receipt of metered data, perform VEE and process the metered data for billing and settlement.</p> <p>6.9.1.3. MSP</p> <p>6.9.1.3.1. Inform MO when its MDRS is ready to resume normal operation.</p> <p>6.9.1.3.2. Resume normal retrieval and transmittal of metered data using the MDRS.</p>	<p>6.9.1.1.1. Inform MO of the occurrence of the failure of its MDRS.</p> <p>6.9.1.1.2. Perform emergency restoration of its MDRS.</p> <p>6.9.1.1.3. While the MDRS is out of service, retrieve all required metered data using alternative methods of retrieval and submit it within seven (7) days to MO in a file format that is compatible with the MO system.</p> <p>6.9.1.1.4. For this purpose, the MSP may use a backup MDRS if it is available, or retrieve the metered data on-site or remotely using the proprietary meter software.</p> <p>6.9.1.2. MO</p> <p>Upon receipt of metered data, perform VEE and process the metered data for billing and settlement.</p> <p>6.9.1.3. MSP</p> <p>6.9.1.3.1. Inform MO when its MDRS is ready to resume normal operation.</p> <p>6.9.1.3.2. Resume normal retrieval and transmittal of metered data using the MDRS.</p>	<p>Summary flow chart tables are used similar with other sections.</p>

Section/Title	Original Provision	Proposed Amendment	Rationale
		 <pre> graph TD 1([1 General Failure of the MSP's MDRS]) --> 2a[MSP informs MO about the failure of MSP's MDRS to interrogate the meter data every 24 hours.] 1 --> 2b[MSP performs Emergency Restoration of its MDRS] 2a --> 3a[MSP retrieves the metered data from the all metering sites using alternative methods of data retrieval and transmit the data to MO within seven (7) days.] 2b --> 3b[Upon restoration of MDRS, MSP informs MO that its MDRS is ready to operate.] 3b --> 3c[MSP resumes normal daily retrieval and delivery of meter data through the MDRS.] 3a --> 4([4 MO uploads the meter data to MDW of the MMS and process the data for billing and settlement.]) 3c --> 4 </pre>	
	NEW	5.9.2 Procedures to Address Failure of Metering Services Provider Meter Data Retrieval System	

Section/Title	Original Provision	Proposed Amendment	Rationale																																
		<table border="1"> <thead> <tr> <th data-bbox="1070 293 1146 320">Ref</th> <th data-bbox="1146 293 1377 320">Procedures</th> <th data-bbox="1377 293 1556 320">Frequency/Method</th> <th data-bbox="1556 293 1720 320">Where/Who</th> </tr> </thead> <tbody> <tr> <td data-bbox="1070 320 1146 379">1</td> <td data-bbox="1146 320 1377 379">Failure of the MSP's MDRS</td> <td data-bbox="1377 320 1556 379">Per occurrence</td> <td data-bbox="1556 320 1720 379">MSP</td> </tr> <tr> <td data-bbox="1070 379 1146 467">2a</td> <td data-bbox="1146 379 1377 467">Inform MO of the occurrence of the failure of its MDRS</td> <td data-bbox="1377 379 1556 467">Per occurrence</td> <td data-bbox="1556 379 1720 467">MSP</td> </tr> <tr> <td data-bbox="1070 467 1146 528">2b</td> <td data-bbox="1146 467 1377 528">Perform emergency restoration of MDRS</td> <td data-bbox="1377 467 1556 528">Per occurrence</td> <td data-bbox="1556 467 1720 528">MSP</td> </tr> <tr> <td data-bbox="1070 528 1146 839">3a</td> <td data-bbox="1146 528 1377 839">While the MDRS is out of service, retrieve all required metered data using alternative methods of retrieval and submit it within seven (7) days to MO in a file format that is compatible with the MO system. For this purpose, the MSP may use a back-up MDRS if it is available or retrieve the metered data on-site or remotely using the proprietary</td> <td data-bbox="1377 528 1556 839">Per occurrence</td> <td data-bbox="1556 528 1720 839">MSP</td> </tr> <tr> <td data-bbox="1070 839 1146 900">3b</td> <td data-bbox="1146 839 1377 900">Inform MO when its MDRS is ready to resume normal retrieval</td> <td data-bbox="1377 839 1556 900">Per occurrence</td> <td data-bbox="1556 839 1720 900">MSP</td> </tr> <tr> <td data-bbox="1070 900 1146 987">3c</td> <td data-bbox="1146 900 1377 987">Resume normal daily retrieval and transmittal of metered data using the MDRS</td> <td data-bbox="1377 900 1556 987">Per occurrence</td> <td data-bbox="1556 900 1720 987">MSP</td> </tr> <tr> <td data-bbox="1070 987 1146 1091">4</td> <td data-bbox="1146 987 1377 1091">Upon receipt of metered data, perform VEE and processes the metered data for billing and settlement</td> <td data-bbox="1377 987 1556 1091">Automatic</td> <td data-bbox="1556 987 1720 1091">MO</td> </tr> </tbody> </table>	Ref	Procedures	Frequency/Method	Where/Who	1	Failure of the MSP's MDRS	Per occurrence	MSP	2a	Inform MO of the occurrence of the failure of its MDRS	Per occurrence	MSP	2b	Perform emergency restoration of MDRS	Per occurrence	MSP	3a	While the MDRS is out of service, retrieve all required metered data using alternative methods of retrieval and submit it within seven (7) days to MO in a file format that is compatible with the MO system. For this purpose, the MSP may use a back-up MDRS if it is available or retrieve the metered data on-site or remotely using the proprietary	Per occurrence	MSP	3b	Inform MO when its MDRS is ready to resume normal retrieval	Per occurrence	MSP	3c	Resume normal daily retrieval and transmittal of metered data using the MDRS	Per occurrence	MSP	4	Upon receipt of metered data, perform VEE and processes the metered data for billing and settlement	Automatic	MO	
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6.9.2	<p>6.9.2. In case of technical problems and emergency situations at the MO Main Server that necessitate transfer of operation to the Emergency Back-up System (EBS):</p> <p>6.9.2.1. MO</p>	<p>6.9.2. In case of technical problems and emergency situations at the MO Main Server that necessitate transfer of operation to the Emergency Back-up System (EBS):</p> <p>6.9.2.1. MO</p>																																	

Section/Title	Original Provision	Proposed Amendment	Rationale
	<p>6.9.2.1.1. Inform the MSPs and the TPs of the need to transfer operations from the Main Server to the EBS; and instruct MSPs to transmit the metered data to the EBS.</p> <p>6.9.2.1.2. Activate the EBS, upload the metered data and perform VEE process for billing and settlement.</p> <p>6.9.2.1.3. Performs emergency restoration of its Main Server</p> <p>6.9.2.2. MSP Transmit the metered data to MO-EBS.</p> <p>6.9.2.3. MO When the MO is ready to resume operation at the Main Server, inform the MSPs to resume metered data transmittal to the Main Server.</p> <p>6.9.2.4. MSP Resume transmittal of metered data to the MO Main Server.</p> <p>6.9.2.5. MO Resume operations at the Main Server. Upload the meter data and perform VEE process for billing and settlement.</p>	<p>6.9.2.1.1. Inform the MSPs and the TPs of the need to transfer operations from the Main Server to the EBS; and instruct MSPs to transmit the metered data to the EBS.</p> <p>6.9.2.1.2. Activate the EBS, upload the metered data and perform VEE process for billing and settlement.</p> <p>6.9.2.1.3. Performs emergency restoration of its Main Server</p> <p>6.9.2.2. MSP Transmit the metered data to MO-EBS.</p> <p>6.9.2.3. MO When the MO is ready to resume operation at the Main Server, inform the MSPs to resume metered data transmittal to the Main Server.</p> <p>6.9.2.4. MSP Resume transmittal of metered data to the MO Main Server.</p> <p>6.9.2.5. MO Resume operations at the Main Server. Upload the meter data and perform VEE process for billing and settlement.</p>	
	<p>6.9.3 Failure of MSP Meter Data Retrieval System</p>	<p><i>Flowchart transferred to Section 5.9.1 (above) as revised</i></p>	

Section/Title	Original Provision	Proposed Amendment	Rationale
	 <pre> graph TD Start([General Failure of the MSP's MORS]) --> Path1[MSP inform MO about the failure of MSP's MORS to interrogate the meter data every 24 hours.] Start --> Path2[MSP to perform Emergency Restoration of its MORS] Path1 --> Step1[MSP retrieves the metered data from the all operating sites using alternative methods of data retrieval and transmit the data to MO within seven (7) days.] Path2 --> Step2[Upon restoration of MORS, MSP informs MO that its MORS is ready to operate.] Step2 --> Step3[MSP resumes normal daily retrieval and delivery of meter data through the MORS.] Step1 --> End([MO uploads the meter data to MOW of the MMS and process the data for billing and settlement.]) Step3 --> End </pre>		

Section/Title	Original Provision	Proposed Amendment	Rationale
	<p>6.9.4. Switching of Servers from Main Site to EBS by MO</p> 	<p>6.9.4 5.9.3 Workflow for the Market Operator Switching of Servers from <u>the</u> Main Site to <u>the</u> EBS <u>Emergency Back up Site</u> by MO</p> 	<p>To update the formatting of workflows and procedures. Summary flow chart tables are used as per other sections.</p>
	NEW	5.9.4 Procedures for the Market Operator Switching of Servers from Main Site to Emergency Backup Site	

Section/Title	Original Provision	Proposed Amendment	Rationale																																				
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Section 7 DATA VALIDATION, ESTIMATION AND EDITING 7.1. INTRODUCTION	Section 7 DATA VALIDATION, ESTIMATION AND EDITING 7.1. INTRODUCTION The Metering data collected by the Market Operator (MO) shall be reviewed using the Validation, Estimation, and Editing (VEE) process. The VEE process operates according to established schedule that ensures the integrity of the metered data suitable for settlement purposes as per Section 4.9 of the WESM rules.	Section 7 6 DATA VALIDATION, ESTIMATION AND EDITING 7.1 6.1 <u>INTRODUCTION COVERAGE</u> The metering data collected by the Market Operator (MO) shall be reviewed using the Validation, Estimation, and Editing (VEE) process. The VEE process operates according to established schedules that ensure the integrity of the metered data suitable for settlement purposes as per Section WESM Rules Clause 4.9 of the WESM rules. <u>6.1.1 Pursuant to WESM Rules Clause 4.9, the Market Operator shall validate and substitute the metering data after being furnished settlement-</u>	Re-numbering and to provide an overview of the MO's responsibility in the VEE process.																																				

Section/Title	Original Provision	Proposed Amendment	Rationale
		<p><u>ready metering data by the WESM Metering Services Provider using the process set in this Section.</u></p> <p><u>6.1.2 This section provides the methodologies and procedures for validating, estimating and editing metering data for the determination of the metered quantity of a Trading Participant.</u></p> <p><u>6.1.3 In accordance with WESM Rules Clause 4.5.4.2, the Market Operator will not be liable to any person or entity in respect of any inaccuracies, discrepancies or other defects in the metering data, including the metering data which is stored in the metering database provided that this do not arise from the gross negligence or willful misconduct of the Market Operator.</u></p>	
<p>7.2 GENERAL DESCRIPTION OF THE VEE PROCESS</p>	<p>7.2 GENERAL DESCRIPTION OF THE VEE PROCESS</p> <p>7.2.1 The VEE Perspective</p> <p>At the time the metered data were received by the Market Management System (MMS), it shall be evaluated using criteria as agreed among Trading Participants, Metering Services Provider (MSP) and the MO. Whether the metered data contains missing values, uncertain values or exceeds the max/min values, such data shall undergo validation, estimation and editing wherein substitutions of metered data should follow the establish policy using historical data or the best available information. In cases where metered data fails in the VEE process, MO will then issue trouble report and give instruction to the</p>	<p>7.2 6.2 GENERAL DESCRIPTION OF THE VEE PROCESS</p> <p>7.2.1 The VEE Perspective</p> <p><u>6.2.1 All metering data received by the Market Operator shall be evaluated using the Validation, Estimation and Editing process described in this section. When metering data contains missing values, uncertain values, or exceeds the maximum or minimum of the daily hourly load profile values of the registered meter, such metering data shall undergo estimation and editing wherein substitution of metering data shall be made using historical data.</u></p> <p>At the time the metered data were received by the</p>	<p>Revised for clarity.</p>

Section/Title	Original Provision	Proposed Amendment	Rationale
	<p>concerned MSP who should investigate the trouble and provide report to MO later.</p> <p>The concerned Metering Services Provider may propose an adjustment to the edited value based on confirmed nature of failures. Once the metered data had undergone verification, all concerned parties including MO must agree to the proposed change.</p>	<p>Market Management System (MMS), it shall be evaluated using criteria as agreed among Trading Participants, Metering Services Provider (MSP) and the MO. Whether the metered data contains missing values, uncertain values or exceeds the max/min values, such data shall undergo validation, estimation and editing wherein substitutions of metered data should follow the establish policy using historical data or the best available information. In cases where metered data fails in the VEE process, MO will then issue trouble report and give instruction to the concerned MSP who should investigate the trouble and provide report to MO later.</p> <p>The concerned Metering Services Provider may propose an adjustment to the edited value based on confirmed nature of failures. Once the metered data had undergone verification, all concerned parties including MO must agree to the proposed change.</p>	
7.2.2 Custodian of Metering Database	<p>7.2.2 Custodian of metering database</p> <p>MO shall establish and maintains a database containing metered data transferred from each registered wholesale meter to the MMS in accordance with section 4.8.2 of the WESM rules. The metering database includes original energy readings, substitutions, estimations, and calculated values for all WESM complaint meters.</p>	<p>7.2.2-Custodian of metering database</p> <p>MO shall establish and maintains a database containing metered data transferred from each registered wholesale meter to the MMS in accordance with section 4.8.2 of the WESM rules. The metering database includes original energy readings, substitutions, estimations, and calculated values for all WESM complaint meters.</p> <p><u>6.2.2 The Market Operator shall issue a Meter Trouble Report for all metering data that fail the validation categories of the Validation, Estimation and Editing</u></p>	<p>This is already covered in Section 5.2 <i>Metering Databases</i>.</p>

Section/Title	Original Provision	Proposed Amendment	Rationale
		<p><u>process. When Meter Trouble Reports are issued, the WESM Metering Services Provider shall investigate the meter trouble and subsequently provide a report to the Market Operator. The WESM Metering Services Provider shall then correct the meter data. Procedures regarding Meter Trouble Reports are described in more detail in Section 8 of this Manual.</u></p>	
7.3 THE VEE PROCESS	7.3 THE VEE PROCESS	<p>7.3 6.3 THE <u>VALIDATION PROCEDURES</u> VEE PROCESS</p>	<ul style="list-style-type: none"> • Changed the section title for consolidation purposes. • Re-numbering.
7.3.1 Meter Value Validation	<p>7.3.1 Meter Value Validation</p> <p>When the metered data is received by the MMS, several checks will be performed. The time series that fails the test will be reported according to four error categories:</p> <p>7.3.1.1. Uncertain Value 7.3.1.2. Missing Values 7.3.1.3. Outside Min/max limits 7.3.1.4. Orphan values</p>	<p>7.3.1 6.3.1 Meter Value <u>Daily</u> Validation</p> <p>7.3.1.1 6.3.1.1 <u>Validation Categories</u></p> <p>When the metered data is received by the MMS, several checks will be performed. The time series that fails the test will be reported according to four error categories</p> <p><u>The Market Operator shall perform several checks upon receipt of metering data. These checks are described further in Section 6.3.1.2. Metering data that fail the checks will be reported according to four (4) error categories:</u></p> <p><u>a.</u> 7.3.1.1. <u>Uncertain Values;</u> <u>b.</u> 7.3.1.2. <u>Missing Values;</u> <u>c.</u> 7.3.1.3. <u>Outside Historical Min/max limits; and</u> <u>d.</u> 7.3.1.4. <u>Orphan values.</u></p>	<ul style="list-style-type: none"> • Changed the title for consolidation purposes, and to revise the format following the procedure framework. • Re-numbering.

Section/Title	Original Provision	Proposed Amendment	Rationale
7.3.2 Checks to be performed for the Meter data	<p>7.3.2. Checks to be performed for the Meter Data</p> <p>The following checks will be performed for the above values:</p> <p>7.3.2.1. Evaluate the meter’s maximum and minimum readings.</p> <p>7.3.2.2. Verify the values of the check meter if check meter is available.</p> <p>7.3.2.3. Verification for the values of the metered data whose meter is not registered in the MMS, master lists which are known as the “Orphan Values”.</p> <p>7.3.2.4. Review the historical meter readings which fall outside defined parameters max/min of the historical data. The historical data used for reasonability check is limited to:</p> <p>a. Same value as last week b. Same value as the same hour during the previous day of the same type (i.e. weekday or weekend)</p>	<p>7.3.2 6.3.1.2 Validation <u>Checks</u> to be performed for the Meter data</p> <p>The following checks will be performed by the Market Operator for the above validation error categories values:</p> <p>a. Check for uncertain values; b. Check for missing values</p> <p>c. 7.3.2.1 Evaluate the meter’s maximum and minimum readings.</p> <p>7.3.2.2 Verify the values of the check meter if check meter is available.</p> <p>d. 7.3.2.3 Verify the values of the metered data whose meter is not registered in the MMS master lists which are known as the “Orphan Values”.</p> <p>e. 7.3.2.4 Review the historical meter readings which fall outside defined parameters max/min of the historical data. The historical data used for reasonability check is limited to are as follows:</p> <p>i. same value as last week during the same hour last week; ii. same value during the same hour dispatch interval during of the same previous day of the same type (i.e. weekday or weekend) ; and iii. Average values during the previous days or last week of the same hour.</p>	Revised for clarity.

Section/Title	Original Provision	Proposed Amendment	Rationale
7.3.3 Meter Values Validation Configuration	<p>7.3.3. Meter Values Validation Configuration</p> <p>Minimum and maximum values for the metered data are recorded in the registry of the MMS' metering system. Any value that falls outside the range will be marked with status "uncertain".</p> <p>7.3.3.1. Check against Historical Values</p> <p>Check against historical meter data is executed by clock control or manually. This validation uses the following historical values:</p> <ol style="list-style-type: none"> Same value as last week Same value as the previous day Average of previous day <p>7.3.3.2. Check against Check Meter (if necessary)</p> <p>The verification of values of the check meter is recorded in the MMS and the parameters to be checked should follow the same period.</p>	<p>7.3.3. Meter Values Validation Configuration</p> <p>Minimum and maximum values for the metered data are recorded in the registry of the MMS' metering system. Any value that falls outside the range will be marked with status "uncertain".</p> <p>7.3.3.1. Check against Historical Values</p> <p>Check against historical meter data is executed by clock control or manually. This validation uses the following historical values:</p> <ol style="list-style-type: none"> Same value as last week Same value as the previous day Average of previous day <p>7.3.3.2. Check against Check Meter (if necessary)</p> <p>The verification of values of the check meter is recorded in the MMS and the parameters to be checked should follow the same period.</p>	<p>For deletion since this section is already covered in the preceding section.</p>
Meter Values Validation Reporting	<p>7.3.4. Meter Values Validation Reporting</p> <p>A special report is shown in the MMS wherein the errors in the three categories below are reflected:</p> <p>7.3.4.1. Uncertain value. Values that failed the test against the check meter, the historical data check or the balance test.</p> <p>7.3.4.2. Missing Values. This check is performed directly in the time series matrix.</p>	<p>7.3.4. 6.3.1.3. Meter Values Validation Reporting</p> <p><u>The Market Operator shall prepare a daily validation report containing the errors encountered for the day and their respective category.</u></p> <p>A special report is shown in the MMS wherein the errors in the three categories below are reflected:</p>	<p>Certain provisions are for deletion since these are already a repetition of proposed Section 6.3.1.2 above.</p>

Section/Title	Original Provision	Proposed Amendment	Rationale
	<p>7.3.4.3. Outside min/max limits. This check is performed directly in the time series matrix.</p> <p>7.3.4.4. Comparing the check meter to another meter (main or alternate meter measuring the same power flow).</p>	<p>7.3.4.1. Uncertain value. Values that failed the test against the check meter, the historical data check or the balance test.</p> <p>7.3.4.2. Missing Values. This check is performed directly in the time series matrix.</p> <p>7.3.4.3. Outside min/max limits. This check is performed directly in the time series matrix.</p> <p>7.3.4.4. Comparing the check meter to another meter (main or alternate meter measuring the same power flow)</p>	
	NEW	<p>6.3.2 Monthly Validation</p> <p><u>In addition to the daily validation, the <i>Market Operator</i> shall also validate the monthly <i>metering data</i> sent by the WESM <i>Metering Services Providers</i>. The procedure for the monthly validation is as follows:</u></p> <ul style="list-style-type: none"> a. <u>The <i>Metering Services Provider</i> shall submit preliminary <i>metering data</i>. The preliminary <i>metering data</i> must have no missing values. The <i>Metering Services Provider</i> shall report to the <i>Market Operator</i> all discrepancies between the monthly <i>metering data</i> and the daily <i>metering data</i> values with justifications for the discrepancies;</u> b. <u>The <i>Market Operator</i> shall compare the values contained in the monthly <i>metering data</i> to the daily <i>metering data</i> of each <i>metering point</i> submitted by the <i>Metering Services Provider</i>. If there are discrepancies between the values, a <i>Meter Trouble Report</i></u> 	To explicitly establish the monthly validation process of the MO and MSP.

Section/Title	Original Provision	Proposed Amendment	Rationale
		<p><u>(refer to Section 7) shall be issued by the Market Operator to the Metering Services Provider;</u></p> <p><u>c. If issued a Meter Trouble Report, the Metering Services Provider shall correct the metering data and submit final metering data not later than four (4) business days prior to the issuance of the final settlement statement; and</u></p> <p><u>d. The final metering data shall be formally transmitted to the Market Operator with a cover letter identifying all the metering points, through their Site Equipment Identification Number.</u></p>	
7.3.5 Meter Value Estimation	<p>7.3.5 Meter Value Estimation</p> <p>Meter values that are missing will be estimated and substituted for settlement purposes. This estimate shall be based on the following items:</p> <p>7.3.5.1. Same value as last week</p> <p>7.3.5.2. Same value as the same hour during the previous day of the same day type (i.e. weekday or weekend)</p> <p>7.3.5.3. If the meter value for one interval is missing, estimation based on Interpolation between values</p> <p>7.3.5.4. If the meter values for two or more intervals are missing, meter data from the alternate meter</p> <p>7.3.5.5. In the absence of an alternate meter, historical data previously gathered from the main meter</p> <p>7.3.5.6. For generators without alternate meters or historical, the real time ex-post (RTX) information</p>	<p><i>(Delete entire provision)</i></p> <p>7.3.5 Meter Value Estimation</p> <p>Meter values that are missing will be estimated and substituted for settlement purposes. This estimate shall be based on the following items:</p> <p>7.3.5.1. Same value as last week</p> <p>7.3.5.2. Same value as the same hour during the previous day of the same day type (i.e. weekday or weekend)</p> <p>7.3.5.3. If the meter value for one interval is missing, estimation based on Interpolation between values</p> <p>7.3.5.4. If the meter values for two or more intervals are missing, meter data from the alternate meter</p> <p>7.3.5.5. In the absence of an alternate meter, historical data previously gathered from the main meter</p> <p>7.3.5.6. For generators without alternate meters or historical, the real time ex-post (RTX) information</p>	<p>The entire sub-section is for deletion since this is already included in the proposed amendments of this section.</p>

Section/Title	Original Provision	Proposed Amendment	Rationale
	<p>The estimated meter values shall be updated to their correct value upon submission by the Metering Services Provider (MSP) of the actual meter data obtained from the WESM compliant meters within the required period. A settlement recalculation run will be undertaken to implement the correct meter values into the settlement equation.</p>	<p>The estimated meter values shall be updated to their correct value upon submission by the Metering Services Provider (MSP) of the actual meter data obtained from the WESM compliant meters within the required period. A settlement recalculation run will be undertaken to implement the correct meter values into the settlement equation.</p>	
<p>7.3.6 Meter Value Approval</p>	<p>7.3.6 Meter Value Approval</p> <p>All meter data that are received must be approved by the Market Operator before they are used in the settlement process. These data are reviewed and verified using the methods as discussed in sections 7.1 to 7.5.</p>	<p>7.3.6 6.3.3 Meter Value Approval</p> <p>All meter data that are received must be approved by the Market Operator before they are used in the settlement process. These data are reviewed and verified using the methods as discussed in Sections 6.3.1 to 6.3.2.</p>	<p>Section renumbering</p>
<p>7.3.7 Meter Value Export</p>	<p>7.3.7 Meter Value Export</p>	<p>7.3.7 6.3.4 Meter Value Export</p> <p>---xxx---</p>	<p>Section renumbering</p>
<p>7.4 VEE – ESSENTIAL INDICATORS</p>	<p>7.4 VEE – ESSENTIAL INDICATORS</p> <p>7.4.1 Validation Tests for all Metering Installation</p> <p>The MSP may perform its own validation of Metering Installation. The following are the validation test that maybe performed by the MSP.</p> <p>7.4.1.1. Current and Voltage Check This indicator detects the loss of voltage and/or current input to the meter due to failure of the supply from one or more instrument transformers or tampering.</p>	<p>7.4 6.4 VEE – ESSENTIAL INDICATORS</p> <p>7.4.1 6.4.1 <i>Validation Tests for all Metering Installations</i></p> <p>The Metering Services Provider MSP may perform its own validation of Metering Installations. The following are the validation tests that may be performed by the Metering Services Provider MSP:</p> <p>7.4.1.1.a. Current and Voltage Check</p> <p>This indicator detects the loss of voltage and/or current input to the meter due to failure of the supply from one</p>	<p>Section renumbering</p>

Section/Title	Original Provision	Proposed Amendment	Rationale
	<p>7.4.1.2. Load Profile vs Meter Reading These checks for corruption related to the meter multiplier.</p> <p>7.4.1.3. Intervals Found vs. Interval Expected Checks for missing intervals.</p> <p>7.4.1.4. Time Synchronization Checks for synchronism of meter clock to Philippine Standard Time/Data Collection System time.</p> <p>7.4.1.5. Number of Power Outage Intervals This indicator allows periods of zero primary power to be identified.</p> <p>7.4.1.6. CRC/ROM RAM CRC pertains to the hardisk, ROM is read only memory and RAM is random access memory. This is part of the internal component of the meters, which automatically flags down indicating failure of internal electronics of the meter.</p> <p>7.4.1.7. Meter Clock over Flow Flag generated by the meter indicating failure of internal electronics.</p> <p>7.4.1.8. Hardware Reset Flag generated by the meter indicating failure of internal electronics.</p> <p>7.4.1.9. Time Reset Indicates the interval in which the meter clock time has been changed creating either a shorter or longer interval.</p>	<p>or more instrument transformers or tampering.</p> <p>7.4.1.2. b. Load Profile vs Meter Reading</p> <p>These This checks for corruption related to the meter multiplier.</p> <p>7.4.1.3. c. Intervals Found vs. Intervals Expected Checks for missing intervals.</p> <p>7.4.1.4. d. Time Synchronization Checks for synchronism of meter clock to Philippine Standard Time/Data Collection System time.</p> <p>7.4.1.5. e. Number of Power Outage Intervals This indicator allows periods of zero primary power to be identified.</p> <p>7.4.1.6. f. CRC/ROM RAM CRC pertains to the hardisk, ROM is read only memory and RAM is random access memory. This is part of the internal component of the meters, which automatically flags down indicating failure of internal electronics of the meter.</p> <p>7.4.1.7. g. Meter Clock over Flow Flag generated by the meter indicating failure of internal electronics.</p> <p>7.4.1.8. h. Hardware Reset</p>	

Section/Title	Original Provision	Proposed Amendment	Rationale
	<p>7.4.1.10. Data Overflow on Interval This indicates that the meter is creating more pulses than it can record in an interval or Data Collection System (DCS) can accommodate in an interval.</p> <p>7.4.1.11. Number of Channels The actual number of data channels from the meter does not match the number expected at the data collection System.</p> <p>7.4.1.12 Changed Device ID The internal device identifier does not match the value registered at the data collection System.</p> <p>7.4.1.13. Watch Dog Time Out This is the failure of the meter to return data in response to a poll within the required time frame. This is reported by some recorders when a watchdog register is tripped or activated.</p> <p>7.4.1.14. Parity Error This indicator determined by a parity error bit that is set by a recorder on a channel of data during status check or read/write function.</p> <p>7.4.1.15. Event Log Check Checks error messages and alarms recorded by the meter.</p>	<p>Flag generated by the meter indicating failure of internal electronics.</p> <p>7.4.1.9. j. Time Reset</p> <p>Indicates the interval in which the meter clock time has been changed creating either a shorter or longer interval.</p> <p>7.4.1.10. j. Data Overflow on Interval</p> <p>This indicates that the meter is creating more pulses than it can record in an interval or Data Collection System (DCS) can accommodate in an interval.</p> <p>7.4.1.11. k. Number of Channels</p> <p>The actual number of data channels from the meter does not match the number expected at the data collection System.</p> <p>7.4.1.12 l. Changed Device ID</p> <p>The internal device identifier does not match the value registered at the data collection System.</p> <p>7.4.1.13. m. Watch Dog Time Out</p> <p>This is the failure of the meter to return data in response to a poll within the required time frame. This is reported by some recorders when a watchdog register is tripped or activated.</p> <p>7.4.1.14. n. Parity Error</p>	

Section/Title	Original Provision	Proposed Amendment	Rationale
		<p>This indicator determined by a parity error bit that is set by a recorder on a channel of data during status check or read/write function.</p> <p>7.4.1.15.o. Event Log Check</p> <p>Checks error messages and alarms recorded by the meter.</p>	
7.4.2.1 Additional Tests Required for Main/Alternate/Check Meter Combination	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. --xxx--	7.4.2.1 6.4.2.1 Additional Tests Required for Main/Alternate/Check Meter Combination 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 a trouble call shall be issued. ---xxx--- b. Demand Comparison For each dispatch interval (1 hour), the active and reactive power demand values of the main meter shall be compared with the active and reactive power demand of to alternate/check meter.	To indicate reference of the allowable percent difference between the main and back-up meter data.
7.4.2.2 Stand-alone Metering	7.4.2.2 Stand-alone Metering	7.4.2.2 6.4.2.2 Stand-alone Metering Installation ---xxx---	To specify the word 'installation' on the subsection's title.

Section/Title	Original Provision	Proposed Amendment	Rationale
7.4.3 Estimating, Editing and Substitution	7.4.3 Estimating, Editing and Substitution When Validation indicates that the data from the main meter might be incorrect, the VEE software will automatically prepare an estimate. Data from the alternate or check meter will be substituted if these data passed Validation. If no other data is available or if data from alternate or check meter is also a suspect (fails Validation), the estimate shall be prepared based on the historical load pattern.	Estimating, Editing and Substitution 7.4.3 <u>6.4.3 Meter Data Estimation and Editing</u> <u>6.4.3.1</u> When V validation indicates that the data from the main meter might be incorrect <u>are missing or have an invalid data</u> , VEE software will automatically prepare an estimate. Data from the alternate or check meter will be substituted if these data passed Validation. If no other data is available or if data from alternate or check meter is also a suspect (fails Validation), the estimate shall be prepared based on the historical load pattern. <u>the values shall be estimated and substituted by the Meter Services Provider for settlement purposes.</u> <u>The following shall be the hierarchy of methods to be used by the Meter Services Provider for meter data estimation and editing:</u> <u>a) Interpolation of Meter Data</u> <u>If the main meter data from one to twelve consecutive 5-minute intervals are missing or have invalid data, the values shall be estimated by the Metering Services Provider by means of interpolation between the available intervals.</u>	To update the estimation of meter data based on the experience by the MO with the agreement of the Trading Participants and MSP.
7.4.3.1 Main/Alternate/Check Metering	7.4.3.1 Main/Alternate/Check Metering a. When energy comparison test fails, a trouble call shall be initiated to establish which meter data is incorrect. The alarms registered in the event log shall be examined to determine whether the problem is associated with the failure of the main meter. If all tests carried out on the main meter do not indicate a	7.4.3.1 Main/Alternate/Check Metering a. When energy comparison test fails, a trouble call shall be initiated to establish which meter data is incorrect. The alarms registered in the event log shall be examined to determine whether the problem is associated with the failure of the main meter. If all tests carried out on the main meter do not indicate a problem, no Substitution from the alternate to the main shall be carried out.	To update the estimation of meter data based on the experience by the MO with the agreement of the Trading Participants and MSP.

Section/Title	Original Provision	Proposed Amendment	Rationale
	<p>problem, no Substitution from the alternate to the main shall be carried out.</p> <p>b. If a test carried out on the main meter indicates a problem, data from the alternate/check meter shall be substituted for each dispatch interval where the energy comparison test fails. The data from the alternate/check meter shall pass the Validation tests before any Substitution is done.</p> <p>c. If a test carried out on the main meter indicates a problem and the data from the alternate/check meter does not pass validation (or the alternate/check meter also indicates a problem), an estimated data based on historical load pattern shall be substituted.</p> <p>d. The decision to use the substituted data in the settlement process shall be based on the results of the trouble call investigation.</p>	<p>b. If a test carried out on the main meter indicates a problem, data from the alternate/check meter shall be substituted for each dispatch interval where the energy comparison test fails. The data from the alternate/check meter shall pass the Validation tests before any Substitution is done.</p> <p>c. If a test carried out on the main meter indicates a problem and the data from the alternate/check meter does not pass validation (or the alternate/check meter also indicates a problem), an estimated data based on historical load pattern shall be substituted.</p> <p>d. The decision to use the substituted data in the settlement process shall be based on the results of the trouble call investigation.</p> <p><u>b. Meter Data from Back-Up Meter</u></p> <p><u>If more than four (4) intervals of main meter are missing or have invalid data, the values from the back-up meter may directly be substituted to the main meter provided that the data passed the validation based on the checks performed on Section 6.3.1.2. If the average deviation between the main and back-up meter is greater than 0.2% but not to exceed 0.6%, a correction factor shall be applied.</u></p> <p><u>c. Use of Average Phase Voltage or Average Phase Current</u></p>	

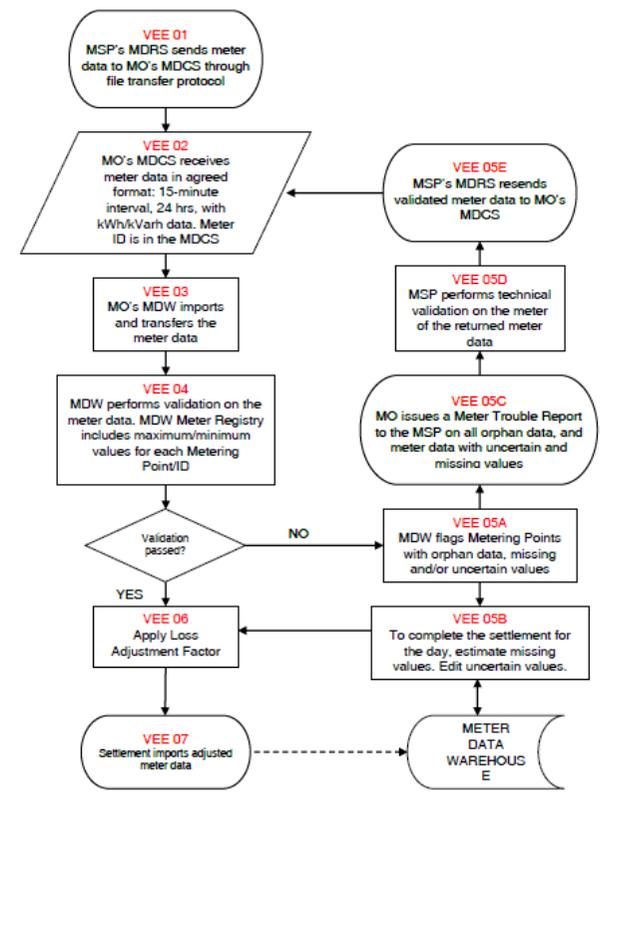
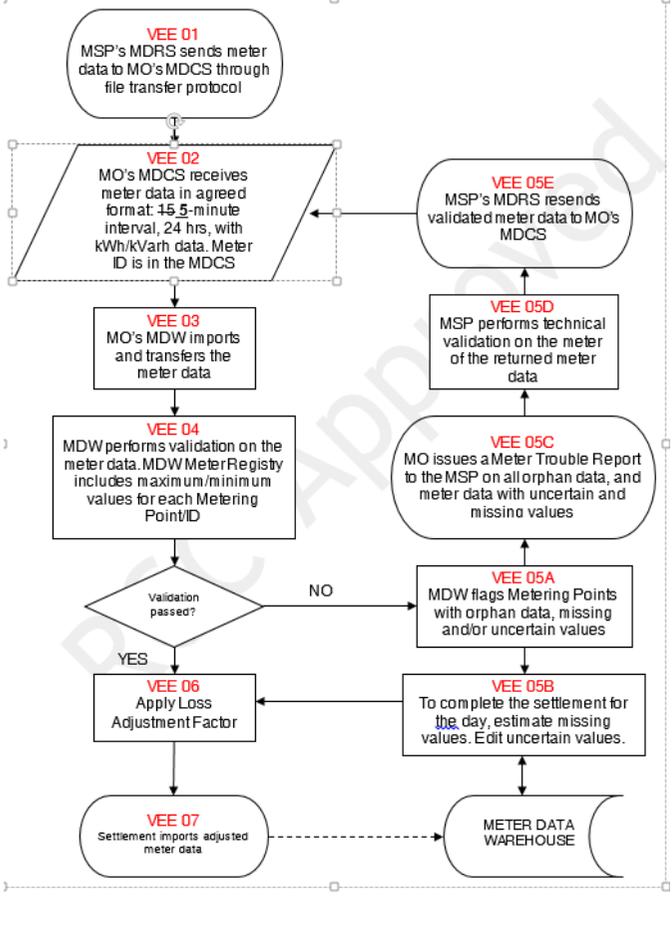
Section/Title	Original Provision	Proposed Amendment	Rationale
		<p><u>If there is a loss of a phase current or phase voltage, the estimation shall be computed by the Metering Services Provider, in coordination with the Market Operator and concerned Trading Participant, in accordance with the following formula:</u></p> $\text{Total Power} = \frac{[(V_{an} * I_a) + (V_{bn} * I_b) + (V_{cn} * I_c)] * \cos \theta * M}{}$ <p><u>where:</u></p> <p><u>I_a = computed phase A</u> <u>I_b, I_c = actual recorded per phase current</u> <u>V_{an}, V_{bn}, V_{cn} = actual recorded per phase voltage</u> <u>Cos Ø = average power factor</u> <u>M = multiplier</u></p> <p><u>d. Use of Remote Terminal Unit (RTU) Data</u></p> <p><u>In the event that there is no back-up meter or if the average deviation of the meter data of the main and back-up exceeds 0.6%, the data from the RTU may be substituted with the correction factor as a replacement for the affected data of the main meter of generators and/or load-end customers whose missing data are more than twelve 5-minute intervals. The Load Profile of the RTU may be adjusted based on the factor obtained between the comparison of the historical RTU data and historical main meter data, as agreed upon by Trading Participant, Metering Services Provider and Market Operator.</u></p>	

Section/Title	Original Provision	Proposed Amendment	Rationale
		<p><u>e) Historical Main Meter Data</u></p> <ul style="list-style-type: none"> <u>i. An average 3-day historical data previously gathered from the main meter can be directly substituted</u> <u>ii. Values of the same hour of the previous day or same day type (i.e. weekday or weekend)</u> <u>iii. Values of the same hour of the same day from the past 3 weeks as recorded on the same meter (i.e. Saturday, Sunday, Holidays)</u> 	
7.4.3.2 Stand-Alone Metering	7.4.3.2 Stand-Alone Metering For stand-alone Metering, estimating shall be based on historical load pattern since no other data is available. Estimation Methods is in accordance with sections 3.1 to 3.5.	7.4.3.2 <u>f.</u> Stand-Alone Metering For stand-alone Metering, estimating shall be based on historical load pattern since no other data is available. Estimation Methods is in accordance with sections 3.1 to 3.5. <u>Meter Data Estimation and Editing is in accordance with Sections 6.4.3.1(a) to 6.4.3.1(e).</u>	To rectify the subsection title and references of Meter Data Estimation and Editing.
7.4.3.3	7.4.3.3 If there is insufficient data to implement the two methods, the method agreed between the TP and MO shall be applied automatically.	7.4.3.3 If there is insufficient data to implement the two methods, the method agreed between the TP and MO shall be applied automatically.	To be consistent with the above revisions.
7.4.3.4 Use of Meter Register Reading in VEE	7.4.3.4. Use of Meter Register Reading in VEE (As approved by PEM Board Resolution No. 2010-57 dated 25 August 2010) Meter Register Readings (Present Index & Previous Index corresponding to the start and end of the period	7.4.3.4 <u>g.</u> Use of Meter Register Reading Reading in VEE Meter Register Readings (Present Index & Previous Index corresponding to the start and end of the period to be settled) may be used for the VEE process under the following circumstances:	Section re-numbering

Section/Title	Original Provision	Proposed Amendment	Rationale
	<p>to be settled) may be used for the VEE process under the following circumstances:</p> <ol style="list-style-type: none"> a. Non availability of load profile capable meter b. Failure of both main and alternate meters c. Load profile data of the main/alternate meters is corrupted <p>The trading participant through its MSP is required to submit the meter register readings from an installed Statistical or Revenue class meter subject to the review and acceptance of the MO for use in the VEE process, based on the following criteria:</p> <ol style="list-style-type: none"> a. The meter where the register readings are taken measures the energy at the same metering point as the main meter. If the meter is not measuring at the same metering point as the main meter, corresponding adjustments for line and transformer losses shall be applied to the register readings. b. The meter where the register readings are taken is certified by the MSP to have been tested and the error is quantified in a test report. c. The register readings are adjusted for the meter error. <p>The meter register readings shall be treated by the MO in the following manner:</p> <ol style="list-style-type: none"> a. The hourly equivalent meter data shall be computed proportionately according to the load shape obtained from available RTU data corresponding to metering point for the time covered by the register readings, or to the load 	<ol style="list-style-type: none"> i. Non availability of load profile capable meter ii. Failure of both main and alternate meters iii. Load profile data of the main/alternate meters is corrupted <p>The <i>Trading Participant</i> through its MSP <u>Metering Services Provider</u> is required to submit the meter register readings from an installed Statistical or Revenue class meter subject to the review and acceptance of the <u>MO Market Operator</u> for use in the VEE process, based on the following criteria:</p> <ol style="list-style-type: none"> i. The meter where the register readings are taken measures the energy at the same <i>metering point</i> as the main meter. If the meter is not measuring at the same <i>metering point</i> as the main meter, corresponding adjustments for line and transformer losses shall be applied to the register readings. ii. The meter where the register readings are taken is certified by the MSP <u>Metering Services Provider</u> to have been tested and the error is quantified in a test report. iii. The register readings are adjusted for the meter error. <p>The meter register readings shall be treated by the MO <u>Market Operator</u> in the following manner:</p> <ol style="list-style-type: none"> i. The hourly equivalent <i>meter data</i> shall be computed proportionately according to the load shape obtained from available RTU data corresponding to <i>metering point</i> for the time covered by the register readings, or 	

Section/Title	Original Provision	Proposed Amendment	Rationale
	<p>shape obtained from the historical load profile data for a similar day and time.</p> <p>b. The hourly equivalent meter data shall undergo site – specific loss adjustment for any equipment between the market trading node and the meter.</p> <p>Register readings for succeeding settlement periods shall be submitted by the trading participant through its MSP and shall be used by the MO until a load profile meter data is available.</p>	<p>to the load shape obtained from the historical load profile data for a similar day and time;₁</p> <p>ii. The hourly equivalent <i>meter data</i> shall undergo site–specific loss adjustment for any equipment between the <i>market trading node</i> and the meter₂</p> <p>iii. Register readings for succeeding settlement periods shall be submitted by the <i>Trading Participant</i> through its MSP and shall be used by the <i>Market Operator</i> until a load profile meter data is available.</p>	
7.4.3.5.	7.4.3.5. The decision to use the substituted data in the settlement process shall be based on results of the trouble call investigation.	7.4.3.5 h. The decision to use the substituted data in the settlement process shall be based on results of the trouble call investigation.	
	<i>New</i>	<p><u>6.4.4 Meter Data Update</u></p> <p><u>The Market Operator shall update the metering data in the metering database to correct the values submitted by the WESM Metering Services Provider. This update shall include the actual metering data obtained as well as estimated metering data from the main and back-up meters within the required period.</u></p>	To update the estimation of meter data based on the experience by the MO with the agreement of the Trading Participants and MSP.
	<i>New</i>	<p><u>6.4.5 Meter Data Reconciliation and Approval</u></p> <p><u>All meter data received must be validated and approved by the Market Operator before they are used in the settlement process. Settlement ready and approved meter data are the only data which are transferable and must be exported to settlement. In any event where there exist defects in the meter data</u></p>	To update the procedure of reconciliation and approval of meter data prior to settlement.

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		<p><u>such as missing data of the main or back-up meter, wrong date and time, loss of all phases of voltage and current, etc., there will be a period of reconciliation among and between the <i>Trading Participants</i>, <i>Direct WESM Member</i>, <i>Metering Service Provider</i> and <i>Market Operator</i> where the meter data are reviewed using the <i>meter data</i> editing and estimation methods specified in Section 6.4.3 above.</u></p> <p><u>Before the end of the reconciliation, a certification shall be signed by the <i>Trading Participant</i>, <i>Direct WESM Member</i> and <i>Metering Services Provider</i>, with the <i>Market Operator</i> as a witness, and shall be documented to effect such agreement.</u></p> <p><u>The reconciliation date shall be held not later than four (4) business days before the issuance of the final settlement run.</u></p>	
7.5 WORK FLOW FOR METERING DATA VALIADTION AND EDITING	7.5 WORK FLOW FOR METERING DATA VALIDATION AND EDITING	7.5 6.5 WORK FLOW FOR METERING DATA VALIDATION AND EDITING	Align with new WESM Design

Section/Title	Original Provision	Proposed Amendment	Rationale
			
7.6 PROCEDURAL STEPS FOR VALIDATION, ESTIMATION AND	7.6 PROCEDURAL STEPS FOR VALIDATION, ESTIMATION AND EDITING PROCESS	7-6 6.6 PROCEDURAL STEPS FOR VALIDATION, ESTIMATION AND EDITING PROCESS	Re-numbering

Section/Title	Original Provision	Proposed Amendment	Rationale																																																																																																																																																
EDITING PROCESS	<table border="1"> <thead> <tr> <th>Ref</th> <th>Task Name</th> <th>Task Detail</th> <th>When</th> <th>Resulting Information</th> <th>Method</th> </tr> </thead> <tbody> <tr> <td>VEE 01</td> <td>Sending the meter data</td> <td>MSP's MDCS sends meter data to MO's MDCS</td> <td>07:45 H daily</td> <td>Meter data is in the shared folder for the transfer protocol in the MDCS terminal</td> <td>File transfer protocol</td> </tr> <tr> <td>VEE 02</td> <td>Receiving the meter data</td> <td>MO's MDCS receives meter data in agreed format</td> <td>After meter data has been sent by the MSP</td> <td>Meter data is in 15min interval by 24 hours with kWh and kWh data. Meter ID is recognized by MDCS Masterfile</td> <td>None</td> </tr> <tr> <td>VEE 03</td> <td>Importing the meter data</td> <td>Meter data is imported by MDW and the file are transferred</td> <td>After meter data has been recognized by MDCS Masterfile</td> <td>Meter data is recognized by MDW Macanille</td> <td>File import/transfered</td> </tr> <tr> <td>VEE 04</td> <td>MDW validation</td> <td>MDW validates the meter data for good, orphan, uncertain, and missing values. 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8.1 INTRODUCTION	8.1 INTRODUCTION This chapter provides for instructions to the Trading Participants (TP) and their Metering Services Provider (MSPs) for the processing of Meter Trouble Reports(MTRs) to investigate potential problems with revenue Metering Installations. The Metering Services Provider of TP should review the entries in the metering database in a timely manner so that discrepancies can be addressed before the preliminary settlement statement issued by the MO. The MO will issue an MTR to the MSP for the affected meter to investigate the problem, perform repairs as required, and provide substitute metering data with this procedure.	<u>7.1-8.1 INTRODUCTION-<u>COVERAGE</u></u> This chapter section provides for the instructions to the Trading Participants (TP) and their Metering Services Provider (MSPs) for the issuance and processing of Meter Trouble Reports (MTRs) to investigate potential problems with revenue Metering Installations. The Metering Services Provider of the Trading Participant TP should review the entries in the metering database in a timely manner so that the discrepancies can be addressed before the preliminary settlement statement issued by the Market Operator MO. The Market Operator MO will issue an MTR to the Metering Services Provider MSP for the affected meter to investigate the problem, perform repairs as required, and provide substitute metering data with this procedure.	Re-numbering; for clarity																																																																																																																																																

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<p>8.2 Meter Trouble Report (MTR)</p>	<p>8.2 METER TROUBLE REPORT (MTR)</p> <p>The MO issues an MTR to the MSP for each meter for which it is responsible with data that fail the validation process, including missing data. MTRs are initiated by the said Metering Group, MSPs and/or TPs who experience difficulties communicating with a Metering Installation or validation of meter data. An MSP and/or TP may inform and request that the MO to issue an MTR. Where the MO determines that an MTR is not required, it notifies the TP and/or MSP of its decision.</p> <p>The market rules contain strict timelines with respect to MTR processing. These timelines are required to ensure prompt resolution of all MTRs and maintain the integrity of the settlements process. MSPs are expected to meet these timelines and all exceptions are tracked by the MO. MTRs that are not resolved within timelines specified in the Metering standard can trigger sanctions and data estimates for the Metering Installation of the TP.</p> <p>The MO is required to issue a MTR within 24 hours after its detection, to the associated MSP and promptly notify the TP when it becomes aware of a potential defect or malfunction at a Metering Installation. After notification and within two (2) business days, the MSP is required to implement the Emergency Restoration Plan and shall also inform the MO of such plan. If the MTR is still unresolved after seven (7) business day, the MO shall implement estimates (historical loading) for the resolution of the preliminary settlement of the Trading Participant. The</p>	<p>7.2 8.2 INITIATION Meter Trouble Report (MTR)</p> <p>The MO <i>Market Operator</i> issues an MTR to the MSP for each meter for which it is responsible with data that fail the validation process, including missing data. MTRs are initiated by the said Metering Group, MSPs and/or TPs who experience difficulties communicating with a Metering Installation or validation of meter data. An MSP and/or TP may inform and request that the MO to issue an MTR. Where the MO determines that an MTR is not required, it notifies the TP and/or MSP of its decision.</p> <p>The market rules contain strict timelines with respect to MTR processing. These timelines are required to ensure prompt resolution of all MTRs and maintain the integrity of the settlements process. MSPs are expected to meet these timelines and all exceptions are tracked by the Market Opeator MO. MTRs that are not resolved within timelines specified in the Metering standard can trigger sanctions and data estimates for the Metering Installation of the TP.</p> <p>The MO is required to issue a MTR within 24 hours after its detection, to the associated MSP and promptly notify the TP when it becomes aware of a potential defect or malfunction at a Metering Installation. After notification and within two (2) business days, the MSP is required to implement the Emergency Restoration Plan and shall also inform the MO of such plan. If the MTR is still unresolved after seven (7) business day, the MO shall implement estimates (historical loading) for the resolution of the preliminary settlement of the Trading Participant. The MSP is also allowed up to twelve (12) business weeks to rectify the instrument transformer malfunction.</p>	<p>To provide initial procedures related to the MO's issuance of Meter Trouble Reports.</p>

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	<p>MSP is also allowed up to twelve (12) business weeks to rectify the instrument transformer malfunction.</p>	<p><u>A Meter Trouble Report may be initiated due to the following:</u></p> <ul style="list-style-type: none"> a. <u>a metering data error is detected through the validation process described in Section 6 of this Manual; or</u> b. <u>a Metering Services Provider or a Trading Participant requests the Market Operator to issue a Meter Trouble Report to the Metering Services Provider due to difficulties in communicating with a metering installation, or validation of metering data. The Market Operator shall notify the Metering Services Provider or a Trading Participant of its decision within twenty-four (24) hours.</u> 	
<p>8.2.1 Improving Efficiency in Resolving MTRs</p>	<p>8.2.1 Improving Efficiency in Resolving MTRs</p> <p>In case of outages, a TP and/or its MSP shall notify MO within 24 hours after its occurrence. All TPs may use the Metering Outages Form to notify their MSP and MO of any outages that may affect the metering data. The MSP will use this information to resolve MTRs that have been issued. Appendix A shows a sample of the form and instructions for completion.</p> <p>To access the MTR system, individuals in a TP or MSP organization, require a User ID and password. To obtain a User ID, download the following form from the MO Web site and complete it as directed including the appropriate signatures. Return the completed form to the MO. The Information Systems Group of MO will notify the user of the User ID and password.</p>	<p>8.2.4 <u>7.2.1</u> Improving Efficiency in Resolving MTRs</p> <p>In case of outages, a TP <u>Trading Participant</u> and/or its MSP <u>Metering Services Provider</u> shall notify MO <u>the Market Operator</u> within 24 hours after its occurrence. All TPs <u>Trading Participants</u> may use the Metering Outages Form to notify their MSP <u>Metering Services Provider</u> and the MO <u>Market Operator</u> of any outages that may affect the metering data. The MSP <u>Metering Services Provider</u> will use this information to resolve MTRs that have been issued. Appendix A shows <u>A</u> sample of the form and instructions for completion <u>may be found in the Appendices.</u></p> <p>To access the MTR system, individuals in a TP <u>Trading Participant</u> or MSP <u>Metering Services Provider</u></p>	<p>For clarity</p>

Section/Title	Original Provision	Proposed Amendment	Rationale
		<p>organization require a User ID and password. To obtain a User ID, download the following form from the MO market information <u>Web site</u> and complete it as directed including the appropriate signatures. Return the completed form to the MO <u>Market Operator</u>. The Information Systems Group of the MO <u>Market Operator</u> will notify the user of the User ID and password.</p>	
<p>8.2.2 Unresolved MTRs</p>	<p>8.2.2 Unresolved MTRs</p> <p>As described in Section 2.0 of this document, the MO can implement the VEE of metering data, when MTRs are not resolved within specific periods. These estimates remain in place until the MTR is rectified to the MO's satisfaction.</p> <p>If the MSP resolves the MTR and subsequently provides metering data acceptable to the MO for the period in which the estimates were created, the MO replaces those estimates with that metering data. The TP/MSP must make the metering data available to MO within three (3) to seven (7) business days before the final statement date(s) for the trading day(s) affected. If the TP/MSP does not make the metering data available to the MO by this deadline, the MO estimates will appear on the final statement.</p> <p>If the MSP submitted the report after the final settlement period, the said adjustment will be reflected on the following billing period.</p> <p>In cases where there is unintentional meter error (e.g. meter multiplier) that causes meter malfunction occurred in the process, a prescribe period of one</p>	<p>8.2.2 7.2.2 Unresolved MTRs</p> <p>As described in Section 6.0 of this document, the <i>Market Operator</i> can implement the VEE of <i>metering data</i>, when MTRs are not resolved within specific periods. These estimates remain in place until the MTR is rectified to the <i>Market Operator's</i> satisfaction.</p> <p>If the MSP resolves the MTR and subsequently provides metering data acceptable to the MO for the period in which the estimates were created, the MO replaces those estimates with that metering data. The TP/MSP must make the metering data available to MO within three (3) to seven (7) business days before the final statement date(s) for the trading day(s) affected. If the TP/MSP does not make the metering data available to the MO by this deadline, the MO estimates will appear on the final statement.</p> <p>If the MSP submitted the report after the final settlement period, the said adjustment will be reflected on the following billing period.</p> <p>In cases where there is unintentional meter error (e.g. meter multiplier) that causes meter malfunction to occur in the process, a prescribe period of one year is allowed for reconciliation from the date of discovery of such error.</p>	<p>To update and modify the provisions of this section in accordance with the practices and experience in the field.</p>

Section/Title	Original Provision	Proposed Amendment	Rationale
	year is allowed for reconciliation from the date of discovery of such error.		
	<i>NEW</i>	<u>7.3 ISSUANCE</u> <u>The <i>Market Operator</i> shall issue a Meter Trouble Report to the <i>Metering Services Provider</i> and, for information, its associated <i>Trading Participant</i> within twenty-four (24) hours after detection or request.</u>	This and the succeeding sections have been revised to clearly set the process for the issuance of MTRs.
	<i>New</i>	<u>7.3.1 Timeline</u> <u>Upon receipt of the Meter Trouble Report, the <i>Metering Services Provider</i> shall submit the correct metering data to the <i>Market Operator</i> within two (2) business days.</u> <u>7.3.2 Unresolved Meter Trouble Reports</u> <u>a. Estimation</u> <u>If a Meter Trouble Report is still unresolved after the designated timeline in Section 7.3.1, the <i>Market Operator</i> shall implement the estimation and editing of <i>metering data</i> in accordance with Section 6 of this Manual.</u> <u>b. Late Resolution</u> <u>The <i>Metering Services Provider</i> may still resolve a Meter Trouble Report and provide <i>metering data</i> acceptable to the <i>Market Operator</i> after the deadline set in Section 7.3.1. For late resolutions, the</u>	

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		<p><u>deadline to be reflected in the final settlement statement is four (4) business days prior to the issuance of the final settlement statement of the affected trading day.</u></p> <p><u>C. After Deadline</u></p> <p><u>If the <i>Metering Services Provider</i> resolves the <i>Meter Trouble Report</i> and submits <i>metering data</i> after the issuance of the final settlement statement of the affected trading day, the <i>Market Operator</i> shall reflect the said adjustment within one year.</u></p> <p><u>d. Certification</u></p> <p><u>The <i>Metering Services Provider</i> shall provide a certification on the adjusted <i>metering data</i> showing the agreement of all affected parties and the <i>Market Operator</i>.</u></p> <p><u>e. Meter Malfunction</u></p> <p><u>In cases where there is an unintentional meter error (e.g., erroneous use or application of meter multiplier) that causes a meter malfunction, the <i>Metering Services Provider</i> shall reconcile the metering data of the affected trading intervals within three months to one (1) year after the date of discovery of such error.</u></p>	
8.3 PROCEDURAL WORK FLOW	8.3. PROCEDURAL WORK FLOW The procedural work flow contains graphical representations of the steps and flow of information related to MTR procedure between the MO, the	8.3. 7.4 PROCEDURAL WORK FLOW The procedural work flow contains graphical representations of the steps and flow of information	<ul style="list-style-type: none"> • Re-numbering • For clarity

Section/Title	Original Provision	Proposed Amendment	Rationale
	primary external participant, the TP and its MSP involved in the procedure, and any other parties.	related to the MTR procedure between the MO Market Operator , the primary external participant, the TP Trading Participant and its MSP Metering Services Provider involved in the procedure, and any other parties.	
8.4 WORKFLOW FOR METER TROUBLE REPORT	8.4 WORKFLOW FOR METER TROUBLE REPORT xxx	8.4 7.5 WORKFLOW FOR METER TROUBLE REPORT xxx	Re-numbering
8.5 PROCEDURAL STEPS FOR METER TROUBLE REPORTS	8.5 PROCEDURAL STEPS FOR METER TROUBLE REPORTS xxx	8.5 7.6 PROCEDURAL STEPS FOR METER TROUBLE REPORTS xxx	Re-numbering
SECTION 9 – SITE-SPECIFIC LOSS ADJUSTMENT	SECTION 9 – SITE-SPECIFIC LOSS ADJUSTMENT	SECTION 9 8 – SITE-SPECIFIC LOSS ADJUSTMENT	Re-numbering
9.1 INTRODUCTION	9.1 INTRODUCTION The <i>WESM Rules</i> states that the ideal location of the <i>metering point</i> should be at the <i>market trading node</i> (MTN). The <i>Trading Participant</i> , the <i>Network Service Provider</i> , and the <i>Market Operator</i> , as mandated by the <i>WESM Rules</i> , shall use their best endeavor to adjust the <i>meter</i> registration to account for electrical losses when the <i>metering point</i> is not physically located at the MTN.	9.1 8.1 INTRODUCTION The <i>WESM Rules</i> states that the ideal location of the <i>metering point</i> should be at the <i>market trading node</i> (MTN). The <i>Trading Participant</i> , the <i>Network Service Provider</i> , the <i>Metering Services Provider</i> and the <i>Market Operator</i> , as mandated by the <i>WESM Rules</i> , shall use their best endeavor to adjust the <i>meter</i> registration to account for electrical losses when the <i>metering point</i> is not physically located at the MTN.	It is proposed that the MSPs be included in the coordination in determining SSLA.
9.2 DEFINITION	9.2 DEFINITION The Site – Specific Loss Adjustment (SSLA) is a procedure developed for determining the amount of	9.2 DEFINITION The Site – Specific Loss Adjustment (SSLA) is a procedure developed for determining the amount of	<ul style="list-style-type: none"> The sub-section is for deletion since the definition for SSLA is

Section/Title	Original Provision	Proposed Amendment	Rationale
9.3 PURPOSE	<p>electrical losses between the Metering Point and the MTN.</p> <p>9.3 PURPOSE</p> <p>This Procedure shall be used to adjust Trading Participants' meter data to compensate for the electrical losses in the components that come between the Metering Point and the MTN. The power and energy registered at the Metering Point shall be adjusted to reflect meter readings that would have been obtained if the revenue meter is physically located at the MTN.</p> <p>xxx</p>	<p>electrical losses between the Metering Point and the MTN.</p> <p>9.3 8.2 PURPOSE</p> <p>This Pprocedure shall be used to adjust the Customer Trading Participants' meter data to compensate for the electrical losses in the components that come between the Metering Point and the MTN. The power and energy registered at the Metering Point shall be adjusted to reflect meter readings that would have been obtained if the revenue meter is physically located at the MTN.</p> <p>xxx</p>	<p>already provided in the revised Section 1.3</p> <ul style="list-style-type: none"> Added to emphasize that SSLA only applies to Customers.
9.4 LOSS FACTOR	<p>9.4 LOSS FACTOR</p> <p>There shall be a Site – Specific Loss Factor (SSLF) distinct for every Metering Point, and dynamic for every Trading Interval, which represents the adjusted meter data of a Metering Point.</p> <p>The SSLF is a unit-less number that shall be multiplied to the original meter data of its corresponding Trading Interval. The end-product of the SSLF and the original meter data is the adjusted power or energy of the Trading Participant as seen from the MTN.</p>	<p>9.4 8.3 LOSS FACTOR</p> <p>There shall be a Site – Specific Loss Factor (SSLF) distinct for every Metering Point, and dynamic for every Trading – dispatch interval, which represents the adjusted meter data of a Metering Point.</p> <p>The SSLF is a unit-less number that shall be multiplied to the original meter data of its corresponding to the Trading – dispatch interval. The end product of the SSLF and the original meter data is the adjusted power or energy of the Trading Participant as seen from the MTN.</p>	<p>Revised for further clarification. SSLF is generally distinct for every Metering Point, thus stating 'distinct' would be redundant.</p>
9.5. SCOPE	9.5. SCOPE	<p>9.5. 8.4 SCOPE</p> <p>xxx</p>	Re-numbering

Section/Title	Original Provision	Proposed Amendment	Rationale
9.6 WESM Members Involved in Performing SSLA	<p>9.6 WESM MEMBERS INVOLVED IN PERFORMING SSLA</p> <p>9.6.1. Network Service Provider in coordination with Trading Participants</p> <p>9.6.2. Metering Services Provider (MSP)</p> <p>9.6.3. Market Operator (MO)</p>	<p>9.6 8.5 WESM MEMBERS INVOLVED IN PERFORMING SSLA</p> <p><u>The following entities shall be involved in performing Site Specific Loss Adjustment (SSLA):</u></p> <p>a. 9.6.1 Network Service Provider in coordination with Trading Participants;</p> <p>b. 9.6.2 Metering Services Provider (MSP); and</p> <p>c. 9.6.3 Market Operator.</p>	To add a section introduction.
9.7 ROLES AND RESPONSIBILITIES	<p>9.7 ROLES AND RESPONSIBILITIES</p> <p>Responsibility for carrying out site-specific loss adjustments is shared among:</p>	<p>9.7 8.6 ROLES AND RESPONSIBILITIES</p> <p>Responsibility for carrying out site-specific loss adjustments is shared among:</p> <p><u>The involvement of the Metering Services Provider, Network Service Providers and Trading Participants are as follows:</u></p> <p>xxx</p>	To clearly spell out the nature of the involvement of the Metering Services Provider, Network Service Provider, and Trading Participants in matters related to SSLA.
9.7.1 Network Service Provider	<p>9.7.1 Network Service Provider</p> <p>9.7.1.1 The Network Service Provider shall submit to the Market Operator every six months all significant conductor and power transformer data between the metering point and the market trading node and as often as it implements significant changes in the actual physical configuration of the conductor and power transformer between the metering point and the market trading node.</p>	<p>9.7.1 8.6.1 Network Service Provider:</p> <p>9.7.1.1 8.6.1.1 The <i>Network Service Provider</i> shall submit to the <i>Market Operator</i> every six months all significant conductor and power transformer data between the metering point and the market trading node and as often as it implements significant changes in the actual physical configuration of the conductor and power transformer between the metering point and the market trading node.</p>	Re-numbering
9.7.1.1.1	9.7.1.1.1 Conductor Data	a. 9.7.1.1.1 Conductor Data	<ul style="list-style-type: none"> Minor revision.

Section/Title	Original Provision	Proposed Amendment	Rationale
	a. Conductor size b. Number of conductors per circuit c. Line Length (km) d. Line Voltage	i. a. Conductor Size ii. Conductor Type iii. b. Number of conductors per circuit iv. c. Line Length (km) v. d. Line Voltage vi. e. Line Configuration	<ul style="list-style-type: none"> To include the conductor type and line configuration among the data to be provided by the Network Service Provider to the Market Operator.
9.7.1.1.2	9.7.1.1.2 Power Transformer Data a. Rated kVA b. Core Loss (Open Circuit Test result) c. Full-load Copper Loss (Short-Circuit Test result) d. Percent Impedance (% Z) e. Equivalent Transformer Resistance (Re) f. Equivalent Transformer Reactance (Xe) g. Equivalent Transformer Impedance (Ze) h. Transformer's Full-Load Output Active Power (kW) i. Transformer's Efficiency (%) at Full-Load Output Active Power j. Transformer's Maximum Efficiency (%) k. Transformer's Output Active Power (kW) at Maximum Efficiency	b. 9.7.1.1.2 Power Transformer Data i. a. Rated kVA ii. b. Core Loss (Open Circuit Test result) iii. c. Full-load Copper Loss (Short-Circuit Test result) iv. d. Percent Impedance (% Z) v. $\frac{X}{r}$ ratio e. Equivalent Transformer Resistance (Re) f. Equivalent Transformer Reactance (Xe) g. Equivalent Transformer Impedance (Ze) h. Transformer's Full-Load Output Active Power (kW) i. Transformer's Efficiency (%) at Full-Load Output Active Power j. Transformer's Maximum Efficiency (%) k. Transformer's Output Active Power (kW) at Maximum Efficiency	Items (f) to (g) were not used in the equation for loss calculation and can just be derived given items (a) to (b), thus the proposed deletion. The inclusion of $\frac{X}{r}$ ratio was proposed instead.
9.7.1.2	9.7.1.2 In coordination with the Metering Services Provider, grid single-line diagrams that show the significant changes in the actual physical configuration of the conductor and power transformer shall also be submitted by the Network Service Provider to the Market Operator.	9.7.1.2 8.6.1.2 In coordination with the <i>Metering Services Provider</i> , grid single-line diagrams that show the significant changes in the actual physical configuration of the conductor and power transformer shall also be submitted by the <i>Network Service Provider(s)</i> to the <i>Market Operator</i> .	Minor revision.

Section/Title	Original Provision	Proposed Amendment	Rationale
		Significant changes refer to any changes in the network data as provided in Section 8.6.1.1.	
9.7.2 Metering Services Provider	9.7.2 Metering Services Provider 9.7.2.1. The Metering Services Provider shall collect and deliver to the Market Operator the meter data containing the daily energy consumption or delivery of all Trading Participants.	9.7.2 8.6.2 Metering Services Provider 9.7.2.1 The <i>Metering Services Provider</i> shall collect and deliver submit to the <i>Market Operator</i> the meter data containing the daily energy consumption or delivery of all <i>Trading Participants</i> .	Minor revision.
9.7.3 Trading Participant	9.7.3 Trading Participant: 9.7.3.1 The Trading Participant, in coordination with the Network Service Provider, shall submit to the Market Operator all significant conductor and power transformer data between its metering point and the market trading node upon its registration in the WESM, and as often as it notices significant changes in the actual physical configuration of the conductor and power transformer between its metering point and the market trading node. The Trading Participant shall submit the same type of data stated in Sub-sections 9.7.1.1.1 and 9.7.1.1.2.	9.7.3 8.6.3 Trading Participant: 9.7.3.1 The <i>Trading Participant</i> , in coordination with the <i>Network Service Provider</i> , shall submit to the <i>Market Operator</i> all significant conductor and power transformer data between its metering point and the market trading node upon its registration in the WESM, and as often as it notices significant changes in the actual physical configuration of the conductor and power transformer between its metering point and the market trading node. The <i>Trading Participant</i> shall submit the same type of data stated in Section 8.6.1 Sub-sections 9.7.1.1.1 and 9.7.1.1.2.	Minor revision.
9.7.4 Market Operator	9.7.4 Market Operator: 9.7.4.1. The Market Operator shall reconcile the data submitted by the Network Service Provider and the Trading Participant. The reconciled data shall be agreed by the Market Operator, Network Service Provider and the Trading Participants. The Market Operator shall use the reconciled data starting on the current billing month only, then progressively for the succeeding billing months until a new conductor and power transformer data is submitted.	9.7.4 8.6.4 Market Operator: 9.7.4.1. 8.6.4.1 The <i>Market Operator</i> shall reconcile the data submitted by the <i>Network Service Provider</i> , the <u>Metering Services Provider</u> , and the <i>Trading Participant</i> . The reconciled data shall be agreed by the Market Operator, <i>Network Service Provider</i> and the <i>Trading Participants</i> . The <i>Market Operator</i> shall use the reconciled data starting on the current billing month only, then progressively for the succeeding billing months until a new conductor and power transformer data is	Minor revision. It is proposed that the MSPs be included in the coordination in determining SSLA.

Section/Title	Original Provision	Proposed Amendment	Rationale
		submitted.	
9.7.4.2	9.7.4.2 Calculate the loss adjustment in accordance with this procedure using Microsoft Excel.	9.7.4.2 8.6.4.2 Calculate the loss adjustment in accordance with this procedure using a suitable computation tool Microsoft Excel.	Minor revision.
9.7.4.3	9.7.4.3. Develop in consultation with the WESM Participants, a standard table of reference, containing data for power transformers and conductors.	9.7.4.3. 8.6.4.3 Develop in consultation with the WESM Participants, a standard table of reference, containing data for power transformers and conductors.	Re-numbering
9.8 Loss Calculation	<p>9.8 LOSS CALCULATION</p> <p>9.8.1 Load Customer Cases:</p> <p>9.8.1.1. Case 1: Single Market Trading Node: A metering point is connected to only one MTN.</p> <p>i. Case 1 – A: only one metering point is presently connected to the MTN (figure 1).</p> <p><i>Figure 1</i></p> <p>ii. Case 1 – B: numerous metering points connected to, or are sharing the same MTN (figure 2).</p> <p><i>Figure 2</i></p> <p>99.8.1.2. Case 2: Multiple Market Trading Nodes: A metering point is connected to two or more MTNs during normal condition (figure 3).</p> <p><i>Figure 3</i></p>	<p>9.8 – 8.7 Loss Calculation SITE-SPECIFIC LOSS FACTOR CALCULATION</p> <p>9.8.1 Load Customer Cases</p> <p>9.8.1.1 xxx 9.8.1.2 xxx 9.8.1.3 xxx 9.8.1.4 xxx</p> <p>9.8.2 Generator Cases</p> <p>9.8.2.1 xxx 9.8.2.2 xxx 9.8.2.3 xxx</p>	<p>To have a systematic way of presenting the cases, rules should be general and cases should be detailed in the Appendix.</p> <p>To avoid redundancy, all diagrams in this section are deleted since these are also in the Appendix on Site-Specific Loss Adjustment.</p>

Section/Title	Original Provision	Proposed Amendment	Rationale
	<p>9.8.1.3. Case 3: Alternate Market Trading Node: A metering point is connected to another MTN for alternate source of power during emergency condition or pre-arranged shutdown..</p> <p>i. Case 3 – A: a metering point is connected to another transformer for alternate source of power during emergency or pre-arranged shutdown. Usual setting for alternate source of power from the same substation (figure 4).</p> <p><i>Figure 4</i></p> <p>ii. Case 3 – B: a metering point is connected to another line for alternate source of power during emergency or pre-arranged shutdown. This is the usual setting for alternate source of power from another substation (figure 5).</p> <p><i>Figure 5</i></p> <p>9.8.1.4. Case 4: Lagging MTN: A metering point is located before the MTN. The meter is installed at a voltage level higher or equal to the voltage level of the MTN (figure 6).</p> <p><i>Figure 6</i></p> <p>9.8.2. Generator Cases:</p> <p>9.8.2.1. Case 1: One Metering Point – One Market Trading Node: A metering point measures the dispatch of only one generating unit (figure 7).</p> <p><i>Figure 7</i></p>		

Section/Title	Original Provision	Proposed Amendment	Rationale
	<p>9.8.2.2. Case 2: One Metering Point – Multiple Market Trading Nodes: A metering point measures the aggregate dispatch of a group or block of generating units (figure 8).</p> <p><i>Figure 8</i></p> <p>9.8.2.3. Case 3: Multiple Metering Points – Multiple Market Trading Nodes: A group of metering points measures the aggregate dispatch of a group or block of generating units (figure 9).</p> <p><i>Figure 9</i></p>		
	<p>9.8.3 General Equations:</p> <p>The following are the equations to be used for calculating the SSLF:</p> $kW_{\text{Meter}} = (kWh_{\text{Meter-15min}} + kWh_{\text{Meter-30min}} + kWh_{\text{Meter-45min}} + kWh_{\text{Meter-00min}}) \div 1h$ $kVar_{\text{Meter}} = (kVarh_{\text{Meter-15min}} + kVarh_{\text{Meter-30min}} + kVarh_{\text{Meter-45min}} + kVarh_{\text{Meter-00min}}) \div 1h$ <p style="text-align: center;">xxx</p> <p>Where:</p> <p>$kWh_{\text{Meter-XXMin}}$: 15-minute interval active energy meter registration</p> <p>$kVarh_{\text{Meter-XXMin}}$: 15-minute interval reactive energy meter registration</p> <p>xxx</p>	<p><i>(The entire sub-section is for deletion)</i></p> <p>9.8.3 General Equations</p> <p>xxx</p> <p>9.8.4 Detailed Loss Calculation:</p> <p>xxx</p>	<p>The calculations are deleted in this section to be transferred in the Appendix on SSLA.</p>

Section/Title	Original Provision	Proposed Amendment	Rationale
	<p>9.8.4. Detailed Loss Calculation:</p> <p>The detailed example loss calculations for every case are included in the Appendix of this Manual under “Site – Specific Loss Adjustment”.</p>		
	<p><i>New</i></p>	<p><u>8.7.1 Loss Calculation</u></p> <p><u>Losses across power system components between the Revenue meter(s) and the Market Trading Nodes (MTN) shall be computed using suitable mathematical model for the components and applying basic circuit analysis principles.</u></p> <p><u>This variable shall be referred to as P_{Loss}. Sample cases for calculating P_{Loss} are presented in the Appendix.</u></p>	<p>The variable for total active loss ($Total_{KW-Loss}$) for a metering point is changed to P_{Loss}.</p> <p>The proposed variable is also reflected in the Appendix on Site-Specific Loss Adjustment.</p>
	<p><i>(Lifted from Chapter 9.8.3 of the Manual)</i></p> <p>Historical Load Share; the fraction or ratio of a metering point’s total energy, against the total energy of all metering points under the same transformer. The HLS for the current billing month shall be based on the energy of the last twelve (12) billing months. (As approved by PEM Board Resolution No. 2010-76 dated 22 November 2010)</p>	<p><u>8.7.2 Historical Load Share</u></p> <p><u>Historical Load Share (HLS) is the fraction or ratio of a metering point’s total energy, against the total energy of all metering points under the same transformer. The HLS for the current billing month shall be based on the energy of the last twelve (12) billing months.</u></p>	<p>Lifted from Chapter 9.8.3 of the Manual for clarity.</p>
	<p><i>New</i></p>	<p><u>8.7.3 Loss Sharing</u></p> <p><u>8.7.3.1 In cases where a single transformer supplies power to multiple metering points, the Transformer Load Loss and No-load Loss (e.g. Core loss) shall be shared by all meters proportionately according to:</u></p>	

Section/Title	Original Provision	Proposed Amendment	Rationale
		a. <u>the energy consumed from each metering point, for the No-load Loss</u> b. <u>the accumulated energy as each metering point reaches the Transformer, for the Load Loss.</u>	
	<i>New</i>	8.7.3.2 If a meter registers a zero value, Loss Share shall be based on the Historical Load Share.	
	<i>New</i>	8.7.3.3 In cases where a line is shared among multiple metering points, the losses across the line shall be shared by all meters proportionately according to the energy consumed from each metering point plus the accumulated losses of each metering point before the line being shared.	
	<i>New</i>	8.7.4 Detailed loss calculations for sample cases are included in the Appendix of this Manual under “Site Specific Loss Adjustment”.	
9.8 PROCEDURAL STEPS FOR SSLA	9.8 PROCEDURAL STEPS FOR SSLA xxx	9.8 8.8 PROCEDURAL STEPS FOR SSLA xxx	Re-numbering
10. PERFORMANCE MEASUREMENT – METERING SERVICE PROVIDER	PERFORMANCE MEASUREMENT – METERING SERVICE PROVIDER (As approved by PEM Board Resolution No. 2010-58 dated 25 August 2010)	9. METERING SERVICES PROVIDER PERFORMANCE MEASUREMENT (As approved by PEM Board Resolution No. 2010-58 dated 25 August 2010)	New Section Title
10.1. INTRODUCTION	10.1. INTRODUCTION The integrity of meter data and timeliness of submission/delivery of meter data to the Philippine	10.1 9.1 INTRODUCTION	Revised for clarity.

Section/Title	Original Provision	Proposed Amendment	Rationale
	<p>Electricity Market Corporation (PEMC) by the Meter Service Provider/s (MSP) are the objectives of the WESM to produce and transmit the settlement ready data to the trading participant/s (TP). Erroneous meter data and/or a delay in submission/delivery of meter data may affect the billing and settlement of WESM generators, customers and other entities.</p>	<p>The integrity of meter data and timeliness of submission/delivery of meter data to the Philippine Electricity Market Corporation (PEMC) Market Operator by the Meter Service Provider/s (MSP) Metering Services Provider are the objectives of the WESM to produce and transmit the settlement ready data to the trading participant/s (TP) Trading Participants. Erroneous meter data and/or a delay in submission/delivery of meter data may affect the billing and settlement of WESM generators, customers and other entities.</p>	
10.2. PURPOSE	<p>10.2 PURPOSE</p> <p>This section provides the Trading Participant/s, Metering Services Provider and PEMC steps required for the review, evaluation and measurement of the performance of a Metering Services Provider (MSP). The measurement process monitors the conformance of an MSP to the WESM Rule Section 4.3.3 – MSP Obligation and as discussed in this section.</p>	<p>40.2 9.2. PURPOSE</p> <p>This section provides the Trading Participant/s, Metering Services Provider and PEMC steps required for the review, evaluation and measurement of the performance of a Metering Services Provider (MSP). describes the steps required for the review, evaluation and measurement of the performance of a Metering Services Provider. The measurement process monitors the conformance of an an the Metering Services Provider MSP to this manual and to the WESM Rules Section Clause 4.3.3–Metering Services Provider Obligation and as discussed in this section.</p>	Revised for clarity
10.3. SCOPE	<p>10.3. SCOPE</p> <p>This procedure is intended to provide the Trading Participant/s, Meter Service Provider/s and PEMC information and/or steps in rating the performance of the Metering Service Provider/s. The procedural work flows described in this section serve as reference for the trading participant/s, metering service provider/s and PEMC in reflecting the</p>	<p>40.3 9.3 SCOPE</p> <p>This procedure is intended to provide the Trading Participant/s, Metering Services Provider/s and PEMC the Market Operator the information and/or steps in rating–evaluating the performance of the Metering Services Provider/s. The procedural workflows described in this section serve as reference for the trading participant/s, metering service provider/s and</p>	Revised for clarity.

Section/Title	Original Provision	Proposed Amendment	Rationale
	<p>requirement in the WESM Rules.</p> <p>The scope of an MSP Performance Measurement includes the following:</p> <p>10.3.1. The integrity of meter data provided by the Meter Service Provider/s to PEMC and the Trading Participant/s.</p> <p>10.3.2. The daily and monthly meter data delivery by the Meter Service Provider/s in accordance with the WESM Rules.</p> <p>10.3.3. The timely resolution to the daily and monthly meter trouble report by the Meter Service Provider/s.</p> <p>10.3.4. The Customer Satisfaction Rating/s.</p>	<p>PEMC in reflecting the requirements in <u>of</u> the <i>WESM Rules</i>.</p> <p>The scope of an <u>the</u> MSP <i>Metering Services Provider</i> Performance Measurement includes the following:</p> <p>10.3.2. a. The daily and monthly meter data delivery by the <i>Metering Services Provider/s</i> in accordance with the <i>WESM Rules</i>;</p> <p>10.3.1. b. The integrity of <u>the</u> meter data provided by the <i>Metering Services Provider/s</i> to <u>the</u> <i>PEMC-Market Operator</i> and the <i>Trading Participant/s</i>;</p> <p>10.3.3. c. The timely resolution to the daily and monthly <i>M</i>meter <i>T</i>trouble <i>R</i>reports <i>(MTR)</i> by the <i>Metering Services Provider/s</i>; <u>and</u></p> <p>10.3.4 d. The Customer Satisfaction Rating/s</p>	
<p>10.4. PERFORMANCE MEASURES</p>	<p>10.4. PERFORMANCE MEASURES</p> <p>The performance of a Metering Services Provider/s shall be rated against the standards set forth in this procedure. The MSP shall abide and comply with the measures as detailed below for successful and efficient operation of the WESM.</p>	<p>10.4 <u>9.4</u> PERFORMANCE MEASURES</p> <p>The performance of a <i>Metering Services Provider/s</i> shall be rated against using the standards set forth in this procedure. <u>In calculating the Metering Services Provider performance rating, force majeure events and market suspension as defined in the WESM Rules shall be considered. These are the events outside the control of the Metering Services Provider. Metering Installations under this condition shall be excluded in the Metering Services Provider rating computation for affected trading intervals.</u> The MSP <i>Metering Services Provider</i> shall abide and comply with the measures as detailed below for <u>the</u> successful and efficient operation of the WESM.</p>	<p>To formalize the consideration of force majeure events in computing MSP performance rating.</p>

Section/Title	Original Provision	Proposed Amendment	Rationale
10.4.1. Service Delivery	<p>10.4.1. Service Delivery</p> <p>10.4.1.1. Data Meter Data Delivery</p> <p>Daily Meter Data Delivery or Meter Retrieval Success is the ratio of number of metering installation successfully communicated to the total number of registered metering installations. Required average daily result shall be greater than or equal to 95% as reported.</p> <p>10.4.1.2. Integrity of Metering Data</p> <p>Integrity of Metering Data is the valid meter data that passed the validation process as set forth by WESM. This measures the ratio of the number of metering installations for which the data passes the validation process to the total number of metering installation successfully retrieved (communicated). Required average daily result shall be greater than or equal to 95% as reported.</p>	<p>10.4.4. 9.4.1 Service Delivery</p> <p>10.4.4.1. a. Timeliness of Daily Data Meter Data Delivery</p> <p>Daily Meter Data Delivery or Meter Retrieval Success is the ratio of number of metering installation successfully communicated to the total number of registered metering installations. This measures the ability of the Metering Services Provider to deliver meter data of the previous trading day, by 0800H of the succeeding day. The required average daily result shall should be greater than or equal to 95% as reported.</p> $\text{Daily Meter Data Delivery} = \frac{\text{Total MI's Meter Data Received}}{\text{Total Active Metering Installations}}$ <p>10.4.4.2. b. Integrity of Daily Metering Data (Issuance of Daily MTR)</p> <p>Integrity of Metering Data is the valid meter data that passed the validation process as set forth by WESM. This measures the ratio of the number of metering installations for which the daily meter data that have successfully passed the daily metering validation process to the total number of metering installation successfully retrieved (communicated). The required average daily result shall should be greater than or equal to 95% as reported.</p>	<ul style="list-style-type: none"> Revised for clarity and reordering of subsections. To include the formula for each criteria. To include as new criteria the integrity of monthly meter data. Since this is the data which is being utilized in the preliminary and final settlement calculation.

Section/Title	Original Provision	Proposed Amendment	Rationale
	<p>10.4.1.3. Timeliness and Percentage Resolution to the Daily Meter Trouble Report</p> <p>This measure the percentage of the total number of metering installation for which a daily meter trouble reports (MTR) is issued, that has been resolved or corrected in 10 calendar days. Required average daily result shall be greater than or equal to 90% as reported.</p> <p>10.4.1.4. Timeliness and Percentage Resolution to the Monthly Meter Trouble Report</p> <p>The MTR issued (for each metering installation) based on the submitted monthly compact disc containing all meter data for the billing period shall be resolved and corrected within 2 business days. Required result shall be greater than or equal to 90% as reported.</p>	$\text{Integrity of Daily Meter Data} = \frac{\text{Total MI passed the Daily Validation}}{\text{Total MI's Meter Data Received}}$ <p>40.4.1.3. c) Timeliness and Percentage Resolution to <u>of</u> the Daily Meter Trouble Report</p> <p>This measures <u>the percentage of the total number of metering installation for which a daily meter trouble reports (MTRs) is issued, that have</u> been resolved <u>and</u> corrected <u>within ten</u> (10) calendar days <u>from the date of the issuance of the MTR. The</u> required result shall <u>should</u> be greater than or equal to 90%.</p> $\text{Timely Resolution to the Daily MTR} = \frac{\text{Resolved Daily MTR}}{\text{Total Daily MTR Issued}}$ <p>40.4.1.4. d) Timeliness and <u>Completeness</u>-Percentage Resolution to the of Monthly Meter <u>Data Delivery</u> Trouble Report</p> <p><u>This measures the ability of the Metering Services Provider to deliver monthly meter data within eighty-four (84) hours after the billing period. It is rated 100% for complete delivery of meter data submitted via secured, electronic means, including but not limited to the Market Operator's SFTP site.</u> The MTR issued (for each metering installation) based on the submitted monthly compact disc containing all meter data for the billing period shall be resolved and corrected within 2 business days. Required result shall</p>	

Section/Title	Original Provision	Proposed Amendment	Rationale
	<p data-bbox="405 786 465 810"><i>New</i></p> <p data-bbox="405 1281 1021 1310">10.4.1.5. Timeliness of Monthly Meter Data Delivery</p> <p data-bbox="405 1342 1021 1370">This involves the delivery/ review/compilation/ part</p>	<p data-bbox="1055 292 1592 320">be greater than or equal to 90% as reported.</p> $Rating = \left[(1.00 - (c)(t - 84)) \times \left(\frac{k}{n} \right) \right]$ <p data-bbox="1055 459 1144 488">where:</p> <p data-bbox="1137 496 1693 596"><u>c – slope of the line, representing reduction of rating for every hour in excess of 84 hours after billing cut-off</u></p> <p data-bbox="1137 604 1592 633"><u>k – number of submitted meter data</u></p> <p data-bbox="1137 641 1637 670"><u>n – number of active metering facilities</u></p> <p data-bbox="1055 735 1715 799"><u>e) Integrity of Monthly Meter Data (Issuance of Monthly MTR)</u></p> <p data-bbox="1055 831 1715 991"><u>This measures the number of monthly meter data that have successfully passed the monthly metering validation process. The required average monthly result should be greater than or equal to 95%</u></p> $ \begin{aligned} &\text{Integrity of Monthly} \\ &\text{Meter Data} \\ &= \frac{\text{Total MI passed the Monthly Validation}}{\text{Total Active Metering Installations}} \end{aligned} $ <p data-bbox="1055 1206 1715 1270"><u>10.4.1.5. f) Timeliness and Percentage Resolution of the Monthly Meter Trouble Report Data Delivery</u></p> <p data-bbox="1055 1302 1715 1398"><u>This measures the number of monthly MTRs that have been resolved and corrected within two (2) business days based on the submitted compact</u></p>	

Section/Title	Original Provision	Proposed Amendment	Rationale
	<p>retrieval of meter data for all the metering installations by the meter service provider. The standard shall be rated 100% for the complete delivery of meter data for all metering installations within 3 calendar days after the billing period.</p> <p>Incomplete Metering Data shall be rated based on the ratio of the number of metering points with meter data submitted to total metering installations as registered in the WESM.</p>	<p>disc containing all meter data for the billing period. The required result should be greater than or equal to 90%. This involves the delivery/review/compilation/part retrieval of meter data for all the metering installations by the meter service provider. The standard shall be rated 100% for the complete delivery of meter data for all metering installations within 3 calendar days after the billing period.</p> <p>Incomplete Metering Data shall be rated based on the ratio of the number of metering points with meter data submitted to total metering installations as registered in the WESM.</p> <p>Timely Resolution to the Monthly MTR</p> $= \frac{\text{Resolved Monthly MTR}}{\text{Total Monthly MTR Issued}}$	
	<p><i>New</i></p>	<p><u>9.4.2. Assessment of Metering Installations Compliance</u></p> <p><u>a. Assessment of New Metering Installation's Documentation</u></p> <p><u>Before a metering installation is energized, the following documents shall be submitted and signed by Trading Participant prior to assessment:</u></p> <ol style="list-style-type: none"> <u>i. Accomplished Metering Installation Registration Form (MIRF)</u> <u>ii. Single Line Diagram (SLD)</u> 	<ul style="list-style-type: none"> • To provide the metering registration process that MSPs should follow, as well as the requirement for the consistent updating of metering installation test for all registered Metering Installations in the WESM based in Sections 8.4.1.1 and 8.4.2.3 of the Philippine Grid Code.

Section/Title	Original Provision	Proposed Amendment	Rationale
		<p>iii. <u>Wiring Diagram</u> iv. <u>ERC Meter Test Report/ MSP Meter Test Report for Main Meter</u> v. <u>Current Transformer Ratio Test for Phase A</u> vi. <u>Current Transformer Ratio Test for Phase B</u> vii. <u>Current Transformer Ratio Test for Phase C</u> viii. <u>Potential Transformer Ratio Test for Phase A</u> ix. <u>Potential Transformer Ratio Test for Phase B</u> x. <u>Potential Transformer Ratio Test for Phase C</u></p> <p><u>The required result should be 100% using the formula below:</u></p> $\frac{\text{Assessment of New MI Documentation} + \text{Sum of Compliant Documents per New MI}}{\text{Total New MI Documentations} + \text{Total New MI for the Month}}$ <p><u>b. Compliance with Periodic Metering Installation Testing</u></p> <p><u>This measures the number of Metering Installations which have been tested within the periods provided in the Section 9.2.5.2.1 and 9.2.5.2.3 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%.</u></p> $\frac{\text{Compliance with Periodic MI Testing} + \text{Total MI Tested}}{\text{Total number of MI due for testing}}$	<ul style="list-style-type: none"> To address the previous audit finding of non-updated MIRFs and other metering documents.

Section/Title	Original Provision	Proposed Amendment	Rationale
		<u>The 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.</u>	
10.4.2 CUSTOMER SATISFACTION	<p>10.4.2. Customer Satisfaction is a measurement of the Meter Service Provider corporate image, its responsiveness to emergency situation and on call meeting/s, the safety/behavior of its personnel and its compliance to the requirement of the metering facilities.</p> <p>A Meter Service Provider Customer Satisfaction Rating Sheet shall be issued to measure the service satisfaction provided by a Meter Service Provider as rated by the WESM trading participant/s. Required annual average result shall be greater than or equal to 90%.</p>	<p>10.4.2. 9.4.3. Customer Satisfaction is a measurement of the <i>Metering Services Provider</i> corporate image, its responsiveness to emergency situation and on call meeting/s, the safety/and behavior of its personnel, and its compliance to the requirement of the metering facilities.</p> <p>A <i>Metering Services Provider</i> Customer Satisfaction Rating Sheet shall be issued to measure the service satisfaction provided by athe Metering Services Provider as rated by the WESM trading participant/s. The Required annual average result shall be should be greater than or equal to 90%.</p>	Revised for clarity.

Section/Title	Original Provision	Proposed Amendments	Rationale										
10.5. PERFORMANCE STANDARDS	<p>10.5 PERFORMANCE STANDARDS</p> <p>The Performance Standard as set by the WESM is the following:</p> <table border="1"> <thead> <tr> <th>Performance Indicator</th> <th>Category</th> <th>Performance Measures</th> <th>Percent Weight</th> <th>Percent Passing</th> </tr> </thead> <tbody> <tr> <td>Service Delivery</td> <td>Daily Meter Data Delivery</td> <td>Number of metering installations successfully retrieved</td> <td>25</td> <td>95</td> </tr> </tbody> </table>	Performance Indicator	Category	Performance Measures	Percent Weight	Percent Passing	Service Delivery	Daily Meter Data Delivery	Number of metering installations successfully retrieved	25	95	<p>10.5. 9.5 PERFORMANCE STANDARDS</p> <p>The following table provides the Performance Standard Performance Standard as set by the WESM is the following:</p>	To add a new performance standard category, and re-distribute percentage weights.
Performance Indicator	Category	Performance Measures	Percent Weight	Percent Passing									
Service Delivery	Daily Meter Data Delivery	Number of metering installations successfully retrieved	25	95									

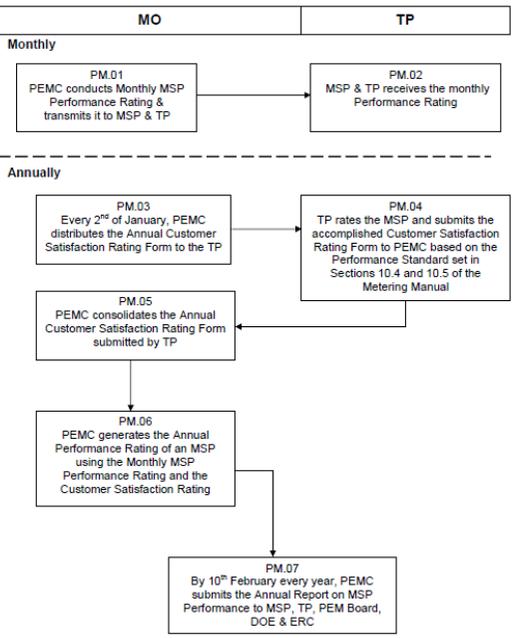
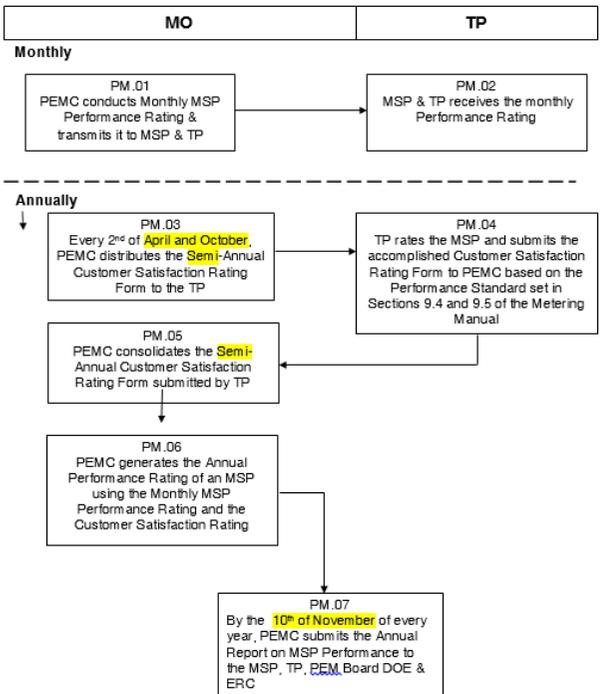
Section/Title	Original Provision					Proposed Amendments					Rationale
		Integrity of Meter Data	Meter Data that passed the validation processes	25	95	Performance Indicator	Category	Performance Measures	Percent Weight	Percent Passing	
		Timeliness and Percentage Resolution to the Daily Meter Trouble Report	Resolution to the Meter Trouble Report within 10 calendar days	15	90						
		Timeliness and Percentage Resolution to the Monthly Meter Trouble Report	Resolution to the Meter Trouble Report within 2 business days	10	90	Service Delivery - Daily	Daily Meter Data Delivery	Number of metering installations successfully retrieved	10	95	
		Timeliness of Monthly Meter Data Delivery	Complete delivery of all meter data within 3 calendar days after the billing period.	15	100		Integrity of Daily Meter Data	Metering points that passed the daily meter validation processes	15	95	
		Customer Satisfaction	Meter Service Provider Performance Appraisal by the Trading Participant/s.	10	90		Timeliness and Percentage Resolution of the Daily Meter Trouble Report	Resolution to the Meter Trouble Report within 10 calendar days	10	90	
						Service Delivery - Monthly	Timeliness of Monthly Meter Data Delivery	Complete delivery of all meter data within 84 hours after the billing period	10	100	
							Integrity of Monthly Meter Data	Metering points that passed the monthly meter validation	20	95	

Section/Title	Original Provision	Proposed Amendments					Rationale
			Timeliness and Percentage Resolution of the Monthly Meter Trouble Report	Resolution to the Meter Trouble Report within 2 business days	10	90	
		Metering Installation Compliance	Assessment of new Metering Installation's documentation	Complete and timely submission and approval of all metering requirements prior to energization	7.5	100	
			Compliance with Periodic Metering Installation Testing	Compliant and timely submission of all Meter and Instrument Transformer Tests	7.5	90	
		Customer Satisfaction	Customer Satisfaction Rating	Metering Services Provider Performance Appraisal by the Trading Participants	10.0	90	
10.6. OVERALL PASSING PERCENTAGE	The following is the overall passing percentage of a meter service provider rated annually.	9.6 10.6 OVERALL PASSING PERCENTAGE The following table provides is the overall passing percentage of the Metering Services Provider the Metering Services Provider rated annually.					

Section/Title	Original Provision			Proposed Amendments						Rationale
	% Weight	Passing	Equivalent %	Performance Indicator	Category	Performance Measures	Percent Weight	Percent Passing	Equivalent Percentage	
Daily Meter Data Delivery	25 %	95 %	23.75 %	Service Delivery - Daily	Daily Meter Data Delivery	Number of metering installations successfully retrieved	10	95	9.5	
Integrity of Meter Data	25 %	95 %	23.75 %		Integrity of Meter Data	Meter Data that passed the validation processes	15	95	14.25	
Timely Resolution (Daily MTR)	15 %	90 %	13.5 %		Timeliness and Percentage Resolution to the Daily Meter Trouble Report	Resolution to the Meter Trouble Report within 10 calendar days	10	90	9	
Timely Resolution (Monthly MTR)	10 %	90 %	9 %	Service Delivery - Monthly	Timeliness of Monthly Meter Data Delivery	Complete delivery of all meter data within 84 hours after the billing period	10	100	10	
Timely Delivery Monthly Meter Data	15 %	100 %	15 %		Integrity of Monthly Meter Data	Metering points that passed the monthly meter validation	20	95	19	
Customer Satisfaction	10 %	90 %	9 %		Timeliness and Percentage Resolution of the Monthly Meter Trouble Report	Resolution to the Meter Trouble Report within 2 business days	10	90	9	
	Overall Passing		94 %	Metering Installation Compliance	Assessment of new Metering Installation's documentation	Complete and timely submission and approval of all metering requirements	7.5	100	7.5	

Section/Title	Original Provision	Proposed Amendments					Rationale	
			prior to energization Compliance with Periodic Metering Installation Testing	Compliant and timely submission of all Meter and Instrument Transformer Tests	7.5	90	6.75	
		Customer Satisfaction	Customer Satisfaction Rating	Meter Service Provider Performance Appraisal by the Trading Participant/s.	10.0	90	9	
10.7.1 MONTHLY PERFORMANCE RATING	After every billing period, the Philippine Electricity Market Corporation shall issue or release to the trading participant/s and meter service provider/s the actual generated performance rating of the MSP measured under Section 10.4.1 – Service Delivery. The result of the MSP performance ratings shall be discussed with the MSP by the PEMC if so requested by the concerned MSP and its trading participant/s. The generated performance rating of the MSP shall be published in the website.	<p>9.7.1 10.7.1 Monthly Performance Rating</p> <p>After every billing period, the Philippine Electricity Market Corporation Market Operator shall issue or release publish in the market information website to the trading participant/s and meter service provider/s the actual generated the performance rating of the MSP Metering Services Provider measured under Section 10.4.1 9.4.1 – Service Delivery and Section 9.4.2 Assessment of Metering Installations Compliance. The result of the MSP Metering Services Provider performance ratings shall can be verified and discussed with the MSP Metering Services Provider and Trading Participants by the PEMC Market Operator upon request, if so requested by the concerned MSP and its trading participant/s. The generated performance rating of the MSP shall be published in the website.</p>					Revised for clarity and re-numbering	
10.7.2 SEMI-ANNUAL CUSTOMER SATISFACTION RATING	Every six (6) months, the PEMC Metering & Settlement Department shall conduct a CSR on the MSP performance through the issuance of the CSR form to all the WESM trading participants to be accomplished and submitted back to PEMC. The CSR forms are to be accomplished every first week of July of the current year	<p>10.7.2 9.7.2 Semi-Annual Customer Satisfaction Rating</p> <p>Every six (6) months, the PEMC Metering & Settlement Department Market Operator shall conduct a Customer Service Rating (CSR) on the MSP Metering Services Provider performance through the issuance of the CUSTOMER</p>					<ul style="list-style-type: none"> Revised for clarity. The deadlines for the submission of 	

Section/Title	Original Provision	Proposed Amendments	Rationale
	<p>and January of the following year. The July rating comprises the MSP performance from January to June of the current year and the January rating correspond to the second half of the previous year (July to December).</p>	<p>SATISFACTION MEASUREMENT-CSMR form under Section 9.7.6 to all the WESM Trading Participants to be accomplished and submitted back returned to PEMC the Market Operator. This form shall be The CSR forms are to be accomplished every first week of July April of the current year and January October of the following year. The July April rating comprises the MSP Metering Services Provider performance from January to June of the current year October of the previous year to March of the current year and the January October rating shall correspond to the second half of the previous year (July to December) period from April to September of the current year.</p>	<p>the CSR have been revised to align with the timelines of the NGCP since the MSP Performance Rating is being utilized by the NGCP as part of its Corporate Performance Management System.</p>
<p>10.7.3 ANNUAL PERFORMANCE RATING</p>	<p>Annual Performance Rating covers the billing periods January to December of each year. It shall consist of:</p> <p>a) The annual Performance Measures under Sub-section 10.4.1 – Service Delivery (Average of the 12 months billing).</p> <p>b) The Customer Satisfaction Rating under Sub-sections 10.4.2 and 10.7.2.</p> <p>The annual MSP Performance Rating shall be submitted by the PEMC Metering & Settlement Department to PEMC Management.</p>	<p>10.7.3 9.7.3 Annual Performance Rating covers the billing periods from October of the previous year to September of the current year January to December of each year. It shall consist of:</p> <p>a. The annual Performance Measures under Sub- sSection 10.4.1 9.5.1 and 9.5.2 Service Delivery (Average of the 12 months billing); and</p> <p>b. The Customer Satisfaction Rating under Sub S sSections 10.4.2 9.5.3 and 10.7.2 9.7.2.</p> <p>The annual MSP Performance Rating shall be submitted by the PEMC Metering & Settlement Department Market Operator to PEMC Management the Metering Services Provider, PEM Board, DOE and ERC every 10th of November every year.</p>	<p>To update reference sections, and add the MSP, PEM Board, DOE and ERC among the recipients of annual MSP Performance Rating result.</p>

Section/Title	Original Provision	Proposed Amendments	Rationale
	<p style="text-align: center;">Work Flow for MSP Performance Rating</p> 	<p>9.7.4 Work Flow for MSP Performance Rating</p> <p>9.7.4 Work Flow for MSP Performance Rating</p> 	
	Customer Satisfaction Measurement	<p>9.7.5 Customer Satisfaction Measurement Form</p> <p><i>(see below for the marked and highlighted proposed changes to the Customer Satisfaction Measurement form)</i></p>	Revised for enhancements.

Section/Title	Original Provision	Proposed Amendments	Rationale																																																
	<p>Customer Satisfaction Measurement</p> <table border="1" data-bbox="376 316 1041 655"> <thead> <tr> <th colspan="2" data-bbox="376 316 806 336">Meter Service Provider Customer Satisfaction Rating Sheet:</th> <th colspan="4" data-bbox="806 316 1041 336">*LEVELS OF SATISFACTION</th> </tr> <tr> <th colspan="2" data-bbox="376 336 806 352"></th> <th data-bbox="806 336 864 352">Below 90%</th> <th data-bbox="864 336 922 352">Above 90%</th> <th data-bbox="922 336 981 352">Above 95%</th> <th data-bbox="981 336 1041 352">Above 99%</th> </tr> </thead> <tbody> <tr> <td data-bbox="376 352 806 416"> 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 </td> <td data-bbox="806 352 1041 416"></td> <td data-bbox="806 352 864 416"></td> <td data-bbox="864 352 922 416"></td> <td data-bbox="922 352 981 416"></td> <td data-bbox="981 352 1041 416"></td> </tr> <tr> <td data-bbox="376 416 806 464"> B. Punctuality/Responsiveness: Do they arrive/act on time? Emergency breakdown On time during appointment/meeting </td> <td data-bbox="806 416 1041 464"></td> <td data-bbox="806 416 864 464"></td> <td data-bbox="864 416 922 464"></td> <td data-bbox="922 416 981 464"></td> <td data-bbox="981 416 1041 464"></td> </tr> <tr> <td data-bbox="376 464 806 504"> Do they submit report/s on time? Metering Information Registration Form Notice of Metering Installation Changes Metering Equipment Test/Calibration Reports </td> <td data-bbox="806 464 1041 504"></td> <td data-bbox="806 464 864 504"></td> <td data-bbox="864 464 922 504"></td> <td data-bbox="922 464 981 504"></td> <td data-bbox="981 464 1041 504"></td> </tr> <tr> <td data-bbox="376 504 806 568"> C. Safety: Do they observe safety at all times? Wearing safety helmet Wearing safety shoes Wearing gloves when needed Secure clearance during metering activities </td> <td data-bbox="806 504 1041 568"></td> <td data-bbox="806 504 864 568"></td> <td data-bbox="864 504 922 568"></td> <td data-bbox="922 504 981 568"></td> <td data-bbox="981 504 1041 568"></td> </tr> <tr> <td data-bbox="376 568 806 647"> D. Behavioral/General Impression Do they conduct themselves in a professional manner? Courteous Accommodating Knowledgeable/Competent </td> <td data-bbox="806 568 1041 647"></td> <td data-bbox="806 568 864 647"></td> <td data-bbox="864 568 922 647"></td> <td data-bbox="922 568 981 647"></td> <td data-bbox="981 568 1041 647"></td> </tr> <tr> <td data-bbox="376 647 806 655"> * MSP Rating in numerical percentage </td> <td data-bbox="806 647 1041 655"></td> <td data-bbox="806 647 864 655"></td> <td data-bbox="864 647 922 655"></td> <td data-bbox="922 647 981 655"></td> <td data-bbox="981 647 1041 655"></td> </tr> </tbody> </table>	Meter Service Provider Customer Satisfaction Rating Sheet:		*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: Do they arrive/act on time? Emergency breakdown On time during appointment/meeting						Do they submit report/s on time? Metering Information Registration Form Notice of Metering Installation Changes Metering Equipment Test/Calibration Reports						C. Safety: Do they observe safety at all times? Wearing safety helmet Wearing safety shoes Wearing gloves when needed Secure clearance during metering activities						D. Behavioral/General Impression Do they conduct themselves in a professional manner? Courteous Accommodating Knowledgeable/Competent						* MSP Rating in numerical percentage							
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* MSP Rating in numerical percentage																																																			

Customer Satisfaction Measurement

Rating Year _____

Market Participant/Generator/Customer Name: _____

Name of Rater/Designated Position: _____

Contact Nos./Fax Nos./Email Address: _____

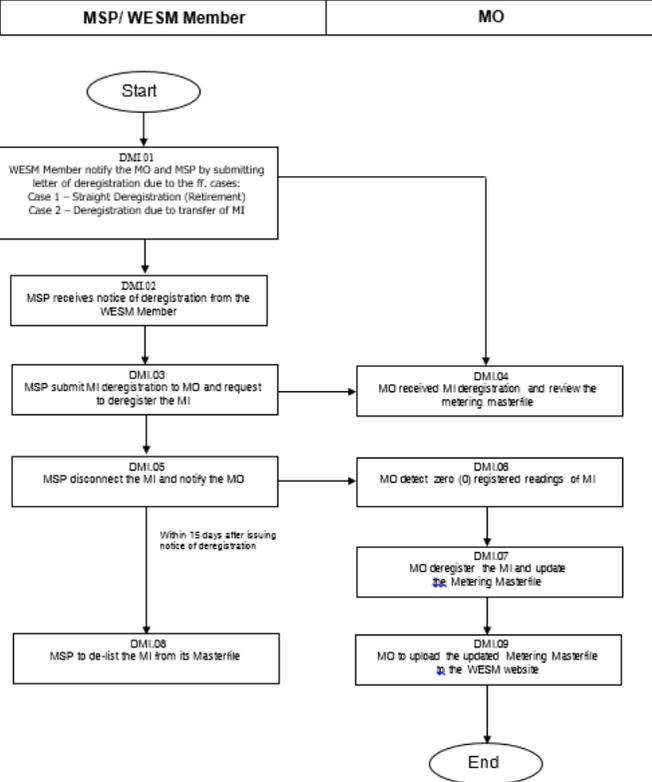
Meter Service Provider Customer Satisfaction Rating Sheet:	LEVELS OF SATISFACTION			
	Below 90%	Above 90%	Above 95%	Above 99%
A. Corporate Image: Does the MSP's Company/Employee maintain good representation at all times? Wearing ID at all times Tidy and neat appearance/attire of personnel General appearance of service vehicle Upkeep of tools and equipment				
B. Punctuality/Responsiveness: Do they arrive/act on time? Emergency breakdown On time during appointment/meeting				
Do they 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?				
Does the MSP notify for periodic metering equipment testing?				
C. Safety: Do they 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 Do they Does the MSP conduct itself in a professional manner? Courteous Accommodating Knowledgeable/Competent Does the MSP regularly perform the PGC prescribed meter and instrument transformer testing?				
E. Remarks (suggestion, recommendations, improvements, etc.)				

Note:

- Fill-out the specific percent rating for its designated column
- The President/Vice President/General Manager or authorized Representative shall rate and sign the Customer Satisfaction Sheet
- Please fax to (02) 654 0985

Signature over printed Name and Date Accomplished

Section/Title	Original Provision	Proposed Amendments	Rationale
	<i>New</i>	<p><u>SECTION 10 – METERING DE-REGISTRATION</u></p> <p><u>10.1 INTRODUCTION</u></p> <p><u>This section describes the process in de-registering a metering installation in accordance with the WESM Rules. Upon de-registration, the subject metering installation shall be dropped from the rolls of active WESM Metering Installations (MI).</u></p>	
	<i>New</i>	<p><u>10.2. DE-REGISTRATION OF A METERING INSTALLATION</u></p> <p><u>A metering installation shall be deregistered upon retirement/de-commission of the same.</u></p>	
	<i>New</i>	<p><u>10.3. TIMELINE FOR DE-REGISTRATION</u></p> <p><u>The Metering Services Provider shall issue a notification to the Market Operator when de-registering a metering installation within the 15- day period before its actual disconnection. The Market Operator shall facilitate the processing of the de-registered metering installation and shall also inform the responsible groups of the de-registration of the same.</u></p>	
	<i>New</i>	<p><u>10.4. WORKFLOW AND PROCEDURAL STEPS</u></p> <p><u>The diagram below depicts the workflow and information flow between the Metering Service Provider or Trading Participant and Market Operator in de-registering a metering installation.</u></p>	

Section/Title	Original Provision	Proposed Amendments	Rationale
	<p><i>New</i></p>	<p>10.5 WORKFLOW FOR DE-REGISTRATION OF METERING INSTALLATION</p> <p><i>(see below for the proposed flowchart)</i></p>  <pre> graph TD Start([Start]) --> DMI01[DMI.01 WESM Member notify the MO and MSP by submitting letter of deregistration due to the ff. cases: Case 1 – Straight Deregistration (Retirement) Case 2 – Deregistration due to transfer of MI] DMI01 --> DMI02[DMI.02 MSP receives notice of deregistration from the WESM Member] DMI02 --> DMI03[DMI.03 MSP submit MI deregistration to MO and request to deregister the MI] DMI03 --> DMI04[DMI.04 MO received MI deregistration and review the metering masterfile] DMI03 --> DMI05[DMI.05 MSP disconnect the MI and notify the MO] DMI04 --> DMI06[DMI.06 MO detect zero (0) registered readings of MI] DMI05 --> DMI06 DMI06 --> DMI07[DMI.07 MO deregister the MI and update the Metering Masterfile] DMI07 --> DMI09[DMI.09 MO to upload the updated Metering Masterfile to the WESM website] DMI09 --> End([End]) DMI05 -- "Within 15 days after issuing notice of deregistration" --> DMI08[DMI.08 MSP to de-list the MI from its Masterfile] </pre>	

Section/Title	Original Provision	Proposed Amendments					Rationale
		<p>10.6 PROCEDURAL STEPS FOR DE-REGISTRATION OF METERING INSTALLATION</p> <p><i>(see below for proposed procedural steps)</i></p>					
		Ref.	Task Name	Task Detail	When	Method	Completion Events
		DMI. 01	WESM Member request to deregister its MI	WESM Member notify the MSP and MO by submitting letter of deregistration due to the ff. cases: Case 1 – Straight Deregistration (Retirement) Case 2 – Deregistration due to transfer of MI	WESM Member decided to deregister its MI	By e-mail, courier or fax and official letter address to MSP and MO	Notice to MSP and MO
		DMI. 02	MSP receives notice of deregistration	WESM Member sends notice of deregistration to the MSP. Reason of deregistration must be	WESM Member sends notice of deregistration to MSP	By e-mail, courier or fax and official letter address to MSP	

			specified in the notice				
		DMI. 03	MSP submit MI deregistration to MO and request to deregister the MI	MSP sends MI deregistration letter to MO containing the reason of deregistration and other pertinent details	After DMI.02	By e-mail, courier or fax and official letter address to MO	Notice to MO
		DMI. 04	MO received MI deregistration	After receiving the letter of deregistration of MI, MO validates the request of the WESM Member and MSP. MO review the Metering Masterfile and issue instructions to deregister the MI	After assessment of MSP that the MI is subject for deregistration	By e-mail, courier or fax and official letter address to MO	
		DMI. 05	MSP disconnect the MI and notify the MO	MSP disconnect the MI within 15 days after issuing notice of deregistration and inform the MO of the MI disconnection.	Upon the final decision of the MSP due to obligation of the MI	By e-mail, courier or fax and official letter address to MO	Notice to MO

		DMI. 06	MO detect zero (0) registered readings of MI	MO verify if the MI is disconnected by detecting zero (0) registered readings of the said MI	After MI disconnection	By meter data inspection	
		DMI. 07	MO deregister the MI	MO deregister the MI and update the Metering Masterfile	After DMI. 06		
		DMI. 08	MSP to delist the MI	MSP to delist the MI from its masterfile and old MIRF shall be deregistered	After DMI.05		End of deregistration process of MI
		DMI. 09	MO to update the MI in the Metering Masterfile	MO to upload the updated Metering Masterfile to the website and old MIRF shall be deregistered	After DMI.07		End of deregistration process of MI

Section/Title	Original Provision	Proposed Amendments	Rationale
	<i>New Section</i>	<u>11 Amendments, Publication and Effectivity</u>	To be consistent with the format of WESM Manuals.
		<u>11.1 AMENDMENTS</u> <u>11.1.1 The Market Operator shall review and update this Market Manual based on the rules change process.</u> <u>11.1.2 Any amendment or revision to this Market Manual shall be approved in accordance with Chapter 8 of the WESM Rules and corresponding Market Manual on rules change process.</u>	
		<u>11.2 PUBLICATION AND EFFECTIVITY</u> <u>The publication and effectivity of this Market Manual shall take be in accordance with Chapter 8 of the WESM Rules and corresponding Market Manual on rules change process.</u>	
APPENDIX C: GOVERNING PROVISIONS OF THE WESM RULES			
4.5 METERING INSTALLATION	The pertinent provision in the <i>WESM Rules</i> on the the requirements for potential candidates as Trading Participants and Metering Services Providers are detailed below, to wit: Xxx	The following pertinent provisions in the <i>WESM Rules</i> on the the requirements for potential candidates as Trading Participants and Metering Services Providers are detailed below, to wit: Xxx	Clerical revisions

Section/Title	Original Provision	Proposed Amendments	Rationale
	<p>Section 4.4.2 Subject to clause 4.3.3 a <i>Generation Company</i> or <i>Customer</i> which is involved in the trading of <i>energy</i> shall not be registered as a <i>Metering Services Provider</i> for any <i>connection point</i> in respect of which the <i>metering data</i> relates to its own use of <i>energy</i>.</p> <p>Section 4.5.1 Metering Installation Components</p> <p>A Metering Installation shall:</p> <p style="text-align: center;">xxx</p> <p>e. Have electronic data recording facilities such that all metering data can be measured and recorded in trading intervals;</p> <p>xxx</p>	<p>Clause Section 4.4.2 Subject to clause 4.3.3.3 a <i>Generation Company</i> or <i>Customer</i> which is involved in the trading of <i>energy</i> shall not be registered as a <i>Metering Services Provider</i> for any <i>connection point</i> in respect of which the <i>metering data</i> relates to its own use of <i>energy</i>.</p> <p>Section 4.5.1 Metering Installation Components</p> <p>A Metering Installation shall:</p> <p style="text-align: center;">xxx</p> <p>e. Have electronic data recording facilities such that all metering data can be measured and recorded in trading relevant intervals;</p> <p>xxx</p>	
APPENDIX D: Metering Service Agreement	WITNESSETH XXX (e) Undertake all reasonable measures to ensure that the metering data are capable of being transmitted to the metering database from their metering installations (Clause 4.5.6):	WITNESSETH XXX (e) Undertake all reasonable measures to ensure that the metering data are capable of being transmitted to the metering database from their metering installations (Clause 4.5.7.1):	To correct reference number

Section/Title	Original Provision	Proposed Amendments	Rationale
	<p>Article 4</p> <p>xxx</p> <p>4.5 Accuracy of Information: Information disclosed or provided by the Metered Trading Participant pursuant to Section 4.3 shall be true, accurate and complete, to the best of the Metered Trading Participant's knowledge, at the time when such disclosure or provision is made. The Metered Trading Participant shall not knowingly or recklessly disclose or provide information pursuant to Section 4.3 that, at the time and in light of the circumstances in which such disclosure or provision is made, is misleading or deceptive or does not state a fact that is required to be stated.</p> <p>4.6 Correction of Information: Where the Metered Trading Participant discovers that any information previously disclosed or provided by it to the MSP pursuant to Section 4.3 was, at the time of disclosure or subsequently thereafter, becomes untrue, incorrect, incomplete, misleading or deceptive, the Metered Trading Participant shall immediately rectify the situation and disclose or provide the true, correct, complete information to the person to whom</p>	<p>Article 4</p> <p>4.6 Accuracy of Information: Information disclosed or provided by the Metered Trading Participant pursuant to Section 4.43 shall be true, accurate and complete, to the best of the Metered Trading Participant's knowledge, at the time when such disclosure or provision is made. The Metered Trading Participant shall not knowingly or recklessly disclose or provide information pursuant to Section 4.4 3 that, at the time and in light of the circumstances in which such disclosure or provision is made, is misleading or deceptive or does not state a fact that is required to be stated.</p> <p>4.6 Correction of Information: Where the Metered Trading Participant discovers that any information previously disclosed or provided by it to the MSP pursuant to Section 4.43 was, at the time of disclosure or subsequently thereafter, becomes untrue, incorrect, incomplete, misleading or deceptive, the Metered Trading Participant shall immediately rectify the situation and disclose or provide the true, correct,</p>	<p>To correct reference number</p>

Section/Title	Original Provision	Proposed Amendments	Rationale
	<p>the original or currently untrue, incorrect, incomplete, misleading or deceptive information had been disclosed or provided</p> <p>Article 7</p> <p>7.1 Term: This Agreement shall be a binding obligation on its date of effectivity and shall remain in full force and effect until terminated in accordance with Sections 7.02 and 7.3 of Article 7.</p>	<p>complete information to the person to whom the original or currently untrue, incorrect, incomplete, misleading or deceptive information had been disclosed or provided.</p> <p>Article 7</p> <p>7.1 Term: This Agreement shall be a binding obligation on its date of effectivity and shall remain in full force and effect until terminated in accordance with Sections 7. 0 2 and 7.3 of Article 7.</p>	

APPENDIX: SITE EQUIPMENT IDENTIFICATION (SEIN)

Table 11 Metering Equipment, Devices and Auxiliaries

Designation	Description
CT	Current Transformer
LA	Lightning Arrester
MB	Meter Box
MD	Modem
MF	Multi-function Electronic Meter (Smart Meter)
PT	Potential Transformer
ST	Metering Structure
TS	Meter Test Switch

Designation	Description
CT	Current Transformer
LA-SA	Lightning-Surge Arrester
MB	Meter Box
MD	Modem
MF	Multi-function Electronic Meter (Smart Meter)
PTVT	Potential <u>Voltage</u> Transformer
ST	Metering Structure
TS	Meter Test Switch

Minor corrections

APPENDIX: SITE-SPECIFIC LOSS ADJUSTMENT

Section/Title	Original Provision	Proposed Amendments	Rationale
APPENDIX: SITE-SPECIFIC LOSS ADJUSTMENT	<p><i>(Lifted from the original Section 9.8.3 of the Manual)</i></p> <p>9.8.3 General Equations</p> <p>9.8.3 General Equations</p> <p>The following are the equations to be used for calculating the SSLF</p> $kW_{\text{Meter}} = (\text{kWhMeter-15min} + \text{kWhMeter-30min} + \text{kWhMeter-45min} + \text{kWhMeter-00min}) \div 1\text{h}$ $kVar_{\text{Meter}} = (\text{kVarhMeter-15min} + \text{kVarhMeter-30min} + \text{kVarhMeter-45min} + \text{kVarhMeter-00min}) \div 1\text{h}$ $I_{\text{Line}} = kW_{\text{Meter}} \div ((\sqrt{3}) * V * pf_{\text{Meter}})$ $pf_{\text{Meter}} = \cos(\tan^{-1}(\text{kVar}_{\text{Meter}} \div kW_{\text{Meter}}))$ $\text{Line}_{kW\text{-Loss}} = (I_{\text{Line}})^2 * R_{\text{Line}} \div 1000$ $R_{\text{Line}} = r_a * L$ $\text{Line}_{kVar\text{-Loss}} = (I_{\text{Line}})^2 * X_{\text{Line}} \div 1000$ $X_{\text{Line}} = X_l * L$ $\text{Transformer}_{kW\text{-Loss}} = \text{TCore}_{\text{Loss}} + \text{TCopper}_{\text{Loss}}$	<p><i>(Lifted from the original Section 9.8.3 of the Manual and amended)</i></p> <p>9.8.3 A. General Equations</p> <p>The following are the equations to be used for calculating the Site-Specific Loss Factor (SSLF):</p> $kW_{\text{Meter}} = (\text{kWhMeter-15min} + \text{kWhMeter-30min} + \text{kWhMeter-45min} + \text{kWhMeter-00min}) \div 1\text{h}$ $kVar_{\text{Meter}} = (\text{kVarhMeter-15min} + \text{kVarhMeter-30min} + \text{kVarhMeter-45min} + \text{kVarhMeter-00min}) \div 1\text{h}$ $I_{\text{Line}} = kW_{\text{Meter}} \div ((\sqrt{3}) * V * pf_{\text{Meter}})$ $pf_{\text{Meter}} = \cos(\tan^{-1}(\text{kVar}_{\text{Meter}} \div kW_{\text{Meter}}))$ $\text{Line}_{kW\text{-Loss}} = (I_{\text{Line}})^2 * R_{\text{Line}} \div 1000$ $R_{\text{Line}} = r_a * L$ $\text{Line}_{kVar\text{-Loss}} = (I_{\text{Line}})^2 * X_{\text{Line}} \div 1000$ $X_{\text{Line}} = X_l * L$ $\text{Transformer}_{kW\text{-Loss}} = \frac{kW_{\text{meter}} * \%}{\text{Transformer}_{\text{Loss}} \text{TCore}_{\text{Loss}} + \text{TCopper}_{\text{Loss}}}$	<p>Transferred from the original Section 9.8.3 and amended to reflect the revised computation of SSLF to consider the 5-minute dispatch interval.</p> <p>Redundant variables are proposed to be removed.</p>

Section/Title	Original Provision	Proposed Amendments	Rationale
	<p> T_{Core_Loss} = constant loss from the open-circuit test </p> <p> T_{Copper_Loss} = full-load copper loss from the short-circuit test or $P_{Short-Circuit}$ </p> <p> $Core_{Loss-Meter} = T_{Core_Loss} * kW_{M1} \div \sum kW_{Meters}$ (Formula to be used if all <i>meters</i> register consumption, core loss being shared by all <i>meters</i> proportional to its consumption) </p> <p> $Core_{Loss-Meter} = T_{Core_Loss} * kW_{M1} * HLS_{M1}$ (Formula to be used if one or more or all of the <i>meter/s</i> register/s zero, core loss being shared according to the historical load factor of each <i>metering point</i>) </p> <p> $Copper_{Loss-Meter} = ((kW_{Meter} \div pf_{Meter}) \div T_{kVA-Rating})^2 * P_{Short-Circuit}$ </p> <p> $Total_{kW-Loss} = Line_{kW-Loss} + Core_{Loss-Meter} + Copper_{Loss-Meter}$ </p> <p> $SSLF = 1 + (Total_{kW-Loss} \div kW_{Meter})$ </p>	<p> T_{Core_Loss} = constant loss from the open-circuit test </p> <p> T_{Copper_Loss} = full-load copper loss from the short-circuit test or $P_{Short-Circuit}$ </p> <p> $Core_{Loss-Meter} = T_{Core_Loss} * kW_{M1} \div \sum kW_{Meters}$ (Formula to be used if all <i>meters</i> register consumption, core loss being shared by all <i>meters</i> proportional to its consumption) </p> <p> $Core_{Loss-Meter} = T_{Core_Loss} * kW_{M1} * HLS_{M1}$ (Formula to be used if one or more or all of the <i>meter/s</i> register/s zero, core loss being shared according to the historical load factor of each <i>metering point</i>) </p> <p> $Copper_{Loss-Meter} = ((kW_{Meter} \div pf_{Meter}) \div T_{kVA-Rating})^2 * P_{Short-Circuit}$ </p> <p> $Total_{kW-Loss} = Line_{kW-Loss} + Transformer_{kW-Loss} + Core_{Loss-Meter} + Copper_{Loss-Meter}$ </p> <p> $SSLF = 1 + (Total_{kW-Loss} \div kW_{Meter})$ </p>	<p> The variable for total active loss (Total_{kW-Loss}) for a metering point is changed to P_{Loss}. </p> <p> The variable for adjusted (kW) active power (Adjusted_{kW}) was changed to $kW_{adjusted}$. </p>

Section/Title	Original Provision	Proposed Amendments	Rationale
	$\text{Adjusted}_{\text{kW}} = \text{SSLF} * \text{kW}_{\text{Meter}} = \text{Total}_{\text{kW-Loss}} + \text{kW}_{\text{Meter}}$ $\text{Adjusted}_{\text{kWh}} = \text{Adjusted}_{\text{kW}} * t$ <p>Where:</p> <p>$\text{kWh}_{\text{Meter},i}$: <i>dispatch interval active energy meter registration</i></p> <p>$\text{kVarh}_{\text{Meter},i}$: <i>dispatch interval reactive energy meter registration</i></p> <p>kW_{Meter} : <i>active power derived from the meter registration</i></p> <p>I_{Line} : <i>current (Ampere) along the line</i></p> <p>V : <i>voltage (kV) level of the line</i></p> <p>pf_{Meter} : <i>power factor from the derived active and reactive power</i></p> <p>$\text{kVar}_{\text{Meter}}$: <i>reactive power derived from the meter registration</i></p> <p>$\text{Line}_{\text{kW-Loss}}$: <i>the active loss (kW) along the line</i></p> <p>$\text{Line}_{\text{kVar-Loss}}$: <i>the reactive loss (kVar) along the line</i></p> <p>R_{Line} : <i>total resistance (ohm) of the line</i></p>	$\text{Adjusted}_{\text{kW}} = \text{SSLF} * \text{kW}_{\text{Meter}} = \text{Total}_{\text{kW-Loss}} + \text{kW}_{\text{Meter}}$ $\text{Adjusted}_{\text{kWh}} = \text{Adjusted}_{\text{kW}} * t$ <p>Where:</p> <p>$\text{kWh}_{\text{Meter},i}$: <i>dispatch interval active energy meter registration</i></p> <p>$\text{kVarh}_{\text{Meter},i}$: <i>dispatch interval reactive energy meter registration</i></p> <p>kW_{Meter} : <i>active power derived from the meter registration</i></p> <p>I_{Line} : <i>current (Ampere) along the line</i></p> <p>V : <i>voltage (kV) level of the line</i></p> <p>pf_{Meter} : <i>power factor from the derived active and reactive power</i></p> <p>$\text{kVar}_{\text{Meter}}$: <i>reactive power derived from the meter registration</i></p> <p>$\text{Line}_{\text{kW-Loss}}$: <i>the active loss (kW) along the line</i></p> <p>$\text{Line}_{\text{kVar-Loss}}$: <i>the reactive loss (kVar) along the line</i></p>	

Section/Title	Original Provision	Proposed Amendments	Rationale
	<p>X_{Line} : total inductive reactance (ohm) of the line</p> <p>r_a : resistance per unit length (ohm/km) of the line</p> <p>X_l : total inductive reactance per unit length (ohm/km) of the line</p> <p>L : total line length (km)</p> <p>Transformer_{Loss} : total loss (kW) in the transformer</p> <p>TC_{CoreLoss} : constant loss (kW) from the open-circuit test</p> <p>TC_{CopperLoss} : full-load copper loss (kW) from the short-circuit test</p> <p>$P_{Short-Circuit}$: same meaning as the TC_{CopperLoss}</p> <p>Core_{Loss-Meter} : <i>meter's</i> equivalent share (kW) of the TC_{CoreLoss}</p> <p>Copper_{Loss-Meter} : <i>meter's</i> equivalent share (kW) of the TC_{CopperLoss}</p>	<p>R_{Line} : total resistance (ohm) of the line</p> <p>X_{Line} : total inductive reactance (ohm) of the line</p> <p>r_a : resistance per unit length (ohm/km) of the line</p> <p>X_l : total inductive reactance per unit length (ohm/km) of the line</p> <p>L : total line length (km)</p> <p>Transformer_{kW-Loss} : total loss (kW) in the transformer</p> <p>TC_{CoreLoss} : constant loss (kW) from the open-circuit test</p> <p>TC_{CopperLoss} : full-load copper loss (kW) from the short-circuit test</p> <p>$P_{Short-Circuit}$: same meaning as the TC_{CopperLoss}</p> <p>Core_{Loss-Meter} : <i>meter's</i> equivalent share (kW) of the TC_{CoreLoss}</p> <p>Copper_{Loss-Meter} : <i>meter's</i> equivalent share (kW) of the TC_{CopperLoss}</p>	

Section/Title	Original Provision	Proposed Amendments	Rationale
	<p>$\sum kW_{Meters}$: summation of <i>active power</i> derived from the <i>meter</i> readings of all <i>metering points</i> under the same transformer</p> <p>HLS : Historical Load Share; the fraction or ratio of a <i>metering point's</i> total <i>energy</i>, against the total <i>energy</i> of all <i>metering points</i> under the same transformer. The HLS for the current billing month shall be based on the energy of the last twelve (12) billing months.</p> <p>M_1 : pertains to the first <i>meter</i>, and so on</p> <p>$T_{kVA-Rating}$: transformer rating (kVA)</p> <p>$Total_{kW-Loss}$: total active loss (kW) for a <i>metering point</i></p> <p>$Adjusted_{kW}$: adjusted (kW) <i>active power</i></p> <p>SSLF : Site – Specific Loss Factor</p>	<p>$\sum kW_{Meters}$: summation of <i>active power</i> derived from the <i>meter</i> readings of all <i>metering points</i> under the same transformer</p> <p>HLS : Historical Load Share; the fraction or ratio of a <i>metering point's</i> total <i>energy</i>, against the total <i>energy</i> of all <i>metering points</i> under the same transformer. The HLS for the current billing month shall be based on the energy of the last twelve (12) billing months.</p> <p>M_1 : pertains to the first <i>meter</i>, and so on</p> <p>$T_{kVA-Rating}$: transformer rating (kVA)</p> <p>$Total_{kW-Loss}$: total active loss (kW) for a <i>metering point</i></p> <p>$Adjusted_{kW}$: adjusted (kW) <i>active power</i></p> <p>SSLF : Site – Specific Loss Factor</p> <p>---XXX---</p>	
	<p>(Lifted from the original Section 9.8.3 of the Manual)</p> <p>9.8.3 General Equations</p>	<p>(Lifted from the original Section 9.8.3 of the Manual and amended)</p> <p>9.8.3 A. General Equations</p>	<p>Transferred from the original Section 9.8.3 and amended to reflect the revised computation of</p>

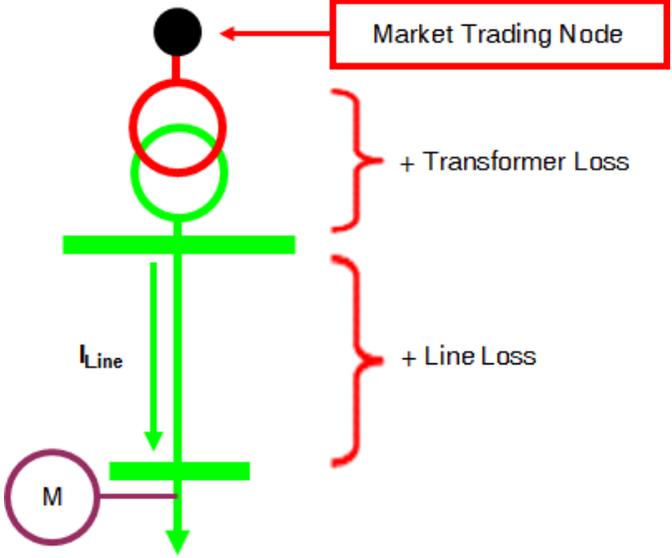
Section/Title	Original Provision	Proposed Amendments	Rationale
	<p>The following are the equations to be used for calculating the SSLF</p> $kW_{\text{Meter}} = (\text{kWhMeter-15min} + \text{kWhMeter-30min} + \text{kWhMeter-45min} + \text{kWhMeter-00min}) \div 1\text{h}$ $kVar_{\text{Meter}} = (\text{kVarhMeter-15min} + \text{kVarhMeter-30min} + \text{kVarhMeter-45min} + \text{kVarhMeter-00min}) \div 1\text{h}$ $I_{\text{Line}} = kW_{\text{Meter}} \div ((\sqrt{3}) * V * pf_{\text{Meter}})$ $pf_{\text{Meter}} = \cos(\tan^{-1}(\text{kVar}_{\text{Meter}} \div kW_{\text{Meter}}))$ $\text{Line}_{\text{kW-Loss}} = (I_{\text{Line}})^2 * R_{\text{Line}} \div 1000$ $R_{\text{Line}} = r_a * L$ $\text{Line}_{\text{kVar-Loss}} = (I_{\text{Line}})^2 * X_{\text{Line}} \div 1000$ $X_{\text{Line}} = X_l * L$ $\text{Transformer}_{\text{kW-Loss}} = \text{TCore}_{\text{Loss}} + \text{TCopper}_{\text{Loss}}$ <p>$\text{TCore}_{\text{Loss}}$ = constant loss from the open-circuit test</p> <p>$\text{TCopper}_{\text{Loss}}$ = full-load copper loss from the short-circuit test or $P_{\text{Short-Circuit}}$</p>	<p>The following are the equations to be used for calculating the Site-Specific Loss Factor (SSLF):</p> $kW_{\text{Meter}} = (\text{kWhMeter-15min} + \text{kWhMeter-30min} + \text{kWhMeter-45min} + \text{kWhMeter-00min}) \div 1\text{h}$ $kVar_{\text{Meter}} = (\text{kVarhMeter-15min} + \text{kVarhMeter-30min} + \text{kVarhMeter-45min} + \text{kVarhMeter-00min}) \div 1\text{h}$ $I_{\text{Line}} = kW_{\text{Meter}} \div ((\sqrt{3}) * V * pf_{\text{Meter}})$ $pf_{\text{Meter}} = \cos(\tan^{-1}(\text{kVar}_{\text{Meter}} \div kW_{\text{Meter}}))$ $\text{Line}_{\text{kW-Loss}} = (I_{\text{Line}})^2 * R_{\text{Line}} \div 1000$ $R_{\text{Line}} = r_a * L$ $\text{Line}_{\text{kVar-Loss}} = (I_{\text{Line}})^2 * X_{\text{Line}} \div 1000$ $X_{\text{Line}} = X_l * L$ $\text{Transformer}_{\text{kW-Loss}} = \frac{kW_{\text{meter}} * \%}{\text{Transformer}_{\text{Loss}} \text{TCore}_{\text{Loss}} + \text{TCopper}_{\text{Loss}}}$ $\text{TCore}_{\text{Loss}} = \text{constant loss from the open-circuit test}$ $\text{TCopper}_{\text{Loss}} = \text{full-load copper loss from the short-circuit test or } P_{\text{Short-Circuit}}$ 	<p>The general equations are revised to reflect the equations used by the MSP in its current methodology.</p>

Section/Title	Original Provision	Proposed Amendments	Rationale
	<p> $\text{Core}_{\text{Loss-Meter}} = \frac{\text{TCore}_{\text{Loss}} * \text{kW}_{\text{M1}}}{\sum \text{kW}_{\text{Meters}}}$ (Formula to be used if all <i>meters</i> register consumption, core loss being shared by all <i>meters</i> proportional to its consumption) </p> <p> $\text{Core}_{\text{Loss-Meter}} = \text{TCore}_{\text{Loss}} * \text{kW}_{\text{M1}} * \text{HLS}_{\text{M1}}$ (Formula to be used if one or more or all of the <i>meter/s</i> register/s zero, core loss being shared according to the historical load factor of each <i>metering point</i>) </p> <p> $\text{Copper}_{\text{Loss-Meter}} = \frac{(\text{kW}_{\text{Meter}} \div \text{pf}_{\text{Meter}}) \div \text{T}_{\text{kVA-Rating}}}{2 * \text{P}_{\text{Short-Circuit}}}$ </p> <p> $\text{Total}_{\text{kW-Loss}} = \text{Line}_{\text{kW-Loss}} + \text{Core}_{\text{Loss-Meter}} + \text{Copper}_{\text{Loss-Meter}}$ </p> <p> $\text{SSLF} = 1 + (\text{Total}_{\text{kW-Loss}} \div \text{kW}_{\text{Meter}})$ </p> <p> $\text{Adjusted}_{\text{kW}} = \frac{\text{SSLF} * \text{kW}_{\text{Meter}}}{\text{Loss} + \text{kW}_{\text{Meter}}} = \text{Total}_{\text{kW-Loss}} + \text{kW}_{\text{Meter}}$ </p> <p> $\text{Adjusted}_{\text{kWh}} = \text{Adjusted}_{\text{kW}} * \text{t}$ </p> <p>Where:</p>	<p> $\text{Core}_{\text{Loss-Meter}} = \frac{\text{TCore}_{\text{Loss}} * \text{kW}_{\text{M1}}}{\sum \text{kW}_{\text{Meters}}}$ (Formula to be used if all <i>meters</i> register consumption, core loss being shared by all <i>meters</i> proportional to its consumption) </p> <p> $\text{Core}_{\text{Loss-Meter}} = \text{TCore}_{\text{Loss}} * \text{kW}_{\text{M1}} * \text{HLS}_{\text{M1}}$ (Formula to be used if one or more or all of the <i>meter/s</i> register/s zero, core loss being shared according to the historical load factor of each <i>metering point</i>) </p> <p> $\text{Copper}_{\text{Loss-Meter}} = \frac{(\text{kW}_{\text{Meter}} \div \text{pf}_{\text{Meter}}) \div \text{T}_{\text{kVA-Rating}}}{2 * \text{P}_{\text{Short-Circuit}}}$ </p> <p> $\text{Total}_{\text{kW-Loss}} = \text{Line}_{\text{kW-Loss}} + \text{Transformer}_{\text{kW-Loss}} + \text{Core}_{\text{Loss-Meter}} + \text{Copper}_{\text{Loss-Meter}}$ </p> <p> $\text{SSLF} = 1 + (\text{Total}_{\text{kW-Loss}} \div \text{kW}_{\text{Meter}})$ </p> <p> $\text{Adjusted}_{\text{kW}} = \frac{\text{SSLF} * \text{kW}_{\text{Meter}}}{\text{Total}_{\text{kW-Loss}} + \text{kW}_{\text{Meter}}}$ </p> <p> $\text{Adjusted}_{\text{kWh}} = \text{Adjusted}_{\text{kW}} * \text{t}$ </p> <p>Where:</p>	

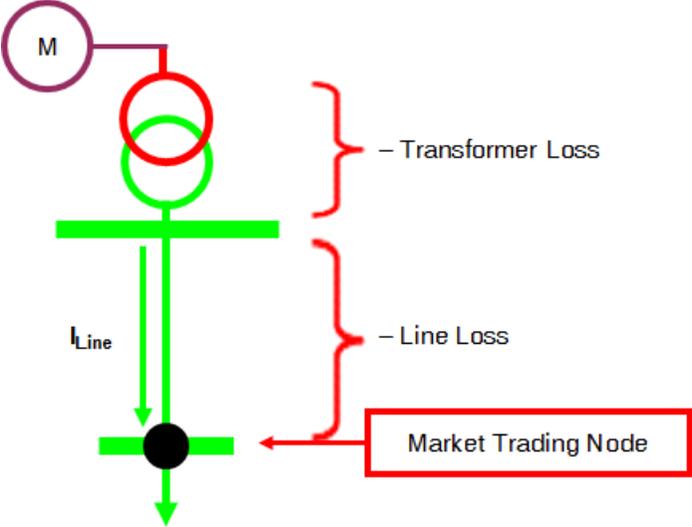
Section/Title	Original Provision	Proposed Amendments	Rationale
	$kWh_{\text{Meter},i}$: <i>dispatch interval active energy meter registration</i> $kVarh_{\text{Meter},i}$: <i>dispatch interval reactive energy meter registration</i> kW_{Meter} : <i>active power derived from the meter registration</i> I_{Line} : current (Ampere) along the line V : <i>voltage (kV) level of the line</i> pf_{Meter} : <i>power factor from the derived active and reactive power</i> $kVar_{\text{Meter}}$: <i>reactive power derived from the meter registration</i> $\text{Line}_{kW\text{-Loss}}$: the active loss (kW) along the line $\text{Line}_{kVar\text{-Loss}}$: the reactive loss (kVar) along the line R_{Line} : total resistance (ohm) of the line X_{Line} : total inductive reactance (ohm) of the line r_a : resistance per unit length (ohm/km) of the line	 $kWh_{\text{Meter},i}$: <i>dispatch interval active energy meter registration</i> $kVarh_{\text{Meter},i}$: <i>dispatch interval reactive energy meter registration</i> kW_{Meter} : <i>active power derived from the meter registration</i> I_{Line} : current (Ampere) along the line V : <i>voltage (kV) level of the line</i> pf_{Meter} : <i>power factor from the derived active and reactive power</i> $kVar_{\text{Meter}}$: <i>reactive power derived from the meter registration</i> $\text{Line}_{kW\text{-Loss}}$: the active loss (kW) along the line $\text{Line}_{kVar\text{-Loss}}$: the reactive loss (kVar) along the line R_{Line} : total resistance (ohm) of the line X_{Line} : total inductive reactance (ohm) of the line 	

Section/Title	Original Provision	Proposed Amendments	Rationale
	X_l : total inductive reactance per unit length (ohm/km) of the line L : total line length (km) Transformer _{Loss} : total loss (kW) in the transformer TCore _{Loss} : constant loss (kW) from the open-circuit test TCopper _{Loss} : full-load copper loss (kW) from the short-circuit test $P_{Short-Circuit}$: same meaning as the TCopper _{Loss} Core _{Loss-Meter} : <i>meter's</i> equivalent share (kW) of the TCore _{Loss} Copper _{Loss-Meter} : <i>meter's</i> equivalent share (kW) of the TCopper _{Loss} $\sum kW_{Meters}$: summation of <i>active power</i> derived from the <i>meter</i> readings of all <i>metering points</i> under the same transformer	r_a : resistance per unit length (ohm/km) of the line X_l : total inductive reactance per unit length (ohm/km) of the line L : total line length (km) Transformer _{kw-Loss} : total loss (kW) in the transformer TCore_{Loss} : constant loss (kW) from the open-circuit test TCopper_{Loss} : full-load copper loss (kW) from the short-circuit test $P_{Short-Circuit}$: same meaning as the TCopper_{Loss} Core_{Loss-Meter} : <i>meter's</i> equivalent share (kW) of the TCore_{Loss} Copper_{Loss-Meter} : <i>meter's</i> equivalent share (kW) of the TCopper_{Loss} $\sum kW_{Meters}$: summation of <i>active power</i> derived from the <i>meter</i> readings of all <i>metering points</i> under the same transformer HLS : Historical Load Share; the fraction or ratio of a <i>metering</i>	

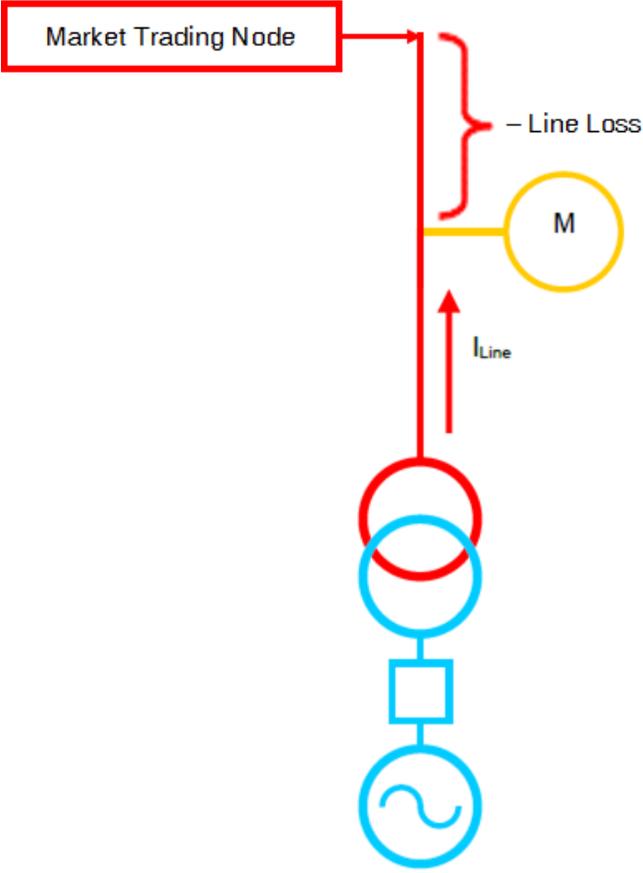
Section/Title	Original Provision	Proposed Amendments	Rationale
	<p>HLS : Historical Load Share; the fraction or ratio of a <i>metering point's</i> total energy, against the total energy of all <i>metering points</i> under the same transformer. The HLS for the current billing month shall be based on the energy of the last twelve (12) billing months.</p> <p>M_1 : pertains to the first <i>meter</i>, and so on</p> <p>$T_{kVA-Rating}$: transformer rating (kVA)</p> <p>$Total_{kW-Loss}$: total active loss (kW) for a <i>metering point</i></p> <p>$Adjusted_{kW}$: adjusted (kW) <i>active power</i></p> <p>SSLF : Site – Specific Loss Factor</p>	<p><i>point's</i> total energy, against the total energy of all <i>metering points</i> under the same transformer. The HLS for the current billing month shall be based on the energy of the last twelve (12) billing months.</p> <p>M_1 : pertains to the first <i>meter</i>, and so on</p> <p>$T_{kVA-Rating}$: transformer rating (kVA)</p> <p>$Total_{kW-Loss}$: total active loss (kW) for a <i>metering point</i></p> <p>$Adjusted_{kW}$: adjusted (kW) <i>active power</i></p> <p>SSLF : Site – Specific Loss Factor</p>	
SITE – SPECIFIC LOSS ADJUSTMENT	SITE – SPECIFIC LOSS ADJUSTMENT xxx	B. CASES FOR LOSS CALCULATION (CUSTOMER) SITE – SPECIFIC LOSS ADJUSTMENT	The cases provided under this section

Section/Title	Original Provision	Proposed Amendments	Rationale
		<p>xxx (Deletes all cases and instead proposes as follows)</p> <p><u>The following are some sample cases to guide the user in computing for the loss calculation:</u></p> <p><u>Customer</u></p> <p><u>Case 1: A metering point is located after the market trading node (Figure L1)</u></p>  <p style="text-align: center;">Figure L1</p> <p style="text-align: center;">Line_{kW}-Loss = (I_{Line})² * R_{Line}</p>	<p>consider adjustments up to the market trading nodes. This results in cases when there are multiple metering points in one market trading node. Since it is proposed that the metering point should be at the connection point, there will only be one metering point per connection point; hence, the cases provided would not be applicable anymore.</p> <p>Presents applicable cases</p>

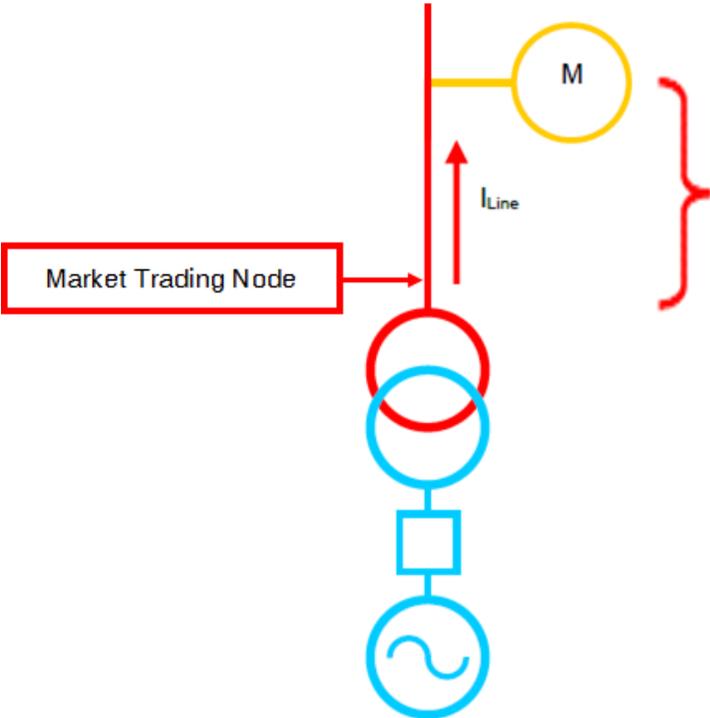
Section/Title	Original Provision	Proposed Amendments	Rationale
		$R_{Line} = r_a * L$ $Line_{kVar-Loss} = (I_{Line})^2 * X_{Line}$ $X_{Line} = X_l * L$ $\text{Transformer}_{kW-Loss} = kW_{Mi} *$ $\% \text{Transformer}_{Loss}$ $\text{Total}_{kW-Loss} = Line_{kW-Loss} +$ $\text{Transformer}_{kW-Loss}$ $SSLF = 1 + (\text{Total}_{kW-Loss} + kW_{Mi})$ <p><i>[Note: Total_{kW-Loss} and kW_{Mi} will have positive values in this case]</i></p> $\text{Adjusted}_{kW} = \text{Total}_{kW-Loss} + kW_{Mi}$ $= SSLF * kW_{Mi}$ $\text{Adjusted}_{kWh} = \text{Adjusted}_{kW} * t$	

Section/Title	Original Provision	Proposed Amendments	Rationale
		<p>Case 2: A metering point is located before the market trading node (Figure L2)</p>  <p>Figure L2</p> $\text{Line}_{kW}\text{-Loss} = (I_{\text{Line}})^2 * R_{\text{Line}}$ $R_{\text{Line}} = r_a * L$ $\text{Line}_{kVar}\text{-Loss} = (I_{\text{Line}})^2 * X_{\text{Line}}$ $X_{\text{Line}} = X_l * L$	

Section/Title	Original Provision	Proposed Amendments	Rationale
		$\text{Transformer}_{kW\text{-Loss}} = kW_{Mi} *$ $\% \text{Transformer}_{Loss}$ $\text{Total}_{kW\text{-Loss}} = \text{Line}_{kW\text{-Loss}} + \text{Transformer}_{kW\text{-Loss}}$ $\text{SSLF} = 1 + (\text{Total}_{kW\text{-Loss}} + kW_{Mi})$ <p><i>[Note: Total_{kW-Loss} and kW_{Mi} will have negative values in this case]</i></p> $\text{Adjusted}_{kW} = \text{Total}_{kW\text{-Loss}} + kW_{Mi}$ $= \text{SSLF} * kW_{Mi}$ $\text{Adjusted}_{kWh} = \text{Adjusted}_{kW} * t$	

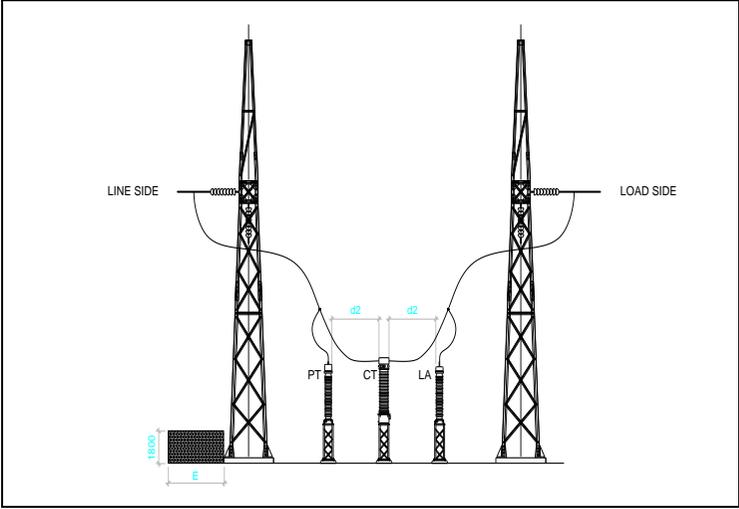
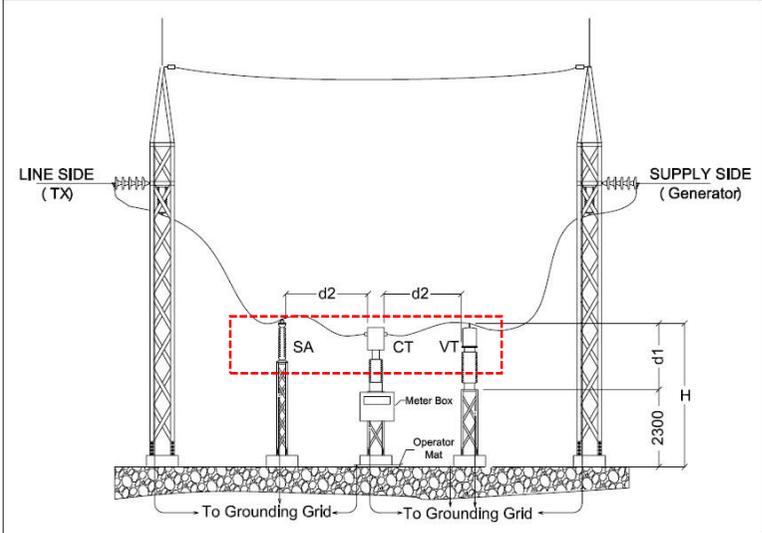
Section/Title	Original Provision	Proposed Amendments	Rationale
		<p>Generator</p> <p>Case 1: A metering point is located after the market trading node (Figure G1)</p>  <p>The diagram illustrates a power flow from a generator (represented by a blue circle with a sine wave) through a transformer (blue square) and a circuit breaker (blue circle) to a market trading node (red circle). A transmission line (red vertical line) carries the power from the trading node to a metering point 'M' (yellow circle). A bracket on the line between the trading node and 'M' is labeled '- Line Loss'. An upward-pointing arrow on the line is labeled 'I_{Line}'. A red box highlights the 'Market Trading Node' label.</p> <p>Figure G1</p>	

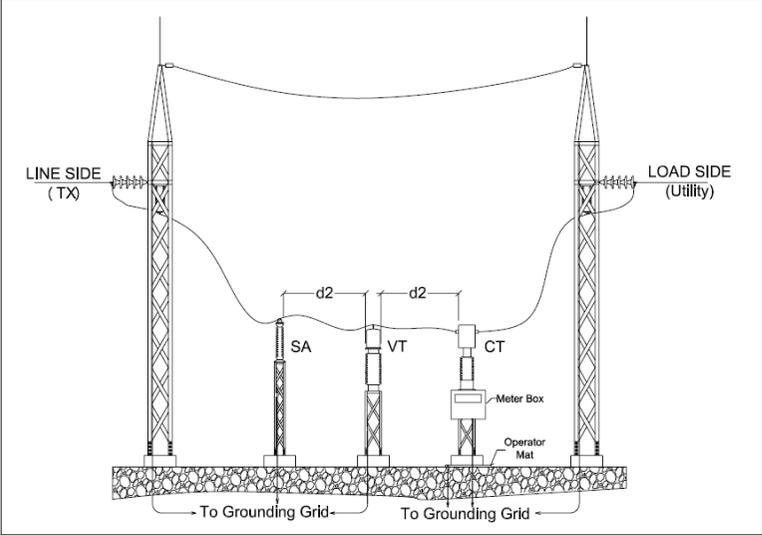
Section/Title	Original Provision	Proposed Amendments	Rationale
		$\text{Line}_{kW\text{-Loss}} = (I_{\text{Line}})^2 * R_{\text{Line}}$ $R_{\text{Line}} = r_a * L$ $\text{Line}_{k\text{Var-Loss}} = (I_{\text{Line}})^2 * X_{\text{Line}}$ $X_{\text{Line}} = X_l * L$ $\text{Transformer}_{kW\text{-Loss}} = \text{kW}_{Mi} *$ $\% \text{Transformer}_{\text{Loss}}$ $\text{Total}_{kW\text{-Loss}} = \text{Line}_{kW\text{-Loss}} +$ $\text{Transformer}_{kW\text{-Loss}}$ $\text{SSLF} = 1 + (\text{Total}_{kW\text{-Loss}} + \text{kW}_{Mi})$ <p><i>[Note: Total_{kW-Loss} and kW_{Mi} will have negative values in this case]</i></p> $\text{Adjusted}_{kW} = \text{Total}_{kW\text{Loss}} + \text{kW}_{Mi}$ $= \text{SSLF} * \text{kW}_{Mi}$ $\text{Adjusted}_{kWh} = \text{Adjusted}_{kW} * t$	

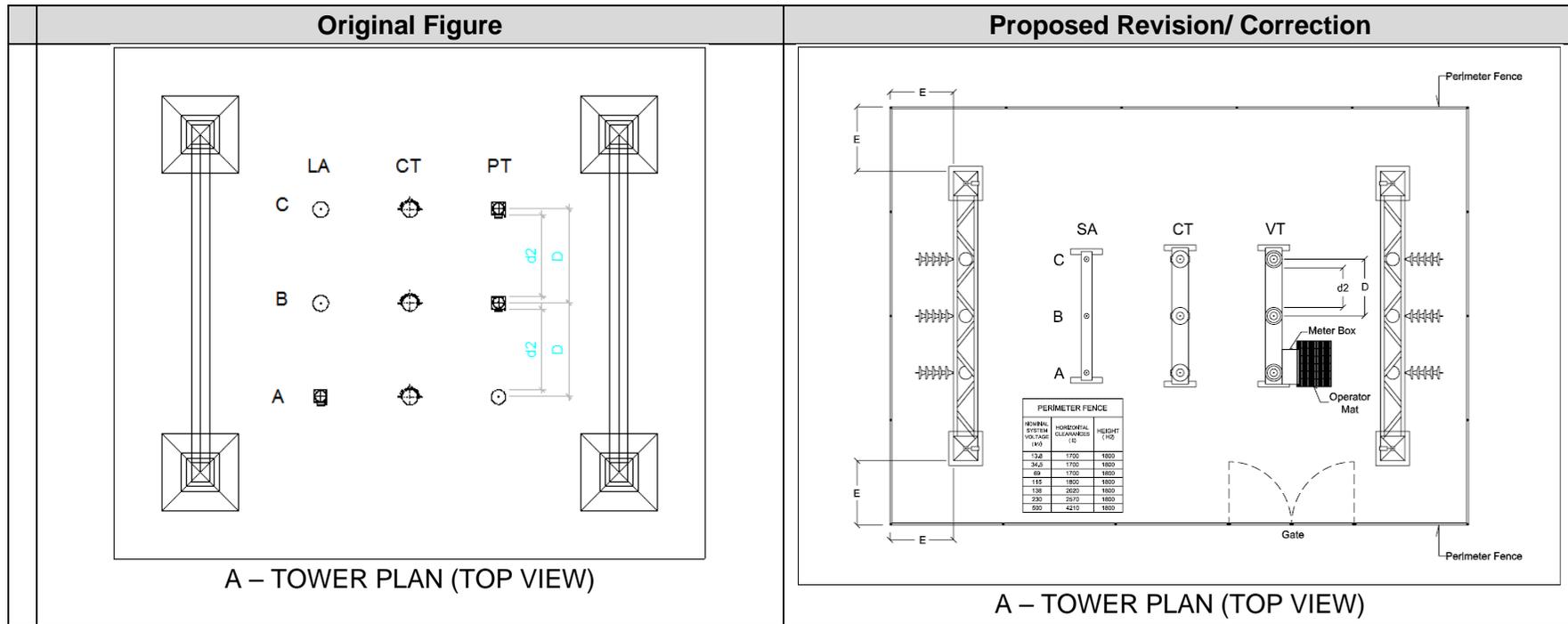
Section/Title	Original Provision	Proposed Amendments	Rationale
		<p>Case 2: A metering point is located before the market trading node (Figure G2)</p>  <p>Figure G2</p> $\text{Line}_{kW\text{-Loss}} = (I_{\text{Line}})^2 * R_{\text{Line}}$ $R_{\text{Line}} = r_a * L$ $\text{Line}_{kVar\text{-Loss}} = (I_{\text{Line}})^2 * X_{\text{Line}}$	

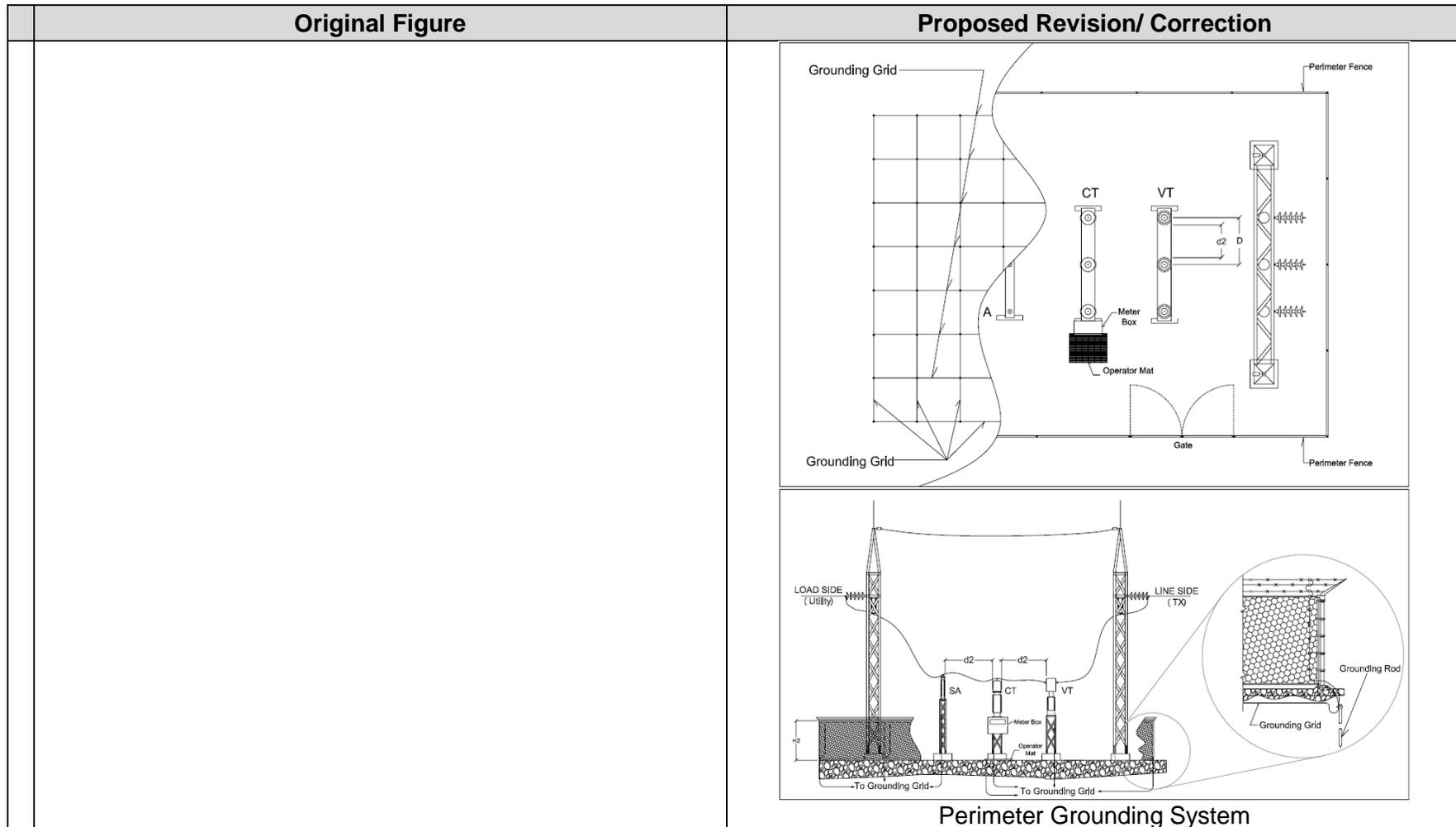
Section/Title	Original Provision	Proposed Amendments	Rationale
		$X_{Line} = X_l * L$ $\text{Transformer}_{kW-Loss} \% \text{Transformer}_{Loss} = kW_{Mi} *$ $\text{Total}_{kW-Loss} \text{Transformer}_{kW-Loss} = \text{Line}_{kW-Loss} +$ $\text{SSLF} = 1 + (\text{Total}_{kW-Loss} + kW_{Mi})$ <p><i>[Note: Total_{kW-Loss} and kW_{Mi} will have positive values in this case]</i></p> $\text{Adjusted}_{kW} = \text{Total}_{kW-Loss} + kW_{Mi}$ $= \text{SSLF} * kW_{Mi}$ $\text{Adjusted}_{kWh} = \text{Adjusted}_{kW} * t$	
References	References xxx	References xxx	For easier reference, transferred list of reference documents from the Appendix to the table of Reference Documents in the introductory part of the Market Manual.

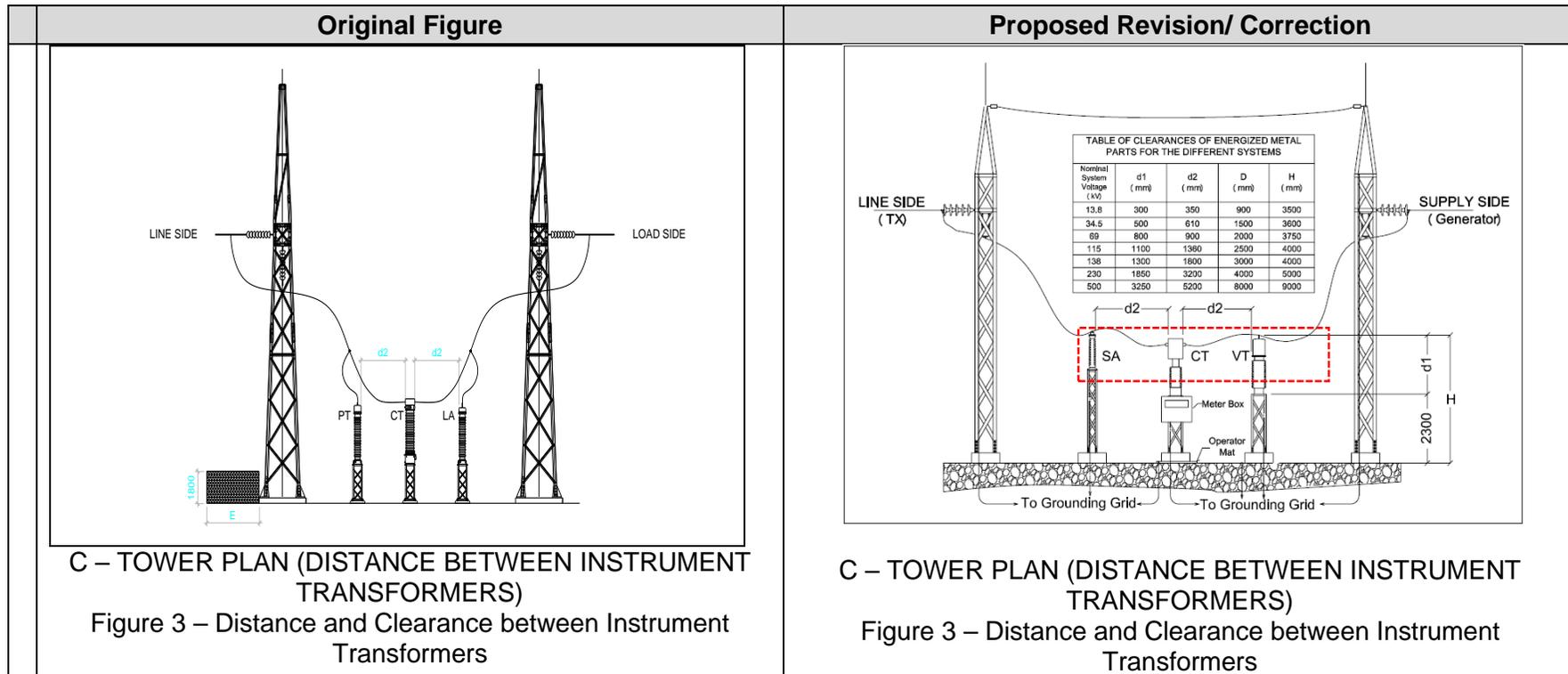
DRAWINGS, FIGURES AND PERTINENT SKETCHES

Original Figure	Proposed Revision/ Correction
 <p>Figure 2 - Location/Arrangement of Instrument Transformers</p>	 <p>Figure 2(a) Location/Arrangement of Instrument Transformers (Generator)</p>

Original Figure	Proposed Revision/ Correction
	 <p>Figure 2(b) Location/Arrangement of Instrument Transformers (Distribution Utility)</p> <p>Figure 2 - Location/Arrangement of Instrument Transformers</p>







Proposed Amendments to the Registration Manual on Location of Metering Point

Title	Section	Provision	Proposed Amendment	Rationale
Generation Company	<u>2.5.1.1(c)</u> (new)	(blank)	<u>A Generation Company shall register each of its connection points with the Market Operator.</u>	Reflect proposed new WESM Rules Clause 2.3.1.9. The proposed change in the location of the metering point to the connection point of a trading participant would require the identification of connection points during registration.
Customers	<u>2.5.1.2(c)</u> (new)	(blank)	<u>A Customer shall register each of its connection points with the Market Operator. For contestable customers, there shall be one registration for each certificate of contestability from ERC.</u>	Reflect proposed new WESM Rules Clause 2.3.2.4. The proposed change in the location of the metering point to the connection point of a trading participant would require the identification of connection points during registration.

Proposed Amendments to the Market Network Model Manual on Location of Metering Point

Title	Section	Provision	Proposed Amendment	Rationale
Market Trading Nodes	4.4.1	<p>These are <i>nodes</i> in the load flow model designated as the reckoning <i>node</i> for Trading Participant bids or offers and corresponding settlement of <i>energy</i> and reserves. MTN shall be modeled as the trading point of a Generator or a Load where the appropriate real-time monitoring facility can be associated. Where the MTN and the metering point are of different location, site-specific loss adjustment (SSLA) provided in the WESM Metering <i>Market Manual</i> shall apply. Further details on MTN can be observed in Section 6 of this <i>Market Manual</i>.</p>	<p>These are <i>nodes</i> in the load flow model designated as the reckoning <i>node</i> for Trading Participant bids or offers and corresponding settlement of <i>energy</i> and reserves <u>of Trading Participants</u>. MTN shall be modeled as the trading point of a Generator or a Load <u>corresponding to its connection point</u> where the appropriate real-time monitoring facility can be associated. Where the MTN and the metering point are of different location, site-specific loss adjustment (SSLA) provided in the WESM Metering <i>Market Manual</i> shall apply. Further details on MTN can be observed in Section 6 of this <i>Market Manual</i>.</p>	<p>This reflects the proposed re-definition of market trading nodes to refer to connection points where trading participants are settled in the WESM.</p>
MNM COMPONENTS AND MODELING	<u>4.4.9</u> (new)	(blank)	<p><u>4.4.9 Scheduling Points</u></p> <p><u>These are nodes in the load flow model designated as the reckoning node for Trading Participant bids or offers. Scheduling points shall be</u></p>	<p>Reflect proposed WESM Rules Clause 3.2.2.3. Some cases require that a participant be scheduled at a location other than its connection points (e.g.,</p>

Proposed Amendments to the Market Network Model Manual on Location of Metering Point

Title	Section	Provision	Proposed Amendment	Rationale
			<p><u>modeled as the point of a Generator where the appropriate real-time monitoring facility can be associated. The scheduling points of a customer shall be at its connection points; however, if the system of a customer is included in the market network model, the scheduling points of the customer shall be at the withdrawal points within its system.</u></p>	<p>generator at its plant, modelled DU at withdrawal points within its system). These points are proposed to be referred to as “scheduling points”. For a customer, its scheduling point and market trading node would both correspond to its connection point</p>
Classification of Market Trading Nodes	6.3.2	<p>There may be conditions wherein a <i>Trading Participant</i> has a generating facility whose remote telemetering facility is situated in a location where both its injection and withdrawal of power are monitored. In such cases, that <i>Trading Participant</i> shall have a generator and customer MTN registered in the WESM to dynamically reflect its injection and withdrawal, respectively. These cases are applicable for the following conditions</p> <p>XXX</p>	<p>There may be conditions wherein a <i>Trading Participant</i> has a generating facility whose remote telemetering facility is situated in a location where both its injection and withdrawal of power are monitored. In such cases, that <i>Trading Participant</i> shall have a generator and customer <u>scheduling point</u> MTN registered in the WESM to dynamically reflect its injection and withdrawal, respectively. These cases are applicable for the following conditions</p> <p>XXX</p>	<p>Since the provision refers to the location of the remote telemetering facility of a generator, the node referred to in the provision is the scheduling point.</p>

Proposed Amendments to the Market Network Model Manual on Location of Metering Point

Title	Section	Provision	Proposed Amendment	Rationale
Criteria for the Definition of MTN	6.4.1	MTN shall be defined for each <i>node</i> in the MNM that lies at the boundary between a network operated by the <i>System Operator</i> and any apparatus, network or equipment used to generate, convey or control the conveyance of <i>energy</i> and operated by a person other than the <i>System Operator</i> .	<u>Subject to Section 6.4.2 and Section 6.4.8, MTN and scheduling points</u> shall be defined for each <i>node</i> in the MNM that lies at the boundary between a network operated by the <i>System Operator</i> and any apparatus, network or equipment used to generate, convey or control the conveyance of <i>energy</i> and operated by a person other than the <i>System Operator</i> .	The proposed change clarifies that both the MTN and settlement points will be defined at the connection point of trading participants except for generating facilities who have individual scheduling nodes and DUs that are modelled in the MNM.
Criteria for the Definition of MTN	6.4.2	MTN shall also be defined for each <i>node</i> in the MNM that lies at the boundary between a network operated by the <i>Network Service Provider</i> that is included in the MNM, and any apparatus, network or equipment used to generate, convey or control the conveyance of <i>energy</i> and operated by a person other than the <i>System Operator</i> .	<u>Scheduling points</u> MTN shall also be defined for each <i>node</i> in the MNM that lies at the boundary between a network operated by the <i>Network Service Provider</i> that is included in the MNM, and any apparatus, network or equipment used to generate, convey or control the conveyance of <i>energy</i> and operated by a person other than the <i>Network Service Provider</i> .	Nodes within sub-transmission or distribution systems that are modelled due to their material impact on schedules and prices shall be modelled as scheduling points only. Settlement points of the owner of the sub-transmission or distribution system will still be at its connection points to the transmission system.

Proposed Amendments to the Market Network Model Manual on Location of Metering Point

Title	Section	Provision	Proposed Amendment	Rationale
Criteria for the Definition of MTN	6.4.4	MTN shall be defined in a manner that calculation of relevant power flows and locational marginal prices shall not result to cross-subsidization of the <i>Trading Participant</i> .	MTN <u>and scheduling points</u> shall be defined in a manner that calculation of relevant power flows and locational marginal prices shall not result to cross-subsidization of the <i>Trading Participant</i> .	Include scheduling points in ensuring no cross-subsidization occurs.
Criteria for the Definition of MTN	6.4.5	If the interface of the network operated by the <i>System Operator</i> and the apparatus, network or equipment operated by the <i>Trading Participant</i> lies at the end of a radial transmission line or power transformer serving solely the <i>Trading Participant</i> , the MTN shall be defined at the take-off point of the radial transmission line or the power transformer from the main power network. Locational marginal prices shall be calculated at the MTN and dispatch of <i>energy</i> supplied or withdrawn by the <i>Trading Participant</i> shall be adjusted to account for the <i>energy</i> losses along the radial transmission line or power transformer. These <i>energy</i> losses shall be for the account of the <i>Trading Participant</i> .	(Deleted) If the interface of the network operated by the System Operator and the apparatus, network or equipment operated by the Trading Participant lies at the end of a radial transmission line or power transformer serving solely the Trading Participant, the MTN shall be defined at the take-off point of the radial transmission line or the power transformer from the main power network. Locational marginal prices shall be calculated at the MTN and dispatch of energy supplied or withdrawn by the Trading Participant shall be adjusted to account for the energy losses along the radial transmission line or power transformer. These energy losses	The provision is no longer applicable since market trading nodes will be placed at the connection points of trading participants.

Proposed Amendments to the Market Network Model Manual on Location of Metering Point

Title	Section	Provision	Proposed Amendment	Rationale
			shall be for the account of the Trading Participant.	
Criteria for the Definition of MTN	6.4.6	If the <i>Trading Participant</i> interconnects to two or more transmission <i>nodes</i> , the MTN for that <i>Trading Participant</i> shall be the high voltage side of its step-up transformer.	(Deleted) If the Trading Participant interconnects to two or more transmission nodes, the MTN for that Trading Participant shall be the high voltage side of its step-up transformer	The provision is no longer applicable since MTNs will be located at the connection points.
Criteria for the Definition of MTN	6.4.7	If the <i>Trading Participant</i> is a dispatchable generator connected to a distribution system (embedded facility), then its MTN shall be assigned to the nearest <i>node</i> represented in the MNM. Adjustments to the real-time monitoring of the Customer MTN shall be made accordingly to reflect the total power consumed by that Customer MTN accounting for the power generated by the dispatchable generator situated downstream.	If the <i>Trading Participant</i> is a dispatchable generator connected to a distribution system (embedded facility), then its MTN and <u>scheduling point</u> shall be assigned to the nearest <u>scheduling point</u> represented in the MNM. Adjustments to the real-time monitoring of the Customer <u>scheduling point</u> MTN shall be made accordingly to reflect the total power consumed by that Customer <u>scheduling point</u> MTN accounting for the power generated by the dispatchable generator situated downstream.	Since the actual connection point of an embedded generator is not at the transmission system, both its MTN and scheduling point will be translated to the nearest scheduling point.
Criteria for the Definition of MTN	6.4.8 (new)	(blank)	<u>A generating facility shall be modelled as a scheduling point.</u>	This is to specify that generating facilities that

Proposed Amendments to the Market Network Model Manual on Location of Metering Point

Title	Section	Provision	Proposed Amendment	Rationale
				have individual RTUs will also be modelled individually as scheduling points even if they share a single metering facility.