

**WHOLESALE ELECTRICITY SPOT MARKET
RULES CHANGE COMMITTEE**

RESOLUTION NO. 2019-10

JUL 28 REC'D.

**Proposed Amendments to the WESM Metering Manual on Metering Standards
and Procedures Issue No. 12.0**

WHEREAS, the National Grid Corporation of the Philippines (NGCP) submitted to the Rules Change Committee (RCC) its proposed amendments to the WESM Metering Manual on Metering Standards and Procedures Issue No. 12.0 on 03 April 2019;

WHEREAS, the proposal aims to generally align the WESM Metering Manual with the procedures and standards set forth in the Philippine Grid Code (PGC), Philippine Distribution Code (PDC), issuances from the DOE and ERC and other international and national standards;

WHEREAS, during the 151st RCC Meeting held on 12 April 2019, the NGCP presented the proposed amendments to the RCC for approval for publication in the PEMC website;

WHEREAS, following the presentation and request, the RCC approved the publication of the proposed amendments in the PEMC website to solicit comments from WESM stakeholders, giving them until 30 May 2019 or thirty (30) working days from the date of publication (15 April 2019) to submit comments on the matter;

WHEREAS, the DOE, the Technical Committee (TC), the Philippine Electricity Market Corporation (PEMC), the Independent Electricity Market Operator of the Philippines (IEMOP), the Manila Electric Company (MERALCO) and SPC Power Corporation (SPC) submitted comments to the proposal;

WHEREAS, during the 153rd RCC Meeting and 154th RCC Meeting held on 21 June and 19 July 2019 respectively, the RCC deliberated on the proposal giving due consideration to the submitted comments and the corresponding responses of the proponent;

WHEREAS, on the proposal to include procedures for considerations regarding registration of metering installations which shall be approved by the Market Operator, the RCC agreed not to adopt the same for reason that metering installations should be compliant with WESM registration requirements;

WHEREAS, revised standards based on best practices were adopted by the RCC to be reflected in the Market Manual – such as burden range, prescribed indicative meter box design, etc.;

WHEREAS, on the procedures for submission of daily metering data, the RCC agreed that for metering installations which experience communication failure, the *Metering Services Providers* may submit additional metering data until 1200H of the same day, otherwise, mechanisms such as interpolation or estimation shall be applied to fulfill requirements for declaration of bilateral contract quantities;

WHEREAS, additional provisions and enhancements to meter data estimation procedures were adopted by the RCC, in particular, the use of parallel lines and temporary use of correction factor as multiplier for instrument transformers;


WHEREAS, clerical and minor revisions were likewise adopted by the RCC for enhancements of provisions in the Market Manual such as the replacement of “alternate meter” instead of “back-up meter” to be aligned with the PGC and direct referencing to the requirements of PGC and PDC, as applicable;









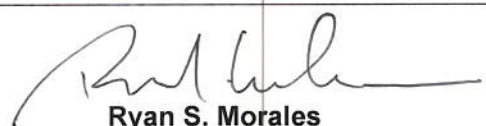
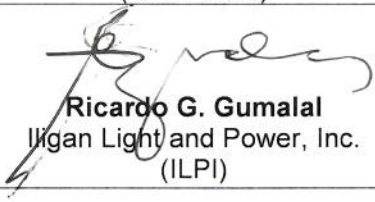

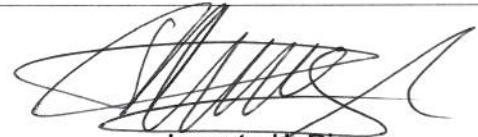
WHEREAS, there being no other matters left to be deliberated, the RCC approved the Proposed Amendments to the WESM Metering Manual on Metering Standards and Procedures Issue No. 12.0;



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

RESOLVED, that the Rules Change Committee approves and adopts the Proposed Amendments to the WESM Metering Manual on Metering Standards and Procedures Issue No. 12.0 (Annex), thereby amending Issue 12.0;

RESOLVED FURTHER, that the Proposed Amendments to the WESM Metering Manual on Metering Standards and Procedures Issue No. 12.0 are hereby endorsed to the PEM Board for approval and subsequent transmittal to the DOE for promulgation;


Done this 19 July 2019, Pasig City.

Approved by: THE RULES CHANGE COMMITTEE	
Independent Members:	
 Maila Lourdes G. de Castro Chairperson	 Francisco L.R. Castro, Jr.
 Allan C. Nerves	 Concepcion I. Tanglao
Generation Sector Members:	
 Dixie Anthony R. Banzon Masinloc Power Partners Co. Ltd. (MPPCL)	 Abner B. Tolentino Power Sector Assets and Liabilities Management Corporation (PSALM)
Jose Ildebrando B. Ambrosio NorthWind Power Development Corp. (NorthWind)	 Cherry A. Javier Aboitiz Power Corp. (APC)
Distribution Sector Members:	
 Virgilio C. Fortich, Jr. Cebu III Electric Cooperative, Inc. (CEBECO3)	 Ryan S. Morales Manila Electric Company (MERALCO)
 Ricardo G. Gumalal Iligan Light and Power, Inc. (ILPI)	 Jose P. Santos Ilocos Norte Electric Cooperative, Inc. (INEC)
Supply Sector Member:	
 Lorreto H. Rivera TeaM (Philippines) Energy Corporation (TPEC)	

Market Operator Member:	
 Isidro E. Cacho, Jr. Independent Electricity Market Operator of the Philippines (IEMOP)	
System Operator Member:	
 Ambrocio R. Rosales National Grid Corporation of the Philippines (NGCP)	

Proposed Amendments to the WESM Metering Manual Issue 12.0

Title	Section	Provision	Proposed Amendment	Rationale
Location of the Metering Point	2.2	<p>The metering point shall be located at the market trading node and shall be in accordance with the WESM Rules, the Grid Code, and the Distribution Code, unless the installation of the metering equipment is physically difficult, uneconomical or not practical.</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 consumed by the Customer at that metering point for determining the quantities to be settled in the WESM.</p>	<p><u>The location of the metering point shall adhere to the applicable provisions of the latest versions of the WESM Rules, the Philippine Grid Code (PGC), the Philippine Distribution Code (PDC), and other relevant issuances of the Energy Regulatory Commission (ERC) and the Department of Energy (DOE).</u></p> <p><u>The metering point shall be located at the market trading node and shall be installed within 500 meters from the connection point between the systems of the Network Service Provider and Trading Participant, unless the installation of the metering equipment is physically difficult, unsafe, uneconomical or impractical.</u></p> <p><u>If the metering point is located more than 500 meters from the connection point, Site-Specific Loss Adjustment (SSLA) shall be applied to the meter data for the full distance from the connection point representing the energy produced or consumed by the Trading</u></p>	<p>To clarify that the Market Operator will base the application of SSLA based on the distance criteria. Revisions are also suggested to clarify when SSLA will be applied.</p>

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Title	Section	Provision	Proposed Amendment	Rationale
			<p><u>Participant at that metering point for determining the quantities to be settled in the WESM. If the metering point is located within 500 meters from the connection point, no Site-Specific Loss Adjustment (SSLA) shall be applied.</u></p> <p>The metering point shall be located at the market trading node and shall be in accordance with the WESM Rules, the Grid Code, and the Distribution Code, unless the installation of the metering equipment is physically difficult, uneconomical or not practical.</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 consumed by the Customer at that metering point for determining the quantities to be settled in the WESM.</p>	
Meters	2.4	<p>2.4.1. Requirements for Transmission Grid Revenue Meters</p> <p>There shall be a main and a back-up revenue meter preferably of different</p>	<p>2.4.1. Requirements for Transmission Grid Revenue Meters</p> <p>There shall be a main and <u>alternate</u> back-up revenue meter</p>	<ul style="list-style-type: none"> To be consistent with the following provision of DOE Advisory on Mandatory Registration to the

Proposed Amendments to the WESM Metering Manual Issue 12.0

Title	Section	Provision	Proposed Amendment	Rationale
		brand (make and model). Meters installed as the main revenue meter and back-up meter shall adhere to the prevailing requirements of the Philippine Grid Code.	preferably of different brand (make and model) <u>meter model but are both compliant</u> Meters installed as the main revenue meter and back-up meter shall adhere to the <u>requirements of the</u> prevailing requirements of the Philippine Grid Code (PGC).	WESM ¹ which prescribes that the PDC shall apply to embedded generators:
		<p>The current specifications are provided as Appendix L of this Manual.</p> <p>2.4.2. Requirements for Revenue Meters for Embedded Generators Registered as WESM Participants</p> <p>For Embedded Generators registered as WESM Participants, meters installed as the main revenue meter and back-up meter shall adhere to the</p>	<p>The current specifications are provided as Appendix L of this Manual.</p> <p><u>The meter shall also have a mass memory capable of recording the 5-minute required demand interval data for a period of at least 60 days and have communication capabilities for remote and manual data retrievals.</u></p>	<p><i>"3. Cooperate with their WESM MSP in ensuring that their metering installations, including revenue meters and instrument transformers, are installed in accordance with the specifications provided in applicable guidelines. Specifically:</i></p> <p><i>a. The PDC shall apply for Embedded Generators; and</i></p> <p><i>b. The PGC shall apply for Grid-Connected Generators."</i></p> <ul style="list-style-type: none"> • For consistency with PGC 2016 Edition,

¹ Issued on 22 November 2018

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		<p>prevailing requirements of the Philippine Grid Code.</p> <p>The current specifications are provided as Appendix M of this Manual.</p>	<p>2.4.2. Requirements for Revenue Meters for Embedded Generators Registered as WESM Participants</p> <p>For Embedded Generators registered as WESM Participants, the main meters installed as the main revenue meter and back-up meter shall adhere to the prevailing requirements of the Philippine Distribution Code (PDC) <u>and shall be capable of recording 5-minute interval data. If there is an alternate meter, it shall also adhere to the requirements of the prevailing PDC Edition.</u></p>	<p>change "back-up meter" to "alternate meter".</p> <ul style="list-style-type: none"> • Under the PDC 2017 Chapter 7, a back-up meter is not required. But the embedded generator may opt to have a back-up meter.
Instrument Transformers	2.5	<p>2.5.1 General Requirements</p> <p>Metering installations shall include instrument transformers.</p>	<p>2.5.1 General Requirements</p> <p>Metering installations, <u>if applicable,</u> shall include instrument transformers.</p> <p><u>2.5.1.1. Requirements for Transmission Grid Instrument Transformers</u></p> <p><u>Instrument Transformers used for metering of Transmission Grid Connections shall adhere to the requirements of the prevailing Philippine Grid Code.</u></p>	<ul style="list-style-type: none"> ▪ To consider metering installations which may not require instrument transformers ▪ To include additional provisions for Instrument Transformers used for metering of Transmission Customers and Embedded Generators

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Title	Section	Provision	Proposed Amendment	Rationale
			<u>2.5.1.2. Requirements for Embedded Generators Registered as WESM Participants</u>	Registered as WESM Participants
			<u>Instrument Transformers used for metering of Embedded Generators registered as WESM Participants shall adhere to the requirements of the prevailing Philippine Distribution Code.</u>	
Instrument Transformers	2.5	<p>2.5.2. Use of Instrument Transformers</p> <p>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.</p> <p>The following schemes shall not be allowed:</p> <p>a. The use of an instrument transformer for meters other than the registered WESM Meters; and</p> <p>b. Paralleling of current transformers.</p>	<p>2.5.2 Use of Instrument Transformers</p> <p>Instrument transformers supplying the revenue meter shall be used solely for purposes of revenue metering and not for any other purposes, including, but not limited to, the attachment of other devices.</p> <p>The following schemes shall not be allowed:</p> <p>a. The use of an instrument transformer for meters other than the registered WESM Meters <u>except as permitted in this section</u>; and</p> <p>b. Paralleling of current transformers.</p>	<p>▪ To provide exceptions for meters covered by Energy Conversion Agreements (ECA) contracts.</p>

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Title	Section	Provision	Proposed Amendment	Rationale
			<u>Meters covered by Energy Conversion Agreements (ECA) contracts which were already in effect prior to the operation of WESM shall be temporarily permitted to share the instrument transformers used for WESM metering until the end of the ECA cooperation period; provided that the ECA and WESM meters shall have separate meter enclosure/box and that the secondary terminals of the instrument transformers are properly sealed.</u>	
Instrument Transformers	2.5	<p>2.5.4.1. Current Transformers</p> <p>Current transformers shall conform to the IEC 44-1 Class 0.2 or ANSI C57.13 Class 0.3 or better of any instrument transformer.</p>	<p>2.5.4.1. Current Transformers</p> <p>Current transformers shall <u>adhere to the requirements of the prevailing PGC</u> IEC 44-1 Class 0.2 or ANSI C57.13 Class 0.3 or better of any instrument transformer. <u>In addition, the accuracy of the current transformers shall be guaranteed from 0-100% of the rated burden.</u></p>	<ul style="list-style-type: none"> ▪ To be consistent with the provision of the prevailing PGC ▪ To provide supplementary requirements for the burden range in which the CT accuracy class is required to be defined or guaranteed. <p>Note that 0% rated burden means no additional external</p>

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				burden is connected to the CT during testing. The inherent burden of the test instruments used are neglected.
Instrument Transformers	2.5	<p>2.5.4.2. Voltage Transformers</p> <p>Voltage transformers shall conform to the IEC 6044-2 Class 0.2 or ANSI C57.13 Class 0.3 of any instrument transformer.</p>	<p>2.5.4.2. Voltage Transformers</p> <p>Voltage transformers shall <u>adhere to the requirements of the prevailing PGC</u> IEC 44-1 Class 0.2 or ANSI C57.13 Class 0.3 or better of any instrument transformer. <u>In addition, the accuracy of the voltage transformers shall be guaranteed from 0-100% of the rated burden.</u></p>	<ul style="list-style-type: none"> ▪ To be consistent with the provision of the prevailing PGC ▪ To provide supplementary requirements for the burden range in which the VT accuracy class is required to be defined or guaranteed
Instrument Transformers	2.5	<p>2.5.4.3. Proof of Accuracy Compliance</p> <p>Proof of compliance with Section 5.3.2 shall be provided in the form of factory test cards complete with serial numbers.</p>	<p>2.5.4.3. Proof of Accuracy Compliance</p> <p>Proof of compliance with Sections <u>5.3.2 2.5.4.1 and 2.5.4.2</u> shall be provided in the form of factory <u>routine</u> test cards complete with <u>reports showing the serial numbers of the instrument transformers.</u></p>	<ul style="list-style-type: none"> ▪ To refer to appropriate section of the WESM manual for amendment ▪ To be consistent with the terms used by ANSI and IEC standards

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Title	Section	Provision	Proposed Amendment	Rationale
Instrument Transformers	2.5	<p>2.5.4.4. Other Requirements Relating to Accuracy</p> <p>Where accuracy tests are required, they shall comply with the following requirements:</p> <p>a. tests shall be carried out by a third-party testing agency using equipment traceable to International Standards;</p> <p>b. tests shall be conducted with the suitable burdens connected to each current transformer;</p> <p>c. additional tests shall be conducted at other suitable burdens if the existing burden is expected to change in the future;</p> <p>d. tests shall include ratio and phase-angle error tests;</p> <p>e. ratio and phase-angle tests of current transformers shall be</p>	<p>2.5.4.4. Other Requirements Relating to Accuracy</p> <p>Where accuracy tests are required, they shall comply with the following requirements:</p> <p>a. tests shall be carried out by a third-party testing agency <u>the Metering Service Provider</u> using equipment traceable to <u>National or International Standards of Measurements</u>;</p> <p>b. tests shall be conducted with the suitable burdens connected to each current transformer;</p> <p>c. additional tests shall be conducted at other suitable burdens if the existing burden is expected to change in the future;</p> <p>d. tests shall include ratio and phase-angle error tests;</p> <p>e. ratio and phase-angle tests of current transformers shall be</p>	<p>▪ To define the responsibility of the MSP relative to maintenance of metering facility consistent with the definition of PGC 2016 Edition and following provisions of the DOE Department Circular DC2016-05-007²:</p> <p><i>"Section 1. Ownership and Accountability of Metering Installations in the WESM. In addition to the provision of the WESM Rules, Retail Rules, and Market Manuals, the Metering Services Provider (MSP) and Trading Participants shall adhere to the following guidelines:</i></p> <p><i>a) Irrespective of the ownership of the</i></p>

² Providing Policies for Further Improvements of the Operations and Metering Installations of the Metering Services Providers (MSPs) in the Wholesale Electricity Spot Market (WESM) and Retail Market

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		measured over a range of secondary current from 1% of rated primary current up to and including the maximum current as defined by the rating factor;	measured over a range of secondary current from 1% of rated primary current up to and including the maximum current as defined by the rating factor <u>test currents based on the accuracy curve as defined by the applicable standards whereby the current transformer was designed;</u>	<i>metering facilities, the designated MSP is responsible for the regular testing, calibration and maintenance of the Metering Installations, and shall ensure that the said requirements for Metering Installation are complied with;</i>
		f. test results shall provide correction factors to be applied to both active and reactive power at each test point	<u>fd.</u> test results shall provide <u>ratio</u> correction factors <u>at each test point which may be applied, if deemed necessary for WESM settlement,</u> to both active and reactive power at each test point	<i>b) The relevant Trading Participant shall collaborate with the MSP on the conduct of the said testing, calibration, and maintenance, and shall allow the MSP to access the said Metering Installations at all times; and</i> <i>c) The MSP shall perform such regular testing, calibration and</i>

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Title	Section	Provision	Proposed Amendment	Rationale
				<p><i>maintenance of the said Metering Installations subject to the metering charge to the relevant Trading Participant, provided that such charges shall be filed by the MSP with the Energy Regulatory Commission (ERC) for approval.</i></p> <ul style="list-style-type: none"> ▪ To ensure that the equipment is being tested based on the standards wherein they were designed ▪ To provide option not to apply the correction factor when the measured errors are within acceptable limits consistent with the accuracy class wherein the equipment were designed

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Title	Section	Provision	Proposed Amendment	Rationale
Instrument Transformers	2.5	2.5.5.2. Not to Exceed Nameplate Ratings The measurement of calculation shall verify that actual burdens in service do not exceed the nameplate rated burden limits for the IEC 44-1 Class 0.2 or ANSI C57.13 Class 0.3 of any instrument transformer.	2.5.5.2. Not to Exceed Nameplate Ratings The measurement of calculation shall verify that actual burdens in service do not exceed the nameplate rated burden limits for the IEC 44-1 Class 0.2 or ANSI C57.13 Class 0.3 of any instrument transformer <u>specified under Section 2.5.4.1.</u>	<ul style="list-style-type: none"> To refer the appropriate section of the WESM manual for amendment
Instrument Transformers	2.5	2.5.5.4. Not to Exceed Nameplate Ratings The measurement of calculation shall verify that actual burdens in service do not exceed the nameplate rated burden limits for IEC 6044-2 Class 0.2 or ANSI C57.13 Class 0.3 of any instrument transformer.	2.5.5.4. Not to Exceed Nameplate Ratings The measurement of calculation shall verify that actual burdens in service do not exceed the nameplate rated burden limits for IEC 6044-2 Class 0.2 or ANSI C57.13 Class 0.3 of any instrument transformer <u>specified under Section 2.5.4.2</u>	<ul style="list-style-type: none"> To refer the appropriate section of the WESM manual for amendment
Instrument Transformers	2.5	2.5.9. Surge Arrester 2.5.9.1. Surge Arresters installed (if necessary) at the main metering, shall meet the minimum requirements listed below:	2.5.9. Surge Arrester 2.5.9.1. Surge Arresters installed (if necessary) at the <u>WESM metering installation</u> , shall meet the minimum requirements listed below:	<ul style="list-style-type: none"> To clarify that the requirements applies to WESM Metering in general To clarify that there is no more need for redundant Surge

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500	525	1550	420	20	CL 4	Station																																																																																																																												
Primary Connections	2.6	<p>2.6.1. Location of Primary Terminals of Current Transformer</p> <p>The primary terminals of each current transformer shall be located as close as practicable to the Metering Point.</p>	<p>2.6.1. Location of Primary Terminals of Current Transformer</p> <p>The primary terminals of each current transformer shall be located as close as practicable to the <u>prescribed Connection</u> Metering Point.</p>	<ul style="list-style-type: none">To designate the prescribed connection point of the metered facility as reference																																																																																																																														
Primary Connections	2.6	<p>2.6.2. Location of Primary Terminals of Voltage Transformer</p> <p>The primary terminals of each voltage transformer shall be located as close as practicable to the Metering Point.</p>	<p>2.6.2. Location of Primary Terminals of Voltage Transformer</p>	<ul style="list-style-type: none">To designate the prescribed connection point of the metered facility as reference																																																																																																																														

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Title	Section	Provision	Proposed Amendment	Rationale
			The primary terminals of each voltage transformer shall be located as close as practicable to the <u>prescribed Connection Metering Point</u> .	
Secondary Connections for Instrument Transformers	2.7	<p>2.7.3. Codes and Conditions</p> <p>Instrument transformer secondary cabling and cabling accessories shall comply with the following codes and conditions:</p> <p>2.7.3.1. the Philippine Electrical Code;</p> <p>2.7.3.2. the main meter shall be supplied from dedicated current transformers used for no other purpose;</p> <p>2.7.3.3. voltage transformers with one secondary winding shall be dedicated to the main metering and used for no other purpose;</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. Codes and Conditions</p> <p>Instrument transformer secondary cabling and cabling accessories shall comply with the following codes and conditions:</p> <p>2.7.3.1. the Philippine Electrical Code;</p> <p>2.7.3.2. the main meters shall be supplied <u>provided from with</u> dedicated current and voltage transformers used no other purpose <u>only for WESM Metering, except as permitted in Section 2.5.2;</u></p> <p>2.7.3.3. voltage transformers with one secondary winding shall be dedicated to the main metering and used for no other purpose;</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>	<ul style="list-style-type: none"> ▪ To be consistent with the provision of this WESM Manual that a core of a current transformer and a winding of a voltage transformer may be shared by the WESM registered main and alternate meters as the minimum requirements for redundancy. (Sections 2.7.3.3 and 2.7.3.4 of Issue 12.0 for deletion)

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Title	Section	Provision	Proposed Amendment	Rationale
		<p>2.7.3.3. <u>current transformers may be supplied with more than one secondary core. However, no secondary core other than those intended for metering may be provided;</u></p> <p>2.7.3.4. <u>voltage transformer may be supplied with more than one secondary windings intended for the revenue meters and used for no other purpose;</u></p> <p>2.7.3.5. electrical connection to the instrument transformer secondary terminals shall not be outside of the meter box;</p> <p>2.7.3.6. cabling from the instrument transformers to the meter enclosure shall be routed in dedicated conduit, and the route shall be visually traceable; and</p> <p>2.7.3.7. each secondary terminal of each instrument transformer shall be</p>	<p>2.7.3.3 current transformers may be supplied with more than one secondary core. However, no secondary core other than those intended for metering may be provided;</p> <p>2.7.3.4. voltage transformer may be supplied with more than one secondary windings intended for the revenue meters and used for no other purpose;</p> <p>2.7.3.5. electrical connection to the instrument transformer secondary terminals shall not be outside of the meter box;</p> <p>2.7.3.6. cabling from the instrument transformers to the meter enclosure shall be routed in dedicated conduit, and the route shall be visually traceable; and</p> <p>2.7.3.7. each secondary terminal of each instrument transformer shall be</p>	<ul style="list-style-type: none"> ▪ To recommend that all cores available shall be metering cores to avoid unnecessary inclusion of non-metering cores i.e., protection cores and for consistency with PGC 2016 GRM 9.2.3.2 d

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Title	Section	Provision	Proposed Amendment	Rationale
		brought to the test block on a separate conductor.		
Security of Metering Installation and Data	2.9	2.9.1.1. Instrument transformers connections	2.9.1.1. Instrument transformers connections	<ul style="list-style-type: none"> ▪ To include primary terminals in the security provision.
		Secondary cabling shall be secure, tamper-resistant and compliant with the PGC requirements on security of registered revenue metering installations and metering data.	<u>Primary and Secondary cabling and connections</u> shall be secure, tamper-resistant and compliant with the PGC requirements <u>of the prevailing Philippine Grid Code</u> on security of registered revenue metering installations and metering data. <u>Any ratio-tap changing facility which cannot be secured using security seal or its equivalent shall not be permitted.</u>	<ul style="list-style-type: none"> ▪ To emphasize the need for securing the ratio tap changing facility with security seals or equivalent
Security of Metering Installation and Data	2.9	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 padlocked, sealed and secured. Metering perimeter shall also be well lighted and free from any unwanted materials, equipment, vegetation, etc. (refer Table 7)	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 padlocked, sealed and secured. <u>If the Metering Installation is located inside a perimeter which already provides equivalent security as required by this WESM Manual, installation of additional perimeter fence shall no longer be necessary. A perimeter fence shall also not be required for pole-mounted, vault-type and other</u>	<ul style="list-style-type: none"> ▪ To clarify that there is no more need for redundant perimeter fence dedicated for the metering facility if it is located in a property which already provides the required protection such as inside MSP or TP owned substations ▪ To clarify that there is no more need for perimeter fence for

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Title	Section	Provision	Proposed Amendment	Rationale
			<u>similarly secured metering installations.</u> Metering perimeter shall also be well lighted and free from any unwanted materials, equipment, vegetation, etc. (refer Table 7). <u>Lighting shall be provided by the owner of the perimeter where the metering installation is located.</u>	similarly secured metering installations ▪ To clarify that the owner of the perimeter should provide the lighting
Redundant Metering Installation	2.10	2.10.1. A redundant Metering Installation can be achieved in one of two ways: a. 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 b. 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	<u>2.10.1 A redundant Metering Installation can be achieved in one of two ways: using a single set of instrument transformers to either common or separate core.</u> a. 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 b. 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	▪ To recommend the deletion of the provision for Dual Metering wherein two independent sets of instrument transformers are required due to high capital investment requirements (i.e. equipment, space). The existing partial redundant metering implemented in practically all WESM metering facilities has been proven sufficient in providing the requirements for redundancy. ▪ To provide specific parameters for

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Title	Section	Provision	Proposed Amendment	Rationale
		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.	2.10.2. The minimum requirement for <u>shall be the use of</u> partial redundant metering is using a single set of instrument transformers wherein the main and alternate <u>back-up</u> meters are in series parallel <u>or in parallel</u> and connected to a common core.	comparison i.e. KW and KWH ▪ To remove necessary approval from the Market Operator
		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.	2.10.3. The metered <u>energy (kWh) and demand (kW)</u> data recorded by the main and alternate <u>back-up</u> Meters must <u>shall</u> not deviate by more than <u>+/-</u> 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 <u>shall</u> investigate and correct the causes of such deviations not later than three (3) months from discovery.	
Metering Installation - Existing	2.11	An existing Metering Installation 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:	An existing Metering Installation that does not fully comply with the requirement of this standard will <u>shall</u> be permitted by the Market Operator to remain in service subject to the following conditions:	▪ To recommend deletion of section 2.11a which is being recommended for transfer to section 2.4

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Title	Section	Provision	Proposed Amendment	Rationale
		<p>a. The meter shall have a mass memory capable of recording the 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. ERC has tested/verified and sealed the meter;</p> <p>c. All non-compliant meters shall be replaced within six (6) months from the effectivity of registration in the WESM;</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>Continued non-compliance of metering installations shall be subject to sanctions or penalties.</p>	<p>a. The meter shall have a mass memory capable of recording the 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>ba. ERC has tested/verified and sealed the meter;</p> <p><u>b. All Meters which are non-compliant to the mass memory requirements shall be replaced within six (6) months from the effectivity of registration in the WESM when they become defective or until they reach the end of their economic life;</u></p> <p><u>cd.</u> All non-compliant instrument transformers shall be replaced within the period of two (2) years from the effectivity of registration in the WESM <u>this version of WESM Manual on Metering.</u></p> <p>Continued non-compliance of metering installations shall be subject to <u>applicable</u> sanctions or penalties.</p>	<p>▪ To insert a provision allowing a different transitory period for replacement of meters wherein the non-compliance is only related to mass memory in consideration of the large capital investments for the metering equipment</p>

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Title	Section	Provision	Proposed Amendment	Rationale
Requirements for Registration of Metering Installations	4.3	4.3.2. 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:	4.3.2. 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:	<ul style="list-style-type: none"> Signed Metering Installation Registration Form is no longer required in the CRSS since confirmation of the details of metering information by the Trading Participant is performed online To delete the requirements for PEE to sign drawing, plans and wiring diagrams as the required Diagrams for WESM Registration are merely documentations of what has already been implemented.
		a. Accomplished Metering Installation Form signed by both the Metering Service Provider and the Trading Participant; b. Metering Installation Specifications; c. ... d. ... e. ... f. ... g. ... h. ... i. ... j. ... k. ... l. ... Note: All drawings, plans, wiring diagrams shall be signed by a Professional Electrical Engineer (PEE).	a. Accomplished Metering Installation Form signed <u>or confirmed</u> by both the Metering Service Provider and the Trading Participant; b. ... c. ... d. ... e. ... f. ... g. ... h. ... i. ... j. ... k. ... l. ... Note: All drawings, plans, wiring diagrams shall be signed by a Professional Electrical Engineer (PEE).	No design calculations are included in the registration documents which require the review and signature of a PEE.

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Title	Section	Provision	Proposed Amendment	Rationale
Collection and Submission Procedure	5.3.1	<p>Requirements</p> <p>a. Data The metering data shall contain the following:</p> <p>i. ...</p> <p>ii. The metering data in kWh (Active Energy), kvarh (reactive energy), voltage per phase and current per phase in their assigned channel</p> <p>iii. ...</p> <p>vii. Resolution (every 15 minute)</p>	<p>Requirements</p> <p>b. Data The metering data shall contain the following:</p> <p>i. ...</p> <p>ii. The metering data in kWh (Active Energy), kvarh kVARh (reactive energy), voltage per phase and current per phase in their assigned channel (for daily meter data delivery)</p> <p>iii. ...</p> <p>iv. Resolution (every 45 minute)</p>	<ul style="list-style-type: none"> To clarify that the provision in item ii applies to the daily meter data delivery only. To be consistent with the DC No. 2017-05-0009 section 4.5, 4.6 & 5.1 on the implementation of the 5-minute interval resolution of the meter which was mandated by the DOE.
Collection and Submission Procedure	5.3.2	<p>Daily Process</p> <p>b. 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</p>	<p>Daily Process</p> <p>b. All collected meter data shall be submitted by the Metering Services Provider to the Market Operator's Meter Data Warehouse on or before starting 0400H until to 0800H of the succeeding trading day. However, for metering facilities with failed communication capability, the Metering Service Provider shall attempt remote meter data retrieval and submit to the</p>	<ul style="list-style-type: none"> To consider that if no meter data received by 0800H due to external factors, i.e. TELCO problem which is beyond the control of the MSP, MO shall consider the initial submission of meter data at 12NN and final submission of data up to 4pm.

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Title	Section	Provision	Proposed Amendment	Rationale
			<u>Market Operator not later than 1200H of the same day.</u> The Metering Services Provider shall not make, cause or allow any alteration to the original stored meter data as retrieved in the metering installation	
Collection and Submission Procedure	5.3.3	<p>Monthly Process</p> <p>a. 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 Provider 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</p>	<p>Monthly Process</p> <p>a. Not later than three (3) business working days after the end of the billing period, the Metering Services Provider shall submit, via <u>File Transfer Protocol (FTP) or any secure file storage device</u> compact disk monthly preliminary metering data of all metering points of its associated Trading Participants. In addition, the 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 Provider shall also report to the Market Operator all discrepancies between the monthly metering data and the</p>	<p>▪ To update secure file transfer medium</p> <p>▪ To recommend the deletion of this provision since the daily MTR is sufficient to comply with the required report on</p>

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Title	Section	Provision	Proposed Amendment	Rationale
		<p>b. ...</p> <p>c. 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.</p>	<p>daily metering data values with justifications for the discrepancies</p> <p>b. ...</p> <p>c. Not later than two (2) business <u>seven (7) working</u> 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.</p>	<p>discrepancies between the monthly and daily metering data values.</p> <p>▪ To recommend the change after the issuance of MTR from two (2) days to seven (7) working days since the correction of meter data of the affected Metering Point/s needs ample time for investigation, inspection and troubleshooting considering also the geographical location of the MPs in the remote and critical area/s.</p>
VEE – Essential Indicators	6.4.3	<p>Meter Data Estimation and Editing</p> <p>6.4.3.1. When validation indicates that the data from the main meter are missing or have an invalid data, the values shall be estimated and substituted by the Metering Services Provider for Settlement purposes.</p>	<p>Meter Data Estimation and Editing</p> <p>6.4.3.1 When validation indicates that the data from the main meter are missing or have an invalid data, the values shall be estimated and substituted by the Metering Services Provider for Settlement purposes.</p>	

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Title	Section	Provision	Proposed Amendment	Rationale
		The following shall be hierarchy of methods to be used by the Metering Services Provider for meter data estimation and editing:	The following shall be <u>the</u> hierarchy of methods to be used by the Metering Services Provider for meter data estimation and editing:	
		<p>a. ...</p> <p>b. Meter Data from Back-up Meter</p> <p>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.</p> <p>c. Use of Average Phase Voltage or Average Phase Current</p> <p>If there is a loss of a phase current or phase voltage, the estimation shall be computed by the Metering Services Provider, in coordination</p>	<p>a. ...</p> <p>b. Meter Data from <u>Alternate</u>Back-up Meter</p> <p>If more than four (4) <u>twelve (12) consecutive</u> intervals of main meter are missing or have invalid data, the values from the <u>alternate</u>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 <u>alternate</u>back-up meter is greater than 0.2% but not to <u>exceeding</u> 0.6%, a correction factor shall be applied.</p> <p>c. Use of Average <u>Computed</u> Phase Voltage <u>and</u> or Average Phase</p>	<ul style="list-style-type: none"> ▪ To clarify that this is only applicable to the 15-minute programming. With the planned implementation of the 5-minute programming, the four (4) intervals of main meter shall now become 12 intervals. ▪ To recommend the use of % phase voltage or % phase current method which is more realistic in determining the computed phase voltage or phase current. It is the actual value per data interval of good data.

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Title	Section	Provision	Proposed Amendment	Rationale
		<p>with the Market Operator and concerned Trading Participant, in accordance with the following formula:</p> $Total\ Power = [(V_{an} * I_a) + (V_{bn} * I_b) + (V_{cn} * I_c)] * \cos \theta * M$ <p>where: I_a - computed phase A I_b, I_c - actual recorded per phase current V_{an}, V_{bn}, V_{cn} - actual recorded per phase voltage $\cos \theta$ - average power factor M - multiplier</p>	<p><u>Current using % Phase Voltage or % Phase Current method</u></p> <p>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:</p> $Total\ Power = [(V_{an} * I_a) + (V_{bn} * I_b) + (V_{cn} * I_c)] * \cos \theta * M$ <p>where: I_a, I_b, I_c - computed phase A current values actual recorded per phase current V_{an}, V_{bn}, V_{cn} - actual recorded per phase voltage <u>values</u> $\cos \theta$ - average power factor M - multiplier</p> <p><u>Missing values of Ia:</u></p>	<ul style="list-style-type: none"> ▪ To document the current practice of WESM MSP on the estimation and substitution of meter data with defects. <p>For parallel lines, hierarchy from a, to c should be done first.</p>

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Title	Section	Provision	Proposed Amendment	Rationale
			<p><u>$\% I_a = I_a / (I_a + I_b + I_c)$ using the valid data within the same billing month</u></p> <p><u>Total $\% I_a$ = sum of $\% I_a$ of all intervals</u></p> <p><u>Average $\% I_a$ = Total $\% I_a$ / No. of intervals</u></p> <p><u>$I_a = \text{Average } \% I_a \times (I_b + I_c) / (1 - \text{Average } \% I_a)$</u></p> <p><u>where:</u></p> <p><u>I_a - computed phase A current</u></p> <p><u>I_b, I_c - actual recorded per phase current</u></p> <p><u>Note:</u></p> <p><u>Computation shall be the same with other phases.</u></p> <p><u>Missing values of V_{an}:</u></p> <p><u>$\% V_{an} = V_{an} / (V_{an} + V_{bn} + V_{cn})$ using the valid data within the same billing month</u></p>	

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Title	Section	Provision	Proposed Amendment	Rationale
			<p><u>Total % Van = sum of % Van of all intervals</u></p> <p><u>Average % Van = Total %Van / No. of intervals</u></p> <p><u>Van = Average % Van x (Vbn + Vcn) / (1 – Average % Van)</u></p> <p><u>where:</u> <u>V_{an} - computed phase A voltage</u> <u>V_{bn}, V_{cn} -actual recorded per phase voltage</u></p> <p><u>Note:</u> <u>Computation shall be the same with other phases.</u></p> <p>d. xxx e. xxx f. xxx g. xxx h. xxx i. <u>Parallel lines</u></p>	

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Title	Section	Provision	Proposed Amendment	Rationale
			<p><u>PARALLEL LINES THAT ARE SEPARATELY METERED (one line with meter data defect): Use metered quantity of the line that has no meter data defect with application of Adjustment Factor (AF).</u></p> <p><u>Note: Adjustment Factor shall be based on historical data.</u></p> <p><u>i. Temporary Use of correction factor In multiplier for Instrument Transformer in service that failed in accuracy limit.</u></p> <p>i. <u>For Current Transformer</u></p> <p><u>Ratio Correction Factor (RCF) = True Primary Current / (True Secondary Current x Marked Ratio)</u></p> <p>ii. <u>For Voltage Transformer</u></p> <p><u>Ratio Correction Factor (RCF) = True Primary Voltage / (True Secondary Voltage x Marked Ratio)</u></p>	

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Title	Section	Provision	Proposed Amendment	Rationale
Meter Trouble Report	7.2	<p>Initiation</p> <p>A Meter Trouble Report may be initiated due to the following:</p> <p>a....</p> <p>b.....</p>	<p>Initiation</p> <p>A Meter Trouble Report may be initiated due to the following:</p> <p>a....</p> <p>b...</p> <p><u>Issuance of MTR shall be suspended by the MO in cases where a massive communication link failure affects large areas due to force majeure and TELCO related problems which are beyond the control of the MSP. In cases that MSP still fails to deliver the meter data of the remaining Metering Point/s to MO, MO shall consider the estimation of meter data of the affected MPs until such time that the MSP has collected the meter data remotely or manually and transmitted to MO. In such cases, the MO shall inform the affected customer of the temporary estimation made by the MSP.</u></p> <p>7.2.1. Improving Efficiency in Resolving MTRs</p>	<p>▪ To recommend additional clause on the suspension of the issuance of MTR in cases where a massive communication link failure affects large areas due to force majeure and TELCO related problems which are beyond the control of the MSP.</p>
		7.2.1. Improving Efficiency in Resolving MTRs		

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Title	Section	Provision	Proposed Amendment	Rationale
		In case of outages, a Trading Participant and/or its Metering Services Provider shall notify the Market Operator within 24 hours after its occurrence. Trading Participants may use the Metering Outages Form to notify their Metering Services Provider and the Market Operator of any outages that may affect the metering data. The Metering Services Provider will use this information to resolve MTRs that have been issued. A sample of the form and instructions for completion may be found in the Appendices.	In case of outages, a Trading Participant and/or its Metering Services Provider shall notify the Market Operator and <u>Metering Service Provider</u> within 24 hours after its occurrence. Trading Participants may use the Metering Outages Form to notify their Metering Services Provider and the Market Operator of any outages that may affect the metering data. The Metering Services Provider will use this information to resolve MTRs that have been issued. A sample of the form and instructions for completion may be found in the Appendices.	<ul style="list-style-type: none"> The MSP should be included in the notification by the TP within 24 hours. This information is significant to the MSP in resolving MTRs that may arise due to an outage.
Meter Trouble Report	7.3	<p>Issuance</p> <p>7.3.1 Timeline</p> <p>Upon receipt of the Meter Trouble Report, the Metering Services Provider shall submit the correct metering data to the Market Operator within two (2) business days.</p> <p>7.3.2 Unresolved Meter Trouble Reports</p> <p>a. Estimation</p>	<p>Issuance</p> <p>7.3.1 Timeline</p> <p>Upon receipt of the Meter Trouble Report, the Metering Services Provider shall submit the correct metering data to the Market Operator within two (2) <u>seven (7) working</u> business days.</p> <p>a. xxx</p>	<ul style="list-style-type: none"> To clarify that the two (2) business days is not practical in submitting the corrected meter data considering the geographical location of the MPs especially in the Visayas and Mindanao if onsite meter data retrieval is

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Title	Section	Provision	Proposed Amendment	Rationale
		<p>If a Meter Trouble Report is still unresolved after the designated timeline in Section 7.3.1, the Market Operator shall implement the estimation and editing of metering data in accordance with Section 6 of this Manual</p> <p>b. Late Resolution The Metering Services Provider may still resolve a Meter Trouble Report and provide metering data acceptable to the Market Operator after the deadline set in Section 7.3.1. For late resolutions, the 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.</p> <p>c. ...</p> <p>d. Certification The Metering Services Provider shall provide a certification on the adjusted metering data showing the agreement of all affected parties and the Market Operator.</p>	<p>b. Late Resolution The Metering Services Provider may still resolve a Meter Trouble Report and provide metering data acceptable to the Market Operator after the deadline set in Section 7.3.1. For late resolutions, the deadline to be reflected in the final settlement statement is shall be four (4) working business days prior to the issuance of the final settlement statement</p> <p>c. xxx</p> <p>d. Certification The Metering Service Provider Market Operator shall provide a certification on the adjusted metering data showing the agreement of all affected parties and the Market Operator Metering Services Provider.</p>	<p>required. Seven (7) working days is reasonable.</p> <ul style="list-style-type: none"> ▪ To align with the defined terminologies in the WESM Rules ▪ To be consistent with 7.3.2.a. Estimation, the Certification on the adjusted metering data should be prepared by the MO with concurrence of the MSP and TP.

Proposed Amendments to the WESM Metering Manual Issue 12.0

Title	Section	Provision	Proposed Amendment	Rationale
		e.	e. xxx	
Site – Specific Loss Adjustment	8.6	8.6. Roles and Responsibilities	8.6. Roles and Responsibilities	
		<p>The involvement of the Metering Services Provider, Network Service Providers and Trading Participants are as follows:</p> <p>8.6.1. Network Service Provider:</p> <p>8.6.1.1. 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>a. Conductor Data</p> <ol style="list-style-type: none"> Conductor size Conductor Type Number of conductors per circuit Line Length (km) Line Voltage Line Configuration 	<p>The involvement of the Metering Services Provider, Network Service Providers and Trading Participants are as follows:</p> <p>8.6.1. Network Service Provider:</p> <p>...</p> <p>8.6.2. Metering Service Provider</p> <p><u>8.6.2.1 The Metering Service Provider shall submit to the Market Operator all significant line and transformer parameters between the metering point and the connection point upon registration of the Metering Installation.</u></p> <ol style="list-style-type: none"> <u>Transformer Winding Resistance, R</u> <u>Transformer Winding Reactance, X</u> <u>Transmission Line Circuit Branch Resistance, R</u> 	<p>▪ The revision is being proposed to harmonize with the requirement of Market Network Model Development and Maintenance – Criteria and Procedures Issue 4.0</p>

Proposed Amendments to the WESM Metering Manual Issue 12.0

Title	Section	Provision	Proposed Amendment	Rationale
		<p>b. Power Transformer Data</p> <ul style="list-style-type: none"> i. Rated kVA ii. Core Loss (Open Circuit Test result) iii. Full-load Copper Loss (Short-Circuit Test result) iv. Percent Impedance (% Z) v. x/r ratio <p>8.6.1.2. In coordination with the Metering Services Provider, 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(s) to the Market Operator.</p> <p>Significant changes refer to any changes in the network data as provided in Section 8.6.1.1.</p>	<p>d. <u>Transmission Line Circuit Branch Reactance, X</u></p> <p>e. <u>Transmission Line Circuit Total Branch Susceptance, B</u></p> <p>8.6.2.2 The Metering Service Provider shall submit to the Market Operator the meter data containing the daily energy consumption or delivery of all Trading Participants</p>	
Metering Services Provider Performance Measurement	9.4	<p>Performance Measures</p> <p>9.4.1 Service Delivery</p> <p>9.4.1.1 Data Meter Data Delivery</p>	<p>Performance Measures</p> <p>9.4.1 Service Delivery</p> <p>9.4.1.1. Data Meter Data Delivery</p>	<p>▪ To clarify that the metering point on</p>

Proposed Amendments to the WESM Metering Manual Issue 12.0

Title	Section	Provision	Proposed Amendment	Rationale
		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.	Daily Meter Data Delivery or Meter Retrieval Success is the ratio of the number of metering installations successfully communicated to the total number of active registered metering installations. Required average daily result shall be greater than or equal to 95% as reported <u>in Luzon and Visayas and 85% in Mindanao.</u>	shutdown or suspended should not be included in the total number of registered metering installations.
		<p>9.4.1.2 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>9.4.1.3 Timeliness and Percentage Resolution to the Daily Meter Trouble Report</p> <p>This measure the percentage of the total number of metering installation</p>	<p>9.4.1.2. 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) <u>excluding suspended MP and with no meter data.</u> Required average daily result shall be greater than or equal to 95% as reported <u>in Luzon and Visayas and 85% in Mindanao.</u></p>	<p>MPs with TELCO network problem should not be considered in the computation, since this is beyond the control of the MSP.</p> <ul style="list-style-type: none"> The average of 85% is proposed to be used in Mindanao. This is due to the fact that there are areas that are critical with security issues and identified with weak to intermittent network coverage of TELCO service providers. Historically, the retrieval rate in Mindanao ranges from 83% to 87% only.

Proposed Amendments to the WESM Metering Manual Issue 12.0

Title	Section	Provision	Proposed Amendment	Rationale
		<p>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>9.4.1.4 Timeliness and Percentage Resolution to the Monthly</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>	<p>9.4.1.3 Timeliness and Percentage Resolution to the Daily Meter Trouble Report</p> <p>These measure the percentage of the total number of metering installations for which a daily meter trouble reports (MTR) are issued, that has been resolved or corrected in <u>seven (7) 10 working</u> days. Required average daily result shall be greater than or equal to 90% as reported.</p> <p>9.4.1.4 Timeliness and Percentage Resolution to the Monthly</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 <u>two (2) business working</u> days. Required result shall be greater than or equal to 90% as reported.</p>	<ul style="list-style-type: none"> ▪ To recommend that the estimation of daily meter data of affected MPs of external factors should be considered as temporary meter data until such time that the prevailing condition has been resolved. ▪ To recommend that the submission of data can also be through File Transfer Protocol (FTP)

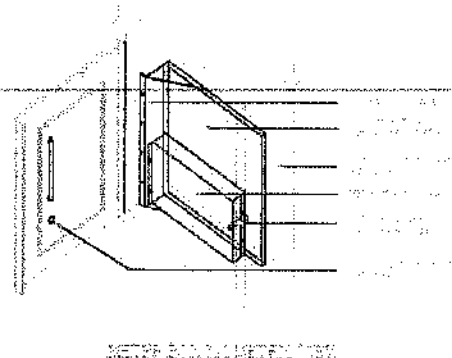
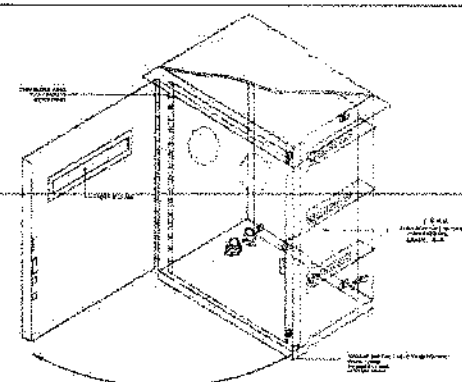
Proposed Amendments to the WESM Metering Manual Issue 12.0

Title	Section	Provision	Proposed Amendment	Rationale
Appendices	Appendix D	<p>Metering Service Agreement</p> <p>APPENDIX D:</p> <p>METERING SERVICE AGREEMENT</p> <p>This METERING SERVICE AGREEMENT (hereinafter, referred to as "Agreement," for brevity) entered into this _____ day of _____, 2025, by and between: _____ (individual/ corporation/ business/ organization), duly incorporated/formed/registered and organized under the laws of _____ (country/state), having its registered address at _____</p> <p>_____ hereinafter referred to as the Metered Trading Participant (MTP);</p> <p>- and -</p> <p>_____ a form of business organization organized under the laws of the Republic of the Philippines, and having received Authorization from the Philippine Energy Regulatory Commission (ERC) to operate as a Metering Services Provider for WESM Trading Participants, and having its registered address at _____</p> <p>hereinafter referred to as the Metering Service Provider (MSP)</p>	<u>See attached appendix D</u>	<ul style="list-style-type: none"> To adopt the existing MSA Form of the Metering Service Provider.
Appendices	Appendix L	Specifications for Transmission Revenue Meters	<u>See attached appendix L</u>	<ul style="list-style-type: none"> To harmonize with the Chapter GRM 9.2.3.3 of the prevailing PGC
Appendices	Appendix N	Specifications for Current Transformers	<p>Accuracy Class: IEC 44-1 Class 0.2/ ANSI C57.13 Class 0.3 or better</p> <p><u>See section 2.5.4.1</u></p> <p>Burden: shall not exceed the rated burden limit of 12.5 VA for the IEC 44-1 Class 0.2/ANSI C57.13 Class 0.3 (see Table 1)</p> <p><u>See section 2.5.4.1</u></p> <p>(see attached Appendix N)</p>	<ul style="list-style-type: none"> To refer section 2.5.4.1 of the proposed amendments of WESM Manuals
Appendices	Appendix O	Specifications for Voltage Transformers	<p>Accuracy Class: IEC 60044-2 Class 0.2/ANSI C57.13 Class 0.3 or better</p> <p><u>See section 2.5.4.2</u></p>	<ul style="list-style-type: none"> To refer section 2.5.4.2 of the proposed

Proposed Amendments to the WESM Metering Manual Issue 12.0

Title	Section	Provision	Proposed Amendment	Rationale
			<p>Burden: Shall not exceed the rated burden limit for the IEC 6044-2 Class 0.2/ANSI C57.13 Class 0.3 or better</p> <p><u>See section 2.5.42</u></p> <p>Termination: Line to Ground</p> <p>(see attached Appendix O)</p>	amendments of WESM Manuals
Appendices	Appendix P		(see attached Appendix P)	<ul style="list-style-type: none"> ▪ To provide detailed technical specifications requirement for current transformers of Embedded Generators in the WESM Metering Manual
Appendices	Appendix Q		(see attached Appendix Q)	<ul style="list-style-type: none"> ▪ To provide detailed technical specifications requirement for voltage transformers of Embedded Generators in the WESM Metering Manual

Proposed Amendments to the WESM Metering Manual Issue 12.0

Title	Section	Provision	Proposed Amendment	Rationale																											
Figure	Figure 5		 <p>Note: This is an indicative design</p>	<ul style="list-style-type: none">▪ The revision is being proposed to provide revised design which can accommodate two meters (main and alternate) provided with security facilities consistent with PGC 2016 GRM 9.2.2.4 (a)																											
Tables	Table 5	<p>Table 5 – Ratios and Ratings of Voltage Transformers</p> <table><thead><tr><th>Rated Voltage (V)</th><th>Marked Ratio</th><th>Secondary Voltage</th></tr></thead><tbody><tr><td>14,400 Grd Y/8,400</td><td>70/120:1</td><td>120V/69V</td></tr><tr><td>24,940 Grd Y/14,400</td><td>120/200:1</td><td>120V/69V</td></tr><tr><td>34,500 Grd Y/20,125</td><td>175/300:1</td><td>120V/69V</td></tr><tr><td>69,000 Grd Y/40,250</td><td>350/600:1</td><td>115V/67V</td></tr><tr><td>115,000 Grd Y/69,000</td><td>600/1000:1</td><td>115V/67V</td></tr><tr><td>138,000 Grd Y/80,500</td><td>700/1200:1</td><td>115V/67V</td></tr><tr><td>230,000 Grd Y/138,000</td><td>1200/2000:1</td><td>115V/67V</td></tr><tr><td>500,000 Grd Y/287,500</td><td>2500/4500:1</td><td>115V/67V</td></tr></tbody></table>	Rated Voltage (V)	Marked Ratio	Secondary Voltage	14,400 Grd Y/8,400	70/120:1	120V/69V	24,940 Grd Y/14,400	120/200:1	120V/69V	34,500 Grd Y/20,125	175/300:1	120V/69V	69,000 Grd Y/40,250	350/600:1	115V/67V	115,000 Grd Y/69,000	600/1000:1	115V/67V	138,000 Grd Y/80,500	700/1200:1	115V/67V	230,000 Grd Y/138,000	1200/2000:1	115V/67V	500,000 Grd Y/287,500	2500/4500:1	115V/67V	<p>34.5kV Secondary Voltage 420V 115V</p> <p>(See attached Table 5)</p>	<ul style="list-style-type: none">▪ To achieve whole Nominal Voltage Ratio (GRM 9.2.3.1 (c) of PGC 2016)
Rated Voltage (V)	Marked Ratio	Secondary Voltage																													
14,400 Grd Y/8,400	70/120:1	120V/69V																													
24,940 Grd Y/14,400	120/200:1	120V/69V																													
34,500 Grd Y/20,125	175/300:1	120V/69V																													
69,000 Grd Y/40,250	350/600:1	115V/67V																													
115,000 Grd Y/69,000	600/1000:1	115V/67V																													
138,000 Grd Y/80,500	700/1200:1	115V/67V																													
230,000 Grd Y/138,000	1200/2000:1	115V/67V																													
500,000 Grd Y/287,500	2500/4500:1	115V/67V																													
Tables	Table 11	<p>Table 11 – Metering Equipment, Devices and Auxiliaries</p> <table><thead><tr><th>Designation</th><th>Description</th></tr></thead><tbody><tr><td>CT</td><td>Current Transformer</td></tr><tr><td>SA</td><td>Surge Arrester</td></tr><tr><td>MB</td><td>Meter Box</td></tr><tr><td>MD</td><td>Modem</td></tr><tr><td>ME</td><td>Multi-Function Electronic Meter (Smart Meter)</td></tr><tr><td>VT</td><td>Voltage Transformer</td></tr><tr><td>ST</td><td>Metering Structure</td></tr><tr><td>TS</td><td>Master Test Switch</td></tr></tbody></table>	Designation	Description	CT	Current Transformer	SA	Surge Arrester	MB	Meter Box	MD	Modem	ME	Multi-Function Electronic Meter (Smart Meter)	VT	Voltage Transformer	ST	Metering Structure	TS	Master Test Switch	<p>FROM:</p> <p>VT – Voltage Transformer</p> <p>SA – Surge Arrester</p> <p>TO:</p> <p>PT – Potential Transformer</p> <p>LA – Lightning Arrester</p>	<ul style="list-style-type: none">▪ To be consistent with the SEIN used in existing registration documents of metering installations submitted to the Market Operator									
Designation	Description																														
CT	Current Transformer																														
SA	Surge Arrester																														
MB	Meter Box																														
MD	Modem																														
ME	Multi-Function Electronic Meter (Smart Meter)																														
VT	Voltage Transformer																														
ST	Metering Structure																														
TS	Master Test Switch																														

Proposed Amendments to the WESM Metering Manual Issue 12.0

Title	Section	Provision	Proposed Amendment		Rationale				
			Additional: <table><tr><th>Designation</th><th>Description</th></tr><tr><td>CI</td><td>Combined Instrument Transformer</td></tr></table>		Designation	Description	CI	Combined Instrument Transformer	To include SEIL of Combined Instrument Transformer (CI) in the list of Metering Equipment
Designation	Description								
CI	Combined Instrument Transformer								



Proposed Amendments to the WESM Metering Manual Issue 12.0

Appendix F

METER TROUBLE REPORT FORM

Day, Month Date, Year			MTR SUMMARY												TOTAL MTR:		63	TOTAL REMAINING MTR:		REMARKS	
MTR_2019-02-13_(1ST ISSUE)			TOTAL DATA		TOTAL MISSING		TOTAL UNCERTAIN		INC DATA		3	INC DATA		INC DATA & UNCERTAIN		INC DATA & UNCERTAIN		INC DATA & UNCERTAIN			
									NO DATA		45	NO DATA		NO DATA		NO DATA		NO DATA			
									UNCERTAIN		14	UNCERTAIN		UNCERTAIN		UNCERTAIN		UNCERTAIN			
			REMARKS												REMARKS		REMARKS		REMARKS		
No.	TP NAME	SEIN	KWH DEL		KVARH DEL		KWH REC		KVARH REC		REMARKS		REMARKS		REMARKS		REMARKS				
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Proposed Amendments to the WESM Metering Manual Issue 12.0

APPENDIX L

SPECIFICATIONS FOR MAIN AND ALTERNATE REVENUE METERS

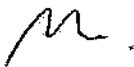
ITEMS	SPECIFICATIONS	REFERENCE DOCUMENTS
Accuracy Class	IEC 687 Class 0.2 / ANSI 12.20 Class 0.3 or better	Grid Code 9.2.3.3
No. of Stators	Blondel's Theorem compliant /3-element	Grid Code 9.2.2.1
Rating	115V 1 A or 5 A 60 Hz	The rating should be suitable to the secondary rating of the instrument transformers.
No. of Quadrants (Measurement)	Active Energy/Power Measurement: Bi-directional Reactive Power Measurement: 4 Quadrant	Grid Code 9.2.2.2 Grid Code 9.2.3.3
Interval Data	Programmable to 1, 5, 15, 30, and 60 minute interval	Grid Code 9.2.3.3
No. of Channels	<u>The 10-channels are as follows:</u> 1. <u>KWH (Del)</u> 2. <u>KWH (Rec)</u> 3. <u>KVARH (Del)</u> 4. <u>KVARH (Rec)</u> 5. <u>Voltage (Ph A)</u> 6. <u>Voltage (Ph B)</u> 7. <u>Voltage (Ph C)</u> 8. <u>Current (Ph A)</u> 9. <u>Current (Ph B)</u> 10. <u>Current (Ph C)</u>	Grid Code 9.2.2.2 Grid Code 9.2.3.3
Mass Memory	Minimum 60 day recording of a 5-minute time-stamped demand interval for 10 recording channels	WESM 4.5.1 (g) Grid Code 9.2.3.3

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ITEMS	SPECIFICATIONS	REFERENCE DOCUMENTS
Meter Registers	<p>The meter shall be capable of measuring, registering and recording the following electrical parameters per dispatch interval:</p> <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) • Power Factor • Frequency • Per Phase Current • Per Phase Voltage 	<p>Grid Code 9.2.2.2 Grid Code 9.2.3.3</p>
Loss Compensation	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 shall also be secured physically by way of security seals.	<p>WESM 4.5.6 Grid Code 9.3.8.1 Grid Code 9.3.8.2 Grid Code 9.3.8.3</p>
Communication Capability	The meter shall have at least a minimum of two 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.	<p>WESM 4.5.7.1 WESM 4.5.1 (c) Grid Code 9.2.3.3</p>
Internal Clock	The meter shall have an internal clock with an allowable error of +/-1 second	<p>WESM 4.5.8.1 Grid Code 9.2.3.3</p>
Time Synchronization	Crystal synchronization. The internal clock shall be capable of being reset set by the data collection software during normal collection operations.	<p>WESM 4.5.8.1 Grid Code 9.2.3.3</p>
Digital Display	The meter shall have a digital display with a minimum of 5 digits.	<p>WESM 4.5.1 (c) Grid Code 9.2.3.3</p>

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ITEMS	SPECIFICATIONS	REFERENCE DOCUMENTS
Codes and Standards	The meter shall adhere to established International	Grid Code 4.2.10.1 IEC, ANSI/IEEE
Compliance	Standards	
Applicable Compliance Tests	<p>These tests shall include material tests and established practice and/or other approved standards.</p> <p>Routine tests prescribed by the applicable standards shall be performed. In particular, the following tests shall be performed for the revenue meters:</p> <ol style="list-style-type: none"> Power frequency tests (insulation) Impulse voltage test (insulation). HF interference test Surge withstand and fast transient tests 	<p>Grid Code 9.2.5.2 Grid Code 9.2.5.3 Grid Code 9.2.8.1 IEC 255-1 IEC 255-A (Class III) IEC 245-4</p>
Battery	Capable of retaining readings and time of day for at least two days without external power source	WESM 4.5.1 (g) Grid Code 9.2.3.3
Enclosure	<p>Minimum requirements Indoor: Protected against dust limited ingress (no harmful deposit) and Protection against vertically falling drops of water e.g. condensation</p> <p>Outdoor:</p> <p><u>For meter cover: Minimum Ingress Protection Rating of IP51 or NEMA 2 to protect the internal component against the harmful elements of environment that may affect its measuring circuit and operation.</u></p> <p><u>For meter box: Minimum Ingress Protection Rating IP34 or NEMA Type 3.</u></p>	<p>ANSI 12.1 4.3.4 Grid Code 9.2.2.3 Grid Code 9.2.2.4 Grid Code 9.3.8</p>



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APPENDIX N

SPECIFICATIONS FOR CURRENT TRANSFORMERS

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, wound type, free standing	
Accuracy Class	<u>See section 2.5.4.1</u>	<u>Grid Code 9.2.3.2</u> <u>(b)</u> Grid Code Appendix 2
Burden	<u>See section 2.5.4.1</u>	<u>Grid Code 9.2.3.2</u> <u>(c)</u> Grid Code Appendix 2
Rated Primary	Current The thermal rating factor shall not be less than 1.0	
Secondary Current	1A or 5A	Grid Code 9.2.3.2 IEC 4.2 Standard values of rated secondary currents
Rating Factor	Minimum of 1.0 at 30°C	
Frequency	60 Hz	
Ambient Air Temperature	-5°C and 50°C for very hot climate	IEC 3.2.1 1996
BIL	Refer to Table 2 for applicable BIL	

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ITEMS	SPECIFICATIONS	REFERENCE DOCUMENTS
Creepage Distance	Refer to Table 3 for applicable creepage distance	
Number of Core	Preferably Two (2) metering cores	Grid Code 9.2.3.2
Mounting	Depend on the applications	
Grounding		Grid Code 9.2.2.1 (g)
Security	Seal holder shall be provided to the GT secondary terminal box (see Figure 1)	Grid Code 9.2.4.1

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APPENDIX O

SPECIFICATIONS FOR VOLTAGE TRANSFORMERS

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	<u>Line-to-Ground (3-element metering)</u> <u>Line-to-Line (2-element metering)</u>	<u>Grid Code 9.2.2.1.</u>
Accuracy Class	<u>See section 2.5.4.2</u>	<u>Grid Code 9.2.3.1 (a)</u> Grid Code Appendix 2
Burden	<u>See section 2.5.4.2</u>	<u>Grid Code 9.2.3.1 (b)</u> 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	
Creepage distance	Refer to Table 3 for applicable creepage distance	
Number of Core	Preferably Two (2)	
Mounting	Depend on the applications	
Grounding		Grid Code 9.2.2.1 (g)

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Proposed Amendments to the WESM Metering Manual Issue 12.0

ITEMS	SPECIFICATIONS	REFERENCE DOCUMENTS
Security	Seal holder shall be provided to the CT secondary terminal box (see Figure 1)	Grid Code 9.2.4.1



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APPENDIX P

SPECIFICATIONS FOR CURRENT TRANSFORMERS FOR EMBEDDED GENERATORS

ITEMS	SPECIFICATIONS	REFERENCE DOCUMENTS
Type	Minimum oil filled, Dry Type or Gas-filled	
Cooling	Oil immersed, Self-cooled; Butyl, Cast resin	
Accuracy Class	<u>0.2 (IEC) or 0.3 (ANSI), or better</u>	<u>Distribution Code 7.2.6.2 (a)</u>
Burden	<u>5VA, guaranteed accurate from 0% to 100%</u>	
Rated Primary	Current The thermal rating factor shall not be less than 1.0	
Secondary Current	1A or 5A	IEC 4.2 Standard values of rated secondary currents
Rating Factor	Minimum of 1.0 at 30°C	
Frequency	60 Hz	
Ambient Air Temperature	-5°C and 50°C for very hot climate	IEC 3.2.1 1996
BIL	Refer to Table 2 for applicable BIL	
Creepage Distance	Refer to Table 3 for applicable creepage distance	
Mounting	Depend on the applications	
Security	Seal holder shall be provided to the CT secondary terminal box (see Figure 1)	<u>WESM Manual 2.9.1.3</u>

Proposed Amendments to the WESM Metering Manual Issue 12.0**APPENDIX O****SPECIFICATIONS FOR VOLTAGE TRANSFORMERS FOR EMBEDDED GENERATORS**

ITEMS	SPECIFICATIONS	REFERENCE DOCUMENTS
Type	Minimum oil filled, Dry Type or Gas-filled	
Cooling	Oil immersed, Self-cooled; Butyl, Cast resin	
Termination	<u>Line-to-Ground (3-element metering)</u> <u>Line-to-Line (2-element metering)</u>	
Accuracy Class	<u>0.3 (ANSI) or 0.2 (IEC)</u>	<u>Distribution Code 7.2.6.1 (a)</u>
Burden	<u>75VA, guaranteed accurate from 0% to 100%</u>	
Ratio	See Table 5	
Secondary Voltage	See Table 5	
Frequency	60 Hz	
BIL	Refer to Table 2 for applicable BIL	
Creepage distance	Refer to Table 3 for applicable creepage distance	
Mounting	Depend on the applications	
Security	Seal holder shall be provided to the CT secondary terminal box (see Figure 1)	<u>WESM Manual 2.9.1.3</u>

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Procedural Steps for De-Registration

Ref.	Task Name	Task Detail	When	Method	Completion Events
DMI.01	MSP <u>submits request for</u> MI deregistration to MO	MSP sends MI deregistration letter to MO containing the reason of deregistration and other pertinent details <u>including the schedule of deregistration.</u>	<u>After reaching an agreement with the WESM member to de-register the MI</u>	By e-mail, courier or fax and official letter address to MO	Notice to MO
DMI.02	MO receives MI deregistration	After receiving the letter of deregistration of MI, MO <u>validates</u> reviews the request of the <u>WESM Member through the</u> MSP. MO review the Metering Masterfile and issue instructions to deregister the MI	<u>After assessment of MSP that the MI is subject for deregistration</u> <u>After DMI. 01</u>	By e-mail, courier or fax and official letter address to MO	
DMI.03	MSP <u>de-registers and/or disconnects</u> the	MSP <u>de-registers and or disconnects the MI on the agreed schedule, within 15 days after issuing</u>	<u>At the agreed de-registration or disconnection schedule</u>	<u>By e-mail, courier or fax and official letter address to MO</u>	<u>Notice to MO</u>

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Ref.	Task Name	Task Detail	When	Method	Completion Events
	MI and notify the MO	notice of deregistration and inform the MO of the MI disconnection. <u>MSP to cease sending of data of de-registered MI to the MO</u>			
DMI.04	MO detect zero (0) registered readings of data delivery for the MI	MO verify if the MI <u>is de-registered and/or disconnected</u> by detecting zero (0) registered readings of data delivery for the said MI	After MI <u>de-registration and/or disconnection</u>	By meter data inspection	
DMI.05	MO deregisters the MI	MO deregister the MI and update the Metering Masterfile. <u>Effectivity of de-registration to the market shall be on the 26th of the month following the actual de-registration or disconnection of the WESM Member by the MSP under DMI.03</u>	After DMI. 04		

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Ref.	Task Name	Task Detail	When	Method	Completion Events
DMI.06	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.07	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.06		End of deregistration process of MI

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Workflow for De-Registration

