REF NO.: RCC-MIN-19-06

MINUTES OF MEETING

Rules Change Committee
153rd Regular Meeting (No. 2019-06)
21 June 2019, 9:00 AM – 3:00 PM
18/F PEMC Executive Board Room, Robinsons Equitable Tower
Ortigas Center, Pasig City

Agenda	Presenter	Action Required
I. Call to Order		
II. Determination of Quorum		There being a quorum, Dr. Allan Nerves (Independent) called the meeting to order at around 11:15 AM.

Attendance List	
In-attendance	**Not In-attendance**
<u>Rules Change Committee</u> ***Principal Members:*** **Maila Lourdes G. de Castro,** Chairperson – Independent **Francisco Leodegario R. Castro, Jr.** – Independent **Concepcion I. Tanglao** – Independent **Allan C. Nerves** – Independent **Abner B. Tolentino** – Generation (PSALM) **Cherry A. Javier** – Generation (APC) **Dixie Anthony R. Banzon** – Generation (MPPCL) **Jose P. Santos** – Distribution (INEC) **Ricardo G. Gumalal** – Distribution (ILPI) **Virgilio C. Fortich, Jr.** – Distribution (CEBECO III) **Lorreto H. Rivera** – Supply (TPEC) **Ambrocio R. Rosales** – System Operator (NGCP) **Isidro E. Cacho** – Market Operator (IEMOP) ***Alternate Member(s):*** **Manuel Luis Zagala** – Distribution (MERALCO)	**Jose Ildebrando B. Ambrosio** – Generation (NorthWind) **Ryan S. Morales** – Distribution (MERALCO)

DOE Observers:

Ferdinand B. Binondo
Ann Margaret Andres

PEMC – Market Assessment Group (MAG)

Elaine D. Gonzales
John Mark S. Catriz
Romellen C. Salazar
Aldjon Kenneth M. Yap
Divine Gayle C. Cruz

PEMC– Legal

Atty. Monica M. Martin

IEMOP

Jonathan B. dela Viña
Raymond Marqueses

NGCP

Honorio F. Estravez, Jr.
Amelia L. Cumpas
Jason J. Abraham

Agenda	Presenter	Action/s Taken
III. Adoption of the Agenda	Secretariat	Approved as revised
Agenda	**Presenter**	**Action/s Taken**
IV. Review of the Minutes of the Previous Meeting (152nd Meeting, 17 May 2019)	Secretariat	Approved as submitted
V. New Business		
Agenda	**Presenter**	**Action/s Taken**
5.1. IEMOP's Proposed Rules Changes: a. Proposed Amendments to the WESM Rules and Manuals (Embedded Generators) b. Proposed Amendments to the WESM Rules and WESM Registration Manual to harmonize with RA 11234 and	Jonathan B. dela Viña (IEMOP)	Approved for publication as submitted

Additional Requirements for De-registration and Cessation c. Proposed Amendments to the WESM Rules and WESM Manual on Billing and Settlement for Enhancements to the Determination of Initial PR (previously submitted as Urgent Amendments) d. Proposed Amendments to the WESM Manual on CVC-PR to include additional CVCs to reflect the dispatch hierarchy of self-scheduled generation		

Mr. Jonathan B. dela Viña (IEMOP) presented the highlights of the following new proposals initiated by the IEMOP *(refer to Annex A for the presentation slides summarizing the proposals)*:

(i) Proposed Amendments to the WESM Rules and Manuals for the Implementation of DOE DC2019-02-0003 Providing for the Framework Governing the Operations of Embedded Generators (ORCP-WR-WM-19-10)

The proposed amendments seek to incorporate to the WESM Rules and Manuals the relevant provisions of DC2019-02-0003 entitled *"Providing for the Framework Governing the Operations of Embedded Generators"*. The proposed changes are summarized below:

- Refer all metering installations standards for embedded generators (i.e., meter, instrument transformers, grounding, communication link, security, redundant metering) to the Philippine Distribution Code with additional requirement for 5-minute interval metering
- Mandatory registration of embedded generators that meet the following criteria:

  (a) Pmax equal to or above the following regional thresholds: 10 MW for Luzon and 5 MW for Visayas and Mindanao; or
  (b) Pmax below regional thresholds but embedded generator has bilateral contract outside its host distribution utility; or
  (c) generating unit is under the Feed-In Tariff (FIT) system

- For consistency, the same Pmax thresholds are proposed to be used for classifying non-scheduled generating units
- Voluntary registration of embedded generators that do not meet the criteria above

The documents for amendments are the (1) WESM Rules, (2) WESM Registration Manual Issue 5.0 and (3) WESM Metering Manual Issue 12.0.

There being no objections, the RCC approved the publication of the proposal in the PEMC website to seek comments from Market Participants and WESM stakeholders.

(ii) Proposed Amendments to the WESM Rules and WESM Manual on Registration, Suspension, and De-Registration Criteria and Procedures to Harmonize with R.A. 11234 and Additional Requirements for De-Registration and Cessation (ORCP-WR-WM-19-11)

The proposal calls for the following revisions:

- Change the timeline for the Market Operator to approve applications to "within 15 calendar days" instead of the current "within 15 working days";

- Change the timeline for Market Participants to submit additional documents to "within 5 calendar days" instead of the current "within 5 working days".

The foregoing proposed revisions aim to align the WESM Rules and WESM Registration Manual with Section 13 of RA 11234 (An Act Establishing the Energy Virtual One-Stop Shop for the Purpose of Streamlining the Permitting Process of Power Generation, Transmission, and Distribution Projects).

Further, the proposal seeks to add a proof of disconnection in the requirements for facility de-registration of a WESM Member and prior to the issuance of a Notice of Cessation.

There being no objections, the RCC approved the publication of the proposal in the PEMC website to seek comments from Market Participants and WESM stakeholders.

(iii) Proposed Amendments to the WESM Rules and WESM Manual on Billing and Settlement for Enhancements to the Determination of Initial Prudential Requirements (PR) (previously submitted as Urgent Amendments)

The proposal to revise the calculation of initial PR was previously approved by the PEM Board on 27 March 2019 and, being an urgent amendment, was immediately implemented. As required by the WESM Rules, the IEMOP re-submitted the subject proposal as general proposed amendment to facilitate its continuous implementation.

IEMOP submitted two versions of the proposal, one to be implemented in the current market design which was not included in the previous urgent amendment, and another for the enhanced market design (i.e., new MMS).

There being no objections, the RCC approved the publication of the proposal in the PEMC website to seek comments from Market Participants and WESM stakeholders.

(iv) Proposed Amendments to the WESM Manual on Constraint Violation Coefficients (CVC)-PR to include additional CVCs to reflect the dispatch hierarchy of self-scheduled generation

The proposal seeks to add CVCs to reflect the dispatch and curtailment hierarchy for non-scheduled, priority dispatch and must dispatch generating unit classifications – collectively called self-scheduled generating units.

The self-scheduled Generation Constraint is proposed to be delineated. With the suggested new CVC names, it is likewise proposed that the corresponding CVCs for the higher prioritized CVCs (items h to n) be adjusted, as follows:

Order	CVC Name	CVC
1	Tertiary Reserve Requirement Constraint	100,000
2	Primary Reserve Requirement Constraint	200,000
3	Nodal VoLL or Nodal Energy Balance Constraint	800,000
4	System Energy Balance Constraint	1,300,000
5	Self-Scheduled Generation Constraint **– Non-Scheduled Generation**	1,400,000
6	**Self-Scheduled Generation Constraint – Priority Dispatch Generation**	**1,500,000**
7	**Self-Scheduled Generation Constraint – Must Dispatch Generation**	**1,600,000**
~~6~~ **8**	Thermal Contingency Constraint – Transformer	~~1,500,000~~ **2,500,000**
~~7~~ **9**	Thermal Contingency Constraint – Line	~~1,500,000~~ **2,500,000**
~~8~~ **10**	Thermal Contingency Constraint – Branch Group	~~2,000,000~~ **3,000,000**
~~9~~ **11**	Secondary Reserve Requirement Constraint	~~3,500,000~~ **5,600,000**
~~10~~ **12**	Thermal Base Case Constraint – Transformer	~~4,000,000~~ **6,000,000**
~~11~~ **13**	Thermal Base Case Constraint – Line	~~4,000,000~~ **6,000,000**

The general idea for setting the new CVC, as Mr. dela Viña explained, was to ensure that the total of two lower priority constraints, should they be violated at the same time, will not overlap with a higher priority CVC. This is to prevent the possibility that the market dispatch optimization model would just opt to violate the higher priority constraint if such overlap of CVCs occurs. To further illustrate the impact of the proposal, Mr. Isidro E. Cacho, Jr. (IEMOP) explained that if generation from a solar plant (must-dispatch) and a biomass plant (priority dispatch) must pass through a line with a limited capacity, the MDOM would prioritize the dispatch of the solar plant over the biomass plant (e.g., decrease biomass plant's dispatch quantity).

Further, the proposed new CVCs are intended to be applied for the enhanced market design.

There being no objections, the RCC approved the publication of the proposal in the PEMC website to seek comments from Market Participants and WESM stakeholders.

VI. Matters Arising from Previous Meetings		
Agenda	**Presenter**	**Action/s Taken**
6.1. Deliberation on NGCP's Proposed Amendments to the WESM Manual on Metering Standards and Procedures Issue 12.0	Honorio F. Estravez, Jr. (NGCP-MSP)	▪ Provisionally approved subject to finalization ▪ Secretariat to e-mail cleaned-up matrix and corresponding draft resolution to the RCC for final approval

Comments to the subject proposal were received from the DOE, PEMC, Technical Committee, IEMOP, MERALCO and SPC/SIPC.

(Refer to Annex B for the matrix of the deliberation and the RCC's agreements.)

Agenda	Presenter	Action/s Taken
Deliberation on PEMC's Proposed Amendments to the WESM Manual on Procedures for the Monitoring of Forecast Accuracy Standards for Must-Dispatch Generating Units	Aldjon Kenneth M. Yap (PEMC)	▪ Provisionally approved subject to finalization ▪ Secretariat to e-mail cleaned-up matrix and corresponding draft resolution to the RCC for final approval

Comments to the subject proposal were received from the Technical Committee, IEMOP, NGCP, Aboitiz Power Corp. (APC), San Carlos Sun Power, Inc. (SACASUN), SPC Power Corp. (SPC) and Wind Energy Developers Association of the Philippines (WEDAP).

(Refer to Annex C for the matrix of the deliberation and the RCC's agreements.)

Agenda	Presenter	Action/s Taken
Draft RCC Resolution No. 2019-01A: Implementation of Enhanced Initial Prudential Requirements Computation for Current Market Management System	RCC Secretariat	Approved as amended

VII. Other Matters		
Agenda	**Presenter**	**Action/s Taken**
7.1. RCC Internal Rules a. Proposed Revisions b. Draft RCC Resolution	Aldjon Kenneth M. Yap (RCC Secretariat)	▪ Provisionally approved subject to the inclusion of the following: o Reason for urgency of a proposal and the discussion paper template in the RCC Form for submitting proposals o Add phrase stating that clearance shall be requested from concerned RCC members every time their e-signature will need to be affixed o Include procedure on sending out acknowledgement letter to participants who submitted comments to a proposal ▪ Approved draft RCC Resolution No. 2019-08 for the revised RCC Internal Rules (Issue 4.0) as revised

114 The summary of the changes to the internal rules are as follows:

	From	To
Section V. Meetings		
Schedule of Meeting	9:00 – 3:00 PM every 1st Friday of the month	9:00 – 3:00 PM every 3rd Friday of the month
Provisional agenda	Approved by Chairperson before being provided to Committee members	Removed approval by Chairperson
Meeting Highlights	Submitted to Committee no later than five (5) working days from date of meeting	Submitted to Committee no later than twenty-four (24) hours after the meeting
Section VI. Conduct of Meetings		
Presiding Officer	Committee members to vote for presiding officer (independent member) in the absence of Chairperson	Chairperson to assign a presiding officer (independent member) in his/her absence
Section VII. Responsibilities		
Electronic Signature	none	RCC Secretariat to secure electronic signatures of Committee members to be affixed to the following documents upon the concerned member's clearance: a) Minutes of the meeting b) RCC Resolutions c) Committee reports; and d) Correspondences

Annex	From	To
RCC Form for Submission of Proposals	Revised templates	
RCC Form for Submission of Comments to Proposals		
Presentation Template for Summary of Proposals	none	Template included

The Secretariat informed the body that those Market Participants and stakeholders who submitted comments to the proposals were sent acknowledgement letters following the complete deliberation of such proposals.

Agenda	Presenter	Action/s Taken
PEM Board Updates	▪ Dr. Allan C. Nerves ▪ RCC Secretariat	▪ Updates were noted ▪ Presentation on MRU Settlement cleared for presentation to the PEM Board in its July 2019 meeting

The Secretariat informed the RCC that the PEM Board, specifically Director Emmanuel Rubio of Aboitiz Power Corp., requested the body to make a presentation on the settlement of Must-Run Units. The RCC reviewed the draft presentation and approved the same for presentation to the PEM Board, pending the addition of data requested from the IEMOP on the number of MRUs who filed for additional compensation.

Agenda	Presenter	Action/s Taken
General Membership Meeting (19 June 2019)	RCC Secretariat	▪ Updates were noted

Following the membership meeting, the Secretariat informed the body that a forum session was held regarding the possibility of forming an Energy Markets Derivatives in the Philippines.

Agenda	Presenter	Action/s Taken
NGCP's proposal on HVDC scheduling (included in the RCC's 2019 Work Plan)	Mr. Ambrocio R. Rosales	▪ Noted the SO's request to remove in the Work Plan its proposal

Mr. Rosales (NGCP-SO) requested the removal in the 2019 Work Plan of its commitment to submit a proposal regarding High Voltage Direct Current (HVDC) scheduling. He explained that the intention of the proposal is for the System Operator to take-over the HVDC scheduling.

He stated that currently, HVDC schedule is included among the considerations in RTD scheduling. However, this is not complied with in more than 90% of the time, and is one reason why pricing error notices are issued. The SO is currently doing simulation studies and looking at other projects that might address power exchange concerns among Luzon, Visayas and Mindanao. Mr. Rosales stated that the SO may once again commit submitting proposed amendments once the NGCP already has a concrete direction on HVDC scheduling.

The RCC noted and accepted the removal of the NGCP's topic from the 2019 Work Plan.

Agenda	Presenter	Action/s Taken
VIII. Next Meeting	Secretariat	The RCC noted the following schedules of the next RCC meetings: ▪ July 19 ▪ August 16 ▪ September 20
IX. Adjournment		The RCC meeting was adjourned at 2:53 PM.

Prepared by:

[redacted]

Divine Gayle C. Cruz
Specialist
Market Assessment Group – Rules Review Division

Reviewed by:

[redacted]

John Mark S. Catriz
Manager
Market Assessment Group – Rules Review Division

Noted by:

[redacted]

Elaine D. Gonzales
Acting Head
Market Assessment Group

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

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

REF NO.: RCC-MIN-19-05

ANNEX A

PROPOSED AMENDMENTS TO THE WESM RULES AND VARIOUS MANUALS

21 JUNE 2019

INDEPENDENT ELECTRICITY MARKET OPERATOR OF THE PHILIPPINES
(DF PEMC BOARDROOM)

THE PROPONENT

- The proponent is the Independent Electricity Market Operator of the Philippines, Inc.
- IEMOP acts as the market operator of the WESM.

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)

[redacted]

OUTLINE

ACTION REQUESTED

RATIONALE OF THE PROPOSAL

SUMMARY OF THE PROPOSAL

OTHER RELEVANT MATTERS

ACTION REQUESTED

- For approval to publish

No.	Description	Documents	Rationale
1	Implementation of DOE DC2019-02-0003 Providing for the Framework Governing the Operations of Embedded Generators	(1) WESM Rules, (2) Registration Manual, (3) Metering Manual	Policy Harmonization
2	Include Additional CVCs to Reflect the Dispatch Hierarchy of Self-Scheduled Generation	(1) CVC and Pricing Re-Runs Manual	Address Audit Findings
3	Harmonization with EVOSS Act (RA 11234)	(1) WESM Rules, (2) Registration Manual	Policy Harmonization
4	[GENERAL] Enhancements to the Determination of Initial Prudential Requirements*	(1) WESM Rules, (2) Billing and Settlement Manual	Process efficiency improvement

*The PEM Board approved the urgent amendments of the same topic on 27 March 2019

1) IMPLEMENTATION OF DC ON EMBEDDED GENERATORS

Rationale of the Proposal

- On 01 April 2019, the DOE promulgated DC2019-02-0003 that provided for the framework governing the operations of embedded generators.
- Under Section 11.1 of the same DC, the Market Operator is directed to submit to the Rules Change Committee proposed changes to the WESM Rules and Market Manuals in accordance with the newly promulgated policy.

5

1) IMPLEMENTATION OF DC ON EMBEDDED GENERATORS

Summary of the Proposal

Current	Amendment	Rationale
Metering standards for embedded generators are provided in the manual	Metering standards for embedded generators are **referred to the Philippine Distribution Code**	Consistency with Section 5.2.2 of DC2019-02-0003
All embedded generators are required to register in the WESM	Only embedded generators **that meet the criteria** are required to register in the WESM	Consistency with Section 6.1 of DC2019-02-0003
	Embedded generators that do not meet the criteria may register in the WESM on a voluntary basis	Provided under Section 6.2 of DC2019-02-0003

Criteria for Mandatory Registration of Embedded Generators

1. Maximum stable load is above 10 MW (Luzon) or 5 MW (Visayas and Mindanao)
2. Maximum stable load is below relevant threshold but has contract outside host distribution utility
3. Under the Feed-in Tariff (FiT) System

6

1) IMPLEMENTATION OF DC ON EMBEDDED GENERATORS

Summary of the Proposal

Current	Amendment	Rationale
Threshold for non-scheduled generating units: 0.1% of the peak demand of the reserve region	Threshold for non-scheduled generating units: **regional threshold for mandatory registration of embedded generation provided in DC2019-02-0003**	The regional threshold provided in the DC is based on the minimum generation level that may significantly affect the frequency of the grid, as determined by NGCP. The same level may be used for classifying non-scheduled generating units for consistency

Criteria for Mandatory Registration of Embedded Generators

1. Maximum stable load is above 10 MW (Luzon) or 5 MW (Visayas and Mindanao)
2. Maximum stable load is below relevant threshold but has contract outside host distribution utility
3. Under the Feed-in Tariff (FiT) System

7

2) HARMONIZE WITH R.A. 11234

Rationale of the Proposal

- On 08 Mar 2019, the President signed RA11234 An Act Establishing the Energy Virtual One-Stop Shop (EVOSS) for the Purpose of Streamlining the Permitting Process of Power Generation, Transmission and Distribution Projects
- Under Section 13, the Market Operator is required to act on applications within 15 calendar days

8

2) HARMONIZE WITH R.A. 11234

Summary of the Proposal

Current	Amendment	Rationale
MO approves application within fifteen (15) working days	MO approves application within fifteen (15) calendar days	Consistency with Section 13 of RA 11234
Submission of additional document within five (5) working days	Submission of additional document within five (5) calendar days	Consistency with Section 13 of RA 11234
Proof of disconnection is not required by the WESM Rules for de-registration of facilities	**Require proof of disconnection** for de-registration of facilities	To clarify the need to present a proof of disconnection for facilities that will be de-registered

3) (GENERAL) ENHANCEMENTS TO INITIAL PR

Rationale of the Proposal

- On 23 Jan 2019, the DOE directed IEMOP to initiate and spearhead *urgent* amendments to introduce an appropriate formula for the calculation of initial prudential requirements
- The RCC (22 Feb 2019) and the PEM Board (27 Mar 2019) approved the *urgent* amendments
- Re-submission of the proposal as general amendment is required for its continuous implementation

3) (GENERAL) ENHANCEMENTS TO INITIAL PR

Summary of the Proposal

Current	Proposed	Rationale
Initial PR of new customers is calculated from projected exposure based on: • 10% of projected consumption • System average price	Initial PR of new customers is calculated from projected exposure based on: • **Projected spot purchase (MWh)** • **Locational prices (load and contract)**	More accurate prudential requirements: ➢ For <10% exposure (e.g., Mindanao), lower security procurement cost ➢ For >10% exposure, higher MO coverage
Concepts and terms under enhanced WESM design and operations.	Concepts and terms under **current and** enhanced WESM design and operations.	Provide formula for implementation under current WESM Rules

Note: Existing trading participants will not be affected. Prudential requirements of existing trading participants are based on their actual exposures, which reflect the actual % of their consumption they procure from the spot market.

4) CVCs FOR SELF-SCHEDULED GENERATION

Rationale of the Proposal

- There is only one CVC associated with non-scheduled, priority dispatch and must dispatch generating unit classifications of self-scheduled generation.
- However, there is a prioritization provided under the WESM Rules. Changes in the CVC are necessary to implement this.

4) CVCs FOR SELF-SCHEDULED GENERATION

Summary of the Proposal

Current

Order	CVC Name	CVC
1	Tertiary Reserve Requirement Constraint	100,000
2	Primary Reserve Requirement Constraint	200,000
3	Nodal Volt. or Nodal Energy Balance Constraint	600,000
4	System Energy Balance Constraint	1,300,000
5	Self-Scheduled Generation Constraint	1,400,000
6	Thermal Contingency Constraint – Transformer	1,500,000
7	Thermal Contingency Constraint – Line	1,500,000
8	Thermal Contingency Constraint – Branch Group	2,000,000
9	Secondary Reserve Requirement Constraint	3,500,000
10	Thermal Base Case Constraint – Transformer	4,000,000
11	Thermal Base Case Constraint – Line	4,000,000
12	Thermal Base Case Constraint – Branch Group	4,000,000

Amendment

Order	CVC Name	CVC
1	Tertiary Reserve Requirement Constraint	100,000
2	Primary Reserve Requirement Constraint	200,000
3	Nodal Volt. or Nodal Energy Balance Constraint	600,000
4	System Energy Balance Constraint	1,300,000
5	Self-Scheduled Generation Constraint – Non-Scheduled Generation	1,400,000
6	Self-Scheduled Generation Constraint – Priority Dispatch Generation	1,500,000
7	Self-Scheduled Generation Constraint – Must Dispatch Generation	1,500,000
8 6	Thermal Contingency Constraint – Transformer	~~1,500,000~~ 2,500,000
9 7	Thermal Contingency Constraint – Line	~~1,500,000~~ 2,500,000
10 8	Thermal Contingency Constraint – Branch Group	~~2,000,000~~ 3,000,000
11 9	Secondary Reserve Requirement Constraint	~~3,500,000~~ 5,400,000
12 10	Thermal Base Case Constraint – Transformer	~~4,000,000~~ 5,000,000
13 11	Thermal Base Case Constraint – Line	~~4,000,000~~ 5,000,000

Rationale

There is only one CVC associated with non-scheduled, priority dispatch and must dispatch generating unit classifications of self-scheduled generation.

However, there is a prioritization provided under the WESM Rules. Changes in the CVC are necessary to implement this.

OTHER RELEVANT MATTERS

- None

ACTION REQUESTED

- For approval to publish

No.	Description	Documents	Rationale
1	Implementation of DOE DC2018-02-0003 Providing for the Framework Governing the Operations of Embedded Generators	(1) WESM Rules, (2) Registration Manual, (3) Metering Manual	Policy Harmonization
2	Harmonization with EVOSS Act (RA 11234)	(1) WESM Rules, (2) Registration Manual	Policy Harmonization
3	[GENERAL] Enhancements to the Determination of Initial Prudential Requirements*	(1) WESM Rules, (2) Billing and Settlement Manual	Process efficiency improvement
4	Include Additional CVCs to Reflect the Dispatch Hierarchy of Self-Scheduled Generation	(1) CVC and Pricing Re-Runs Manual	Address Audit Findings

*The PEM Board approved the urgent amendments on the same topic on 27 March 2019

THANK YOU!

ANNEX B

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
Location of the Metering Point	2.2	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. 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.	**The location of the metering point shall adhere to the applicable provisions of the latest version 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).** **The revenue 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.** **If the installation of the metering equipment at the prescribed location is physically difficult, unsafe, uneconomical or impractical, the Trading**	▪ To include other relevant references such as ERC and DOE issuances. ▪ To be consistent with the amended definition of Market Trading Node prescribed in letters (c) and (d) of Section 1. Amendments to the WESM Rules under DOE Department Circular DC2018-05-0015[1], to wit, *"(c) Clause 3.2.2.1 under Market Trading Node is amended to read as -* *3.2.2.1. A market trading node is designated point in the market network model where energy is bought or sold based on the prices determined by*	**TC:** The objective of the SSLA is to adjust the price of the energy metered away from the Trading Node and settlement in the market is the amount, not the quantity. Thus, instead of using Site Specific Loss Adjustment, use Site Specific Loss Adjustment Factor so that what is adjusted is the price and not the quantity	NGCP to TC NGCP has no objection whether SSLA or SSLA Factor will be applied as long as adjustments will be made to metering points that are not located at the connection points	Pursuant to DOE DC 2018-05-0015, it was clarified that a metering point may be installed within a 500-meter range from the connection point for the purpose of eliminating the need for computing site-specific loss adjustment for revenue meters installed within this range. However, the RCC noted that the ERC mandates revenue meters to be *at* the connection point which is inconsistent with the said DOE policy. In such cases, the MSP may be compliant with the DOE but not with the ERC. Mr. Estravez (NGCP-MSP) stated that if it is not feasible for a revenue meter to be installed at the connection point, then the NGCP would have to request the ERC for exemption. As for the matter on when SSLA should be applied, NGCP agreed to adopt IEMOP's recommendation to qualify for which metering points the Market Operator (MO) should calculate SSLA (i.e., only for those installed beyond the 500-meter
					PEMC: Suggest to revise: ~~**The location of the metering point shall adhere to the applicable provisions of the latest version 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**~~	NGCP to PEMC NGCP proposes to retain the inclusion of other relevant issuances of the Energy Regulatory Commission (ERC) and the Department of Energy (DOE). These issuances provide clarifications to the provisions of WESM Rules, PGC, PDC. Specifically,	

[1] Adopting Further Amendments to the Wholesale Electricity Spot Market (WESM) Rules and Market Manuals for the Implementation of Enhancements to WESM Design and Operations (Provisions for Metering, Market Trading Node and Scheduling Point)

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
			Participant may request the approval of the Market Operator for exemption. In such case, an agreed Site-Specific Loss Adjustment (SSLA) shall be applied to the metering point metered energy data to determine the quantities to be settled in the WESM. ~~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.~~ ~~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.~~	*the market dispatch optimization model.* *(d) Clause 3.2.2.2 under the Market Trading Node is amended to read as -* *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 settlement requirements in the WESM* *(b) Be associated with a revenue metering capable of measuring all relevant incoming and outgoing energy deliveries for the purpose of settlement in the WESM; and*	~~*the Department of Energy (DOE).*~~ *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,* ***the*** ~~***revenue***~~ ***metering point*** ~~***may 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, subject to the approval of the Market Operator. In such case, an agreed Site-Specific Loss Adjustment (SSLA) shall be applied to the metering point metered energy data to determine the quantities***	1) ERC Resolution 23 Series of 2016 – provides the connection point based on function instead of ownership 2) DOE DC2018-05-0015 – provides the location of metering to be no more than 500m from the connection point	allowance). Mr. Isidro Cacho, Jr. (IEMOP) added that currently, the MO calculates SSLA for all revenue meters not installed at the connection point regardless the distance. Following the discussion, the RCC agreed for the provision to just be silent on the possible non-compliance with the ERC on where revenue meters should be installed, adhere to the DOE circular and merely set the qualifications on when SSLA will be applied. The amended provision is as follows: ~~*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.*~~ ~~*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*~~

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
				(c) As much as possible, represent the connection point between the Network Service Provider and the Trading Participant. For this purpose, the revenue metering equipment for the market trading node shall be installed no more than 500 meters from the connection point." ▪ To provide guidance with regard to installation constraints thru the derogation request and SSLA application	***to be*** **settled in the WESM.**		~~*that metering point for determining the quantities to be settled in the WESM.*~~ ***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).*** ***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.*** ***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***
					IEMOP: The Market Operator is not the appropriate organization to exempt the installation of revenue metering at the prescribed location. Instead, we propose to use the distance criteria to determine when site-specific loss adjustments will be applied. The revised wording is proposed 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. Proposed Revised Wording: The **location of the** *metering point* shall	NGCP to IEMOP NGCP acknowledges the position of IEMOP with regards to the approval of request for exemptions. However, there should be a clear provision in the WESM Metering Manual on who will approve exemptions for cases wherein installation of the metering point within the prescribed 500m distance is not feasible. NGCP recommends adopting the proposed wordings of IEMOP particularly the inclusion of the application of SSLA based on distance criteria **"The location of the metering point shall adhere to the applicable provisions of the latest versions**	

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					adhere to the applicable provisions of the latest version of ~~be located at the *market trading node* and shall be in accordance with~~ the *WESM Rules*, the ***Philippine*** *Grid Code* **(PGC)**, ~~and~~ the ***Philippine*** *Distribution Code* **(PDC)**, **and other relevant issuances of the Energy Regulatory Commission (ERC) and the Department of Energy (DOE).** **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 ~~not~~ **im**practical. If the *metering point* is ~~not~~ located **more than 500**	**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).** **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.** **If the metering point is located more than 500 meters from the connection point, Site-Specific Loss Adjustment (SSLA)**	***the full distance from the connection point representing the energy produced or consumed by the Trading 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.***

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					meters from the *connection point* ~~the *market trading node*~~**, a** ~~an agreed~~ 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 Participant*** ~~*Customer*~~ 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.**	**shall be applied to the meter data for the full distance from the connection point representing the energy produced or consumed by the Trading 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."**	

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					DOE: With reference to the DOE letter to the NGCP, the DOE recommended for NGCP to provide for a prescribed distance if 500 m is not adequate to avoid providing exceptive cases that may affect the accuracy of the market network model. Suggest to revise as follows: **The location of the metering point shall adhere to the applicable provisions of the latest version 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).** ~~**The revenue metering point shall be located at the market trading node and shall be installed within 500 meters from**~~	NGCP to DOE NGCP is already amenable with the prescribed 500m distance by DOE DC2018-05-0015. However, there are still few cases wherein installation within the prescribed distance is not feasible due to the following reasons: 1) Right of way issues 2) Security threats 3) Lot availability and terrain (Near the ravine, residential area, swampy etc.) 4) Communication link (No TelCo signal) It is recommended that SSLA be computed for metering point with significant distance from the prescribed connection point For clarity, NGCP recommends to retain the other provisions	

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					~~the connection point between the systems of the Network Service Provider and Trading Participant.~~ ~~If the installation of the metering equipment at the prescribed location is physically difficult, unsafe, uneconomical or impractical, the Trading Participant may request the approval of the Market Operator for exemption. In such case, an agreed Site-Specific Loss Adjustment (SSLA) shall be applied to the metering point metered energy data to determine the quantities to be settled in the WESM.~~ ~~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~~		

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					~~physically difficult, uneconomical or not practical.~~ ~~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.~~		
Meters	2.4	2.4.1. Requirements for Transmission Grid Revenue Meters There shall be a main and a back-up revenue meter preferably of different 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. The current specifications are provided as Appendix L of this Manual.	2.4.1. Requirements for Transmission Grid Revenue Meters There shall be a main and a back-up revenue meter ~~preferably~~ of **equivalent specifications** ~~different 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~~ **PGC 2016 Edition**. **In addition to the specifications as**	▪ To ensure that the specifications of the main and back-up meters are comparable which will not only support inter-operability of the two meters but will also guarantee that the back-up meter can readily serve as sufficient alternative or replacement to the main meter. ▪ To include provision for additional mass memory requirements	**TC:** • Reference to the Phil Grid Code (or Phil Distribution Code) need not specify the year of publication. It is implied that the latest approved version of the code(s) are in effect. • References to specific provisions in PGC and PDC need not be included as appendix to the rules.	NGCP to TC NGCP has no objection on the comments and TC concerns have been incorporated in the new proposed wordings	Based on comments received, the proponent agreed to revise the provision regarding references to the Philippine Grid Code, on specifying that main and alternate meters are preferably of different make and model, and the manner of meter data retrieval. On the requirements for meters for embedded generators, Mr. Zagala (MERALCO) clarified that per the PDC, installation of alternate meters is only optional. He also informed that presently, the regulator only allows MERALCO to recover the costs

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
			prescribed by the PGC 2016 Edition, 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; The ~~current~~ **recommended specifications based on PGC 2016 Edition are** provided as Appendix L of this Manual.	▪ To provide the exact version of PGC which served as basis for the specifications be provided in the Appendix L	This will accommodate any revision in the referenced documents.		for replacing existing meters with those capable of 15-minute metering, not for 5-minute metering. Mr. Estravez clarified that included in this proposal is a recommended transitory period for MSPs, including those serving embedded generators, to replace their existing meters with those compliant with the 5-minute metering. The RCC adopted the proponent's revised wordings, as follows:
		2.4.2. Requirements for Revenue Meters for Embedded Generators Registered as WESM Participants For Embedded Generators registered as WESM Participants, meters installed as the main revenue meter and back-up meter shall adhere to the prevailing requirements of the Philippine Grid Code.	2.4.2. Requirements for Revenue Meters for Embedded Generators Registered as WESM Participants For Embedded Generators registered as WESM Participants, meters installed as the main revenue meter and back-up meter shall adhere to the	▪ To be consistent with the following provision of DOE Advisory on Mandatory Registration to the WESM[2] which prescribes that the PDC shall apply to embedded generators: *"3. Cooperate with their WESM MSP in ensuring that their metering installations, including revenue*	**PEMC:** *No need to specify the edition of the PGC. The qualifier "prevailing" is enough.* *There was a long discussion already on whether the meters shall be of the same or different make or model.* *There was a discussion that if the meters are of the same make and model, the chance of having the same equipment error may occur.* *This specification is not an addition as this is*	NGCP to PEMC Comments of PEMC; specifically, on the sufficiency of the use of "prevailing PGC" have been incorporated in the new proposed wordings. As regard the concern whether the meters shall be of the same or different make or model, NGCP agrees to incorporate the old wordings "preferably of different model" similar to the comment of MERALCO The requirements of PGC 2016 for meter	*There shall be a main and ~~back-up revenue~~ **alternate** meter preferably of different ~~brand (make and model)~~ **meter model but are both compliant** ~~Meters installed as the main revenue meter and back-up meter shall adhere~~ to the **requirements of the** prevailing ~~requirements of the~~ Philippine Grid Code (PGC).* ~~*The current specifications are provided as Appendix L of this Manual.*~~

[2] Issued on 22 November 2018

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
		The current specifications are provided as Appendix M of this Manual.	prevailing requirements of the ~~Philippine Grid Code~~ **PDC 2017 Edition**. The ~~current~~ **recommended** specifications **based on PDC 2017 Edition** are provided as Appendix M of this Manual.	*meters and instrument transformers, are installed in accordance with the specifications provided in applicable guidelines. Specifically:* *a. The PDC shall apply for Embedded Generators; and* *b. The PGC shall apply for Grid-Connected Generators."* ▪ To provide the exact version of PDC which served as basis for the specifications be provided in the Appendix M	*provided in the PGC.* *Suggest to revise:* There shall be a main and a back-up revenue meter preferably of **equivalent specifications** ~~different 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 ~~**PGC 2016 Edition**~~. ~~**In addition to the specifications**~~ **as prescribed by the prevailing edition of the Philippine Grid Code** ~~**2016 Edition**~~**, 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;**	mass memory is 60 days at 15-minutes interval minimum load profile storage capacity	***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.*** *2.4.1. Requirements for Revenue Meters for Embedded Generators Registered as WESM Participants* *For Embedded Generators registered as WESM Participants, the main meter~~s~~ ~~installed as the main revenue meter and back-up meter~~ shall adhere to the prevailing requirements of the Philippine Distribution Code (PDC)* ***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.***

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					Comment: Propose to retain the original provision unless it is proposed that appendix L be deleted. *Proposed Revision:* ~~The current **recommended specifications based on PGC 2016 Edition are** provided as Appendix L of this Manual.~~ The current specifications are provided as Appendix L of this Manual. For Embedded Generators registered as WESM Participants, meters installed as the main revenue meter and back-up meter shall adhere to the prevailing requirements of the Philippine Distribution ~~Grid~~ Code ~~**PDC 2017 Edition.**~~ *Comment: Propose to retain the original provision unless it is proposed to be deleted.*		

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					Proposed revision: The ~~current~~ **recommended** specifications **based on PDC 2017 Edition** are provided as Appendix M of this Manual.		
					IEMOP: The requirements for EGs must also be aligned with the WESM's 5-minute dispatch interval. However, PDC only requires 15-minute interval metering. References to current specifications in the annexes and current version of PGC and PDC may require revisions in the manual every time the PGC and PDC standards are updated. To incorporate application of PDC standards for embedded generators as provided under Section 5.2.2 of DC2019-02-0003.	NGCP to IEMOP NGCP has no objection on the comments and IEMOP concerns have been incorporated in the new proposed wordings	

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					However, it is proposed that 5-minute interval data be required to match the WESM's 5-minute dispatch interval since PDC only requires 15-minute interval metering. References to current specifications and current version of PGC and PDC are also proposed to be deleted to remove necessity to revise manual every time the PGC and PDC standards are updated. <u>Proposed Revised Wording:</u> 2.4.1. Requirements for Transmission Grid Revenue Meters There shall be a main and a back-up revenue meter ~~preferably~~ of **<u>equivalent specifications</u>** ~~different brand (make and model)~~. Meters installed as the main revenue meter and back-up meter shall adhere to the prevailing requirements of the		

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					Philippine Grid Code ~~**PGC 2016 Edition**~~. **In addition to the specifications as prescribed by the PGC 2016 Edition, 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;** ~~The current **recommended specifications based on PGC 2016 Edition are** provided as Appendix L of this Manual.~~ 2.4.1. Requirements for Revenue Meters for Embedded Generators Registered as WESM Participants For Embedded Generators registered as		

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					WESM Participants, meters installed as the main revenue meter and back-up meter shall adhere to the prevailing requirements of the Philippine **Distribution** ~~Grid~~ Code **and in 5-minute interval data.** ~~The current specifications are provided as Appendix M of this Manual.~~		
					DOE: To avoid constant update of the rules, suggest to specify that the prevailing PGC code shall be the reference for the requirements. Suggest to revise as follows: There shall be a main and a back-up revenue meter ~~preferably~~ of **equivalent specifications** ~~different brand (make and model)~~. Meters installed as the main revenue meter and back-up meter shall adhere to the ~~prevailing~~	NGCP to DOE NGCP has no objection on the comments and DOE concerns have been incorporated in the new proposed wordings	

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					requirements of the ~~Philippine Grid Code~~ **prevailing PGC ~~2016~~ Edition**. **In addition to the specifications as prescribed by the prevailing PGC ~~2016~~ Edition, 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;** The ~~current~~ **recommended specifications based on prevailing PGC ~~2016~~ Edition are** provided as Appendix L of this Manual. 1. Requirements for Revenue Meters for Embedded Generators Registered as WESM Participants		

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					For Embedded Generators registered as WESM Participants, meters installed as the main revenue meter and back-up meter shall adhere to the ~~prevailing~~ requirements of the ~~Philippine Grid Code~~ **prevailing PDC ~~2017~~ Edition**. The ~~current~~ **recommended** specifications **based on the prevailing PDC ~~2017~~ Edition** are provided as Appendix M of this Manual.		
					MERALCO: ▪ The requirement for different brand/model between the main and back-up meters was specifically recommended by the past WESM Metering Sub-Committee due to the "millennium bug" experience. This is also to prevent occurrence of meter failure of both meters	NGCP to MERALCO NGCP has no objection on the comments and MERALCO's concerns have been incorporated in the new proposed wordings **"There shall be a main and alternate meter preferably of different meter model but are both compliant to the requirements of the**	

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					on the same nature and at the same time. ▪ For consistency with PGC 2016 Edition, change "back-up meter" to "alternate meter". ▪ There are other means of remote data retrieval and should not be limited via communication port, e.g. built-in RF communication module. ▪ We wish to reiterate that 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. Proposed Revised Wording: "There shall be a main and **alternate** revenue meter **preferably of different brand but with** equivalent specifications.	**prevailing Philippine Grid Code (PGC).** **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** **For Embedded Generators registered as WESM Participants, the main meter shall adhere to the requirements of the prevailing Philippine Distribution Code (PDC) 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."**	

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					Meters installed as the main revenue meter and **alternate** meter shall adhere to the prevailing requirements of the PGC 2016 Edition. In addition to the specifications as prescribed by the PGC 2016 Edition, 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, **have a port for manual data retrieval, and capable of remote data retrieval via port or built-in communication module**." "For Embedded Generators registered as WESM Participants, the main revenue meter ~~and back-up meter~~ shall adhere to the prevailing requirements of the PDC 2017 Edition. **If there is an alternate meter it shall also adhere to the**		

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					prevailing requirements of the PDC 2017 edition.		
Instrument Transformers	2.5	2.5.1 General Requirements Metering installations shall include instrument transformers.	2.5.1 General Requirements Metering installations, **if applicable,** shall include instrument transformers. 2.5.1.1. **Requirements for Transmission Grid Instrument Transformers** **Instrument Transformers used for metering of Transmission Grid Connections shall adhere to the prevailing requirements of the PGC 2016 Edition.** **The recommended specifications based on PGC 2016 Edition are provided as Appendix N and Appendix O of this Manual.** 2.5.1.2. **Requirements for Embedded Generators Registered as WESM Participants**	▪ 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 Registered as WESM Participants ▪ To provide the exact versions of PGC and PDC which served as basis for the specifications be provided in the Appendices N, O, P and Q.	**TC:** Same comment as the previous one, specifying the latest edition of the reference code is sufficient so as not to change the rule every time a new edition of the relevant code is issued **PEMC:** No need for the phrase "if applicable" this is the WESM metering manual, the coverage is DUs, DCCs (all of which requires instrument transformers).	NGCP to TC NGCP has no objection on the comments and TC concerns have been incorporated in the new proposed wordings NGCP to PEMC Generally, a metering installation will require instrument transformers. However, there are loads which needs to be metered at the low voltage side of the power transformer either for technical or economic reasons. 1) Facilities required to be metered for WESM settlement, presently operating at very small loads. Installing the metering at the primary side (using Instrument	The RCC adopted the proponent's revised wording below based on comments: *2.5.1 General Requirements* *Metering installations**, if applicable,** shall include instrument transformers.* ***2.5.1.1. Requirements for Transmission Grid Instrument Transformers*** ***Instrument Transformers used for metering of Transmission Grid Connections shall adhere to the requirements of the prevailing Philippine Grid Code.*** ***2.5.1.2. Requirements for Embedded Generators Registered as WESM Participants*** ***Instrument Transformers used for metering of Embedded Generators registered as WESM Participants shall adhere to the requirements of***

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
			Instrument Transformers used for metering of Embedded Generators registered as WESM Participants shall adhere to the prevailing requirements of the Philippine Distribution Code. **The recommended specifications based on PDC 2017 Edition are provided as Appendix P and Appendix Q of this Manual.**			Transformers) will not only be too expensive but may also provide inaccurate measurements 2) Station Service facilities with space constraints at the HV side	***the prevailing Philippine Distribution Code.*** (discussion on Current Transformer specifications in Section 2.5.4)
					IEMOP: References to current specifications in the annexes and current version of PGC and PDC may require revisions in the manual every time the PGC and PDC standards are updated. Proposed Revised Wording: 2.5.1 General Requirements **2.5.1.1 Requirements for Transmission Grid Instrument Transformers** **Instrument Transformers used for**	NGCP to IEMOP NGCP has no objection on the comments and IEMOP concerns have been incorporated in the following new proposed wordings **"2.5.1 General Requirements** **Metering installations, if applicable, shall include instrument transformers.** **2.5.1.1. Requirements for Transmission Grid Instrument Transformers**	

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					metering of Transmission Grid Connections shall adhere to the prevailing requirements of the ~~PGC 2016 Edition~~ Philippine Grid Code. **2.5.1.2 Requirements for Embedded Generators Registered as WESM Participants** **Instrument Transformers used for metering of Embedded Generators registered as WESM Participants shall adhere to the prevailing requirements of the Philippine Distribution Code.**	**Instrument Transformers used for metering of Transmission Grid Connections shall adhere to the requirements of the prevailing Philippine Grid Code.** **2.5.1.2. Requirements for Embedded Generators Registered as WESM Participants** **Instrument Transformers used for metering of Embedded Generators registered as WESM Participants shall adhere to the requirements of the prevailing Philippine Distribution Code."**	
					MERALCO: We note that as long as the required guaranteed accuracy is met, there should be no cap on rated burden.	NGCP to MERALCO NGCP has no objection on the comments of MERALCO "as long as the required guaranteed accuracy is met"	

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					There are operational, security and technical reasons for using instrument transformers with higher rated burden. For instance, certain situations in end-user installations, e.g., instruments far from meters, require the use of instruments with higher rated burden to ensure security, safety, and sufficient MSP access to the meter. This may require an instrument with a rated burden higher than 5VA. Proposed to change the rated burden in the attached Appendix P and Q. <u>Appendix P:</u> Rated Burden: **<u>at least</u>** 5VA guaranteed accurate from 0% to 100% <u>Appendix Q:</u> Rated Burden: **<u>at least</u>** 75VA guaranteed	The reason why NGCP proposed to include "guaranteed accurate from 0% to 100% of rated burden" in this proposed amendment was because, NGCP finds the prevailing PGC requirement insufficient to guarantee the required accuracy. IEC and ANSI Standards do not require the CT to be certified accurate at low non-standard connected burden unless specified by the customer. Usually, the routine accuracy test is performed **CT** **IEC:** from 25%-100% of rated output (or down to 1VA for extended burden range).	

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					accurate from 0% to 100%	**ANSI:** Maximum rated burden, lower standard burden For a 5VA burden, accuracy is usually guaranteed only from 1.25VA**(IEC)** or 2.5VA **(ANSI)** while the actual connected burden at the metering installation can be lower than 1VA. **VT** **IEC:** from (18.75VA) 25%-(75VA) 100% of rated burden **ANSI:** from 0-100% of rated burden The actual connected burden can be as low as 1VA Using the word "at least" will make the prescribed 5VA and 75VA the minimum instead of maximum It is always a good engineering design practice to specify the CT burden rating as	

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
						close as possible to the actual connected burden so as NOT to extend the saturation characteristic of the CT core (which is dangerous for the meters in case of high fault currents) and ensure better accuracy/lower error in measurement	
Instrument Transformers	2.5	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. The following schemes shall not be allowed: a. The use of an instrument transformer for meters other than the registered WESM Meters; and	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. The following schemes shall not be allowed: a. The use of an instrument transformer for meters other than the registered WESM Meters **<u>except as</u>**	▪ To be consistent with PGC 2016 Edition 9.2.2.1 and the general guidelines in Section 2.5.2 which prescribes the exclusive use of instruments transformers for revenue metering purpose without limiting the use of instrument transformers to WESM registered meters. (NGCP assumes that the intent of this provisions of PGC 2016 Edition and	**<u>PEMC:</u>** *This is the provision in the PGC:* *GRM 9.2.2.1 (d) The use of "totalizing" and/or parallel connected Current Transformers shall not be allowed for revenue metering service. Likewise, the use of a single set of Voltage Transformers to serve more than one metering point shall not be allowed;* *Transformers shall not serve more than one purpose.*	NGCP to PEMC NGCP maintains its opinion that the sole purpose of the instrument transformers is for revenue metering. The ECA meter and the WESM meter are at the same metering point. One meter is used for ECA settlement while the other is for WESM	The RCC adopted the proponent's revised wording (based on DOE's comment): *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.* *The following schemes shall not be allowed:*

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
		b. Paralleling of current transformers.	**permitted in this section**; and b. Paralleling of current transformers. **The following scheme shall be temporarily permitted:** **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 by WESM metering until the end of the ECA cooperation period; provided that the ECA and WESM meters have separate meter enclosure/box and that the secondary terminals of the instrument transformers are properly sealed**.	WESM Manual may have considered special cases such as metering for existing facilities covered by ECA contracts between PSALM and IPP)	**IEMOP:** Is there a proposed period for the temporary permission related to ECA meters? Suggest to delete the word "temporarily" since the proposed permission will not expire Wording is also suggested to be revised for clarity on the exception of meters covered by ECA **Proposed Revised Wording:**	NGCP to IEMOP The proposed period for the temporary permission will expire at the end of the ECA cooperation period. After that the shared instrument transformers will be used solely for WESM Metering purpose NGCP recommends adopting the proposed wordings of DOE **"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**	*a. The use of an instrument transformer for meters other than the registered WESM Meters **except as permitted in this section**; and* *b. Paralleling of current transformers.* ***The following scheme shall be temporarily permitted:*** ***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.***

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

					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. The following schemes shall not be allowed: a. The use of an instrument transformer for meters other than the registered WESM Meters **except as permitted in this section**; and b. Paralleling of current transformers. **By way of exception, ~~The following scheme shall be temporarily permitted:~~meters covered by Energy Conversion Agreements (ECA)**	**attachment of other devices.** **The following schemes shall not be allowed:** **The use of an instrument transformer for meters other than the registered WESM Meters except as permitted in this section; and** **3. Paralleling of current transformers.** **The following scheme shall be temporarily permitted:** **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**	

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					contracts which were already in effect prior to the operation of WESM shall be ~~temporarily~~ permitted to share the instrument transformers used by WESM metering but only until the end of the ECA cooperation period; provided that the ECA and WESM meters have separate meter enclosure/box and that the secondary terminals of the instrument transformers are properly sealed.	**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."**	
					DOE: Minor revision Suggest to revise as follows: 1. Use of Instrument Transformers Instrument transformers supplying the revenue meter shall be used solely for the purposes of revenue metering and not	NGCP to DOE NGCP has no objection on the comments and DOE concerns have been incorporated in the new proposed wordings	

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					for any other purposes, including, but not limited to, the attachment of other devices. The following schemes shall not be allowed: The use of an instrument transformer for meters other than the registered WESM Meters **<u>except as permitted in this section</u>**; and Paralleling of current transformers. **<u>The following scheme shall be temporarily permitted:</u>** **<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</u>**		

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

<table>
<tr><th>Title</th><th>Section</th><th>Provision</th><th>Proposed Amendment</th><th>Rationale</th><th>Stakeholder's Comment</th><th>NGCP's Response</th><th>RCC Discussion/ Agreements</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td><u>transformers used by 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></td><td></td><td></td></tr>
<tr><td>Instrument Transformers</td><td>2.5</td><td>2.5.4.1. Current Transformers

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.</td><td>2.5.4.1. Current Transformers

Current transformers <u>for Generator or Load Customer Revenue Metering Facility</u> shall conform to the ~~IEC 44-1 Class 0.2 or ANSI C57.13 Class 0.3 or better of any instrument transformer~~ <u>following minimum requirements:</u>

<table><tr><td>Trading Parti</td><td>Accuracy Class</td><td>Rated Bur</td><td>Burden</td></tr></table></td><td>▪ To be consistent with the provision of the PGC 2016 Edition

▪ To provide supplementary requirements for the burden range in which the CT accuracy class is required to be defined or guaranteed

▪ To provide the updated version of IEC Standard for Current Transformers</td><td><u>PEMC</u>:

There are only two types of facilities, gen and load. No need to specify.

Suggest to revise:

Current transformers for Generator or Load Customer Revenue Metering Facility shall conform to the IEC 44-1 Class 0.2 or ANSI C57.13 Class 0.3 or better of any instrument transformer following minimum requirements:</td><td>NGCP to PEMC

NGCP has no objection on the comment of PEMC to delete

for Generator or Load Customer Revenue Metering Facility

Comment will be included in the new proposed wordings</td><td>The RCC noted that NGCP is proposing a supplementary requirement beyond what is specified in the PGC (i.e., 0-100% burden range), and accepted the NGCP's explanation (in response to MERALCO's comments) why said additional requirement is necessary to guarantee the accuracy of current transformers.

The RCC adopted the revised provision as follows:

2.5.4.1. Current Transformers</td></tr>
</table>

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

<table>
<tr><th>Title</th><th>Section</th><th>Provision</th><th>Proposed Amendment</th><th>Rationale</th><th>Stakeholder's Comment</th><th>NGCP's Response</th><th>RCC Discussion/ Agreements</th></tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>
<table>
<tr><th>cipant</th><th>ANSI C57.13</th><th>IEC 61689-1 and 2</th><th>den (1)</th><th>Range (2)</th></tr>
<tr><td>Generator</td><td>0.15</td><td>0.2s</td><td>5VA</td><td>0-100%</td></tr>
<tr><td>Load</td><td>0.3</td><td>0.2</td><td>5VA</td><td>0-100%</td></tr>
</table>
Notes: (1) Maximum Rated Burden
(2) Percent of Rated Burden wherein the accuracy class is guaranteed
</td>
<td></td>
<td>
<table>
<tr><th rowspan="2">Trading Participant</th><th colspan="2">Accuracy Class</th><th rowspan="2">Rated Burden (1)</th><th rowspan="2">Burden Range (2)</th></tr>
<tr><th>ANSI C57.13</th><th>IEC 61689-1 and 2</th></tr>
<tr><td>Generator</td><td>0.15</td><td>0.2s</td><td>5VA</td><td>0-100%</td></tr>
<tr><td>Load</td><td>0.3</td><td>0.2</td><td>5VA</td><td>0-100%</td></tr>
</table>
Notes: (1) Maximum Rated Burden
(2) Percent of Rated Burden wherein the accuracy class is guaranteed
</td>
<td></td>
<td>*Current transformers shall* ***adhere to the requirements of the prevailing PGC*** ~~*IEC 44-1 Class 0.2 or ANSI C57.13 Class 0.3 or better of any instrument transformer.*~~ ***In addition, the accuracy of the current transformers shall be guaranteed from 0-100% of the rated burden.***

Notes: 0% rated burden means no additional external burden is connected to the CT during testing. The inherent burden of the test instruments used are neglected.</td>
</tr>
</table>

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

					IEMOP: References to current specifications and current version of PGC and PDC may require revisions in the manual every time the PGC and PDC standards are updated. References to current specifications and current version of PGC and PDC are also proposed to be deleted to remove necessity to revise manual every time the PGC and PDC standards are updated. **Proposed Revised Wording:** 2.5.4.1. Current Transformers Current transformers **for Generator or Load Customer Revenue Metering Facility** shall conform to the **requirements of the Philippine Grid Code** ~~IEC 44-1 Class 0.2 or ANSI C57.13 Class 0.3 or~~	NGCP to IEMOP NGCP acknowledges the comments of IEMOP. However, the proposed revision is intended to supplement the requirements of PGC 2016 Appendix 2 which in NGCP's opinion is insufficient to guarantee the required accuracy. Specifically, the absence of burden range requirements wherein accuracy is guaranteed (Please see NGCP comments on Section 2.5.1) Without this amendment, there will be no definite criteria for interpretation of the required burden range wherein accuracy is guaranteed NGCP recommends adopting the proposed wordings of PEMC	

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

					better of any instrument transformer **following minimum requirements:** ~~Trading Participant~~ | ~~Accuracy Class~~ ~~ANSI C57.13~~ ~~IEC 61689-1 and 2~~ | ~~m~~ ~~Generator~~ | ~~0.15~~ ~~0.2s~~ | ~~5~~ ~~Load~~ | ~~0.3~~ ~~0.2~~ | ~~5~~ ~~Notes: (1) Maximum Rated Burden (2) Percent of Rated Burden wherein the accuracy class is guaranteed~~ **MERALCO:** The burden of instrument transformer should not have a cap. If a parameter will have to be set then it should be a minimum. Meter service providers should not be prevented from having facilities as required by specific end-user circumstances that	**"2.5.4.1. Current Transformers** **Current transformers for Metering shall conform to the following minimum requirements:"** NGCP to MERALCO NGCP disagrees with the opinion of MERALCO on the following: "If a parameter will have to be set then it should be a minimum."	

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

					can perform better than minimum standard if this will perform as required and is a metering facility that is accurate, safe, accessible, and secure. Proposed Revised Wording: "Note 1: **<u>Minimum</u>** Rated Burden"	NGCP maintains the opinion that good engineering design should be practice in providing metering service. Specifically, The CT burden rating should be as close as possible to the actual connected burden. Please note that PGC 2016 GRM 9.2.3.2 also limits the actual connected burden to 2.5VA "The total burden of the metering circuit, consisting of the burdens coming from all the connected devices and the secondary cable shall not exceed fifty percent (50%) of the specified burden of the Current Transformer in Appendix 2;" (Please see NGCP comments on Section 2.5.1)	

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

<table>
<tr><th>Title</th><th>Section</th><th>Provision</th><th>Proposed Amendment</th><th>Rationale</th><th>Stakeholder's Comment</th><th>NGCP's Response</th><th>RCC Discussion/ Agreements</th></tr>
<tr>
<td rowspan="2">Instrument Transformers</td>
<td rowspan="2">2.5</td>
<td rowspan="2">2.5.4.2. Voltage Transformers

Voltage transformers shall conform to the IEC 6044-2 Class 0.2 or ANSI C57.13 Class 0.3 of any instrument transformer.</td>
<td rowspan="2">2.5.4.2. Voltage Transformers

Voltage transformers <u>for Generator or Load Customer Revenue Metering Facility</u> shall conform to the ~~IEC 6044-2 Class 0.2 or ANSI C57.13 Class 0.3 of any instrument transformer~~ <u>following minimum requirements:</u>
<table>
<tr><th rowspan="2">Trading Participant</th><th colspan="2">Accuracy Class</th><th rowspan="2">Ra
c
Bu
e
(1</th></tr>
<tr><th>ANSI C57.13</th><th>IEC 61689 - 1 and 3</th></tr>
<tr><td>Generator</td><td>0.15</td><td>0.2</td><td>75
A</td></tr>
<tr><td>Load</td><td>0.3</td><td>0.2</td><td>75
A</td></tr>
</table>
Notes: (1) Maximum Rated Burden
(2) Percent of Rated Burden wherein the accuracy class is guaranteed</td>
<td rowspan="2">▪ To be consistent with the provision of the PGC 2016 Edition

▪ To provide supplementary requirements for the burden range in which the VT accuracy class is required to be defined or guaranteed

▪ To provide the updated version of IEC Standard for Voltage Transformers</td>
<td><u>PEMC</u>:

Same as above</td>
<td>NGCP to PEMC

NGCP has no objection on the comment of PEMC to delete

for Generator or Load Customer Revenue Metering Facility

Comment will be included in the new proposed wordings.</td>
<td rowspan="2">To be consistent with the preceding provisions pertaining to current transformers, the RCC adopted the revised wording as follows:

2.5.4.2. Voltage Transformers

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></td>
</tr>
<tr>
<td><u>IEMOP:</u>

References to current specifications and current version of PGC and PDC may require revisions in the manual every time the PGC and PDC standards are updated.

References to current specifications and current version of PGC and PDC are also proposed to be deleted to remove necessity to revise manual every time the PGC and PDC standards are updated.</td>
<td>NGCP to IEMOP

NGCP has no objection on the comments of IEMOP. However, the proposed revision is intended to supplement the prevailing requirements of PGC 2016 Appendix 2 which in NGCP's opinion is insufficient to guarantee the required accuracy. Specifically, the absence of burden range requirements wherein accuracy is guaranteed</td>
</tr>
</table>

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

<table>
<tr><th>Title</th><th>Section</th><th>Provision</th><th>Proposed Amendment</th><th>Rationale</th><th>Stakeholder's Comment</th><th>NGCP's Response</th><th>RCC Discussion/ Agreements</th></tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Proposed Revised Wording:
2.5.4.2. Voltage Transformers

Voltage transformers <u>for Generator or Load Customer Revenue Metering Facility</u> shall conform to the <u>requirements of the Philippine Grid Code</u> ~~IEC 6044-2 Class 0.2 or ANSI C57.13 Class 0.3 of any instrument transformer~~ <u>~~following~~</u> <u>~~minimum requirements:~~</u>
<table>
<tr><td rowspan="2">~~Trading Participant~~</td><td colspan="2">~~Accuracy Class~~</td><td rowspan="2">~~P~~
~~e~~
~~B~~
~~e~~
~~(~~</td></tr>
<tr><td>~~ANSI C57.13~~</td><td>~~IEC 61689-1 and 3~~</td></tr>
<tr><td>~~Generator~~</td><td>~~0.15~~</td><td>~~0.2~~</td><td>~~7~~
~~A~~</td></tr>
<tr><td>~~Load~~</td><td>~~0.3~~</td><td>~~0.2~~</td><td>~~7~~
~~A~~</td></tr>
</table>
~~Notes: (1) Maximum Rated Burden~~
~~(2) Percent of Rated Burden wherein the~~</td>
<td>(Please see NGCP comments on Section 2.5.1)

NGCP recommends adopting the proposed wordings of PEMC

"2.5.4.2. Voltage Transformers

Voltage transformers for Metering shall conform to the following minimum requirements:"</td>
<td></td>
</tr>
</table>

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					~~accuracy class is guaranteed~~		
Instrument Transformers	2.5	2.5.4.3. Proof of Accuracy Compliance Proof of compliance with Section 5.3.2 shall be provided in the form of factory test cards complete with serial numbers.	2.5.4.3. Proof of Accuracy Compliance Proof of compliance with Section**s** ~~5.3.2~~ **2.5.4.1 and 2.5.4.2** shall be provided in the form of factory **routine** test ~~cards complete with~~ **reports showing the** serial numbers **of the instrument transformers.**	▪ To refer to appropriate section of the WESM manual for amendment ▪ To be consistent with the terms used by ANSI and IEC standards	**MERALCO:** More recent Routine Accuracy Test reports performed by the MSP are also acceptable. Proposed Revised Wording: Proof of compliance with Sections 2.5.4.1 and 2.5.4.2 shall be provided in the form of factory routine test reports showing the serial numbers of the instrument transformers. **In case of**	NGCP to MERALCO NGCP maintains its proposal	In response to MERALCO's comment, Mr. Estravez added that MSPs' test reports may not be equivalent to factory test reports. On Mr. Zagala's comment that factory test reports may eventually be no longer sound since the test is done even prior to installation, Mr. Estravez responded that permanence of accuracy tests for instrument transformers remain acceptable years after the test was conducted. He added that this is consistent with the PGC which only requires that such accuracy tests be performed every 15 years. On the part of NGCP,

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					unavailability of such report, laboratory / routine / acceptance test report with accuracy and burden tests performed by the MSP shall also be acceptable.		factory test reports serve as reference whenever they conduct accuracy tests of instrument transformers. The RCC adopted the original proposed amendment: *2.5.4.4. Proof of Accuracy Compliance* *Proof of compliance with Section**s** ~~5.3.2~~ **2.5.4.1 and 2.5.4.2** shall be provided in the form of factory **routine** test ~~cards complete with~~ **reports showing the** serial numbers **of the instrument transformers.***
Instrument Transformers	2.5	2.5.4.4. Other Requirements Relating to Accuracy Where accuracy tests are required, they shall comply with the following requirements: a. tests shall be carried out by a third-party testing	2.5.4.4. Other Requirements Relating to Accuracy Where accuracy tests are required, they shall comply with the following requirements: a. tests shall be carried out by ~~a third-party testing~~	▪ 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 DC2016-05-007[3]:	**PEMC:** *Do we have separate national standards? PEC only provides for sizes of wirings and clearances.*	NGCP to PEMC The DOST-ITDI National Metrology Laboratory (NML) is responsible for establishing and maintaining the national measurements standards of the Philippines. NGCP equipment used for	The RCC adopted the NGCP's original proposal: *2.5.4.5. Other Requirements Relating to Accuracy* *Where accuracy tests are required, they shall comply with the following requirements:*

[3] 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

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
		agency using equipment traceable to International Standards; b. tests shall be conducted with the suitable burdens connected to each current transformer; c. additional tests shall be conducted at other suitable burdens if the existing burden is expected to change in the future; d. tests shall include ratio and phase-angle error tests; e. ratio and phase-angle tests of current transformers shall be 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; f. test results shall provide correction factors to be applied to both active and	~~agency~~ **the Metering Service Provider** using equipment traceable to **National or** International Standards **of measurements;** ~~b. tests shall be conducted with the suitable burdens connected to each current transformer;~~ ~~c. additional tests shall be conducted at other suitable burdens if the existing burden is expected to change in the future;~~ ~~d~~**b.** tests **shall include ratio and phase-angle error tests;** ~~e~~**c.** ratio and phase-angle tests of current transformers shall be 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~~ **test currents based on the accuracy**	*"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:* *a) Irrespective of the ownership of the 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;* *b) The relevant Trading Participant shall collaborate with the MSP on the conduct of the said*		accuracy testing of WESM meters are traceable to DOST-ITDI NML. The national or international standards referred to in the provision are the instruments or apparatus which serve as the primary sources of calibration traceability	*b. tests shall be carried out by ~~a third party testing agency~~* ***the Metering Service Provider*** *using equipment traceable to* ***National or*** *International Standards* ***of measurements;*** *~~b. tests shall be conducted with the suitable burdens connected to each current transformer;~~* *~~c. additional tests shall be conducted at other suitable burdens if the existing burden is expected to change in the future;~~* *~~d~~**b.** tests shall include ratio and phase-angle error tests;* *~~e~~**c.** ratio and phase-angle tests of current transformers shall be 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~~* ***test currents based on the accuracy curve as defined by the applicable standards wherein the current transformer was designed;***

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
		reactive power at each test point	**curve as defined by the applicable standards wherein the current transformer was designed;** ~~f~~**d.** test results shall provide **ratio** correction factors **at each test point which may** be applied, **if deemed necessary for WESM settlement,** to both active and reactive power	*testing, calibration, and maintenance, and shall allow the MSP to access the said Metering Installations at all times; and* *c) The MSP shall perform such regular testing, calibration and 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.* ▪ To ensure that the equipment is being tested based on the standards wherein they were designed ▪ To provide option not to apply the correction			~~f~~***d.*** *test results shall provide* ***ratio*** *correction factors* ***at each test point which may*** *be applied,* ***if deemed necessary for WESM settlement,*** *to both active and reactive power* ~~*at each test point.*~~

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
				factor when the measured errors are within acceptable limits consistent with the accuracy class wherein the equipment were designed			
Instrument Transformers	2.5	2.5.5.2. Not to Exceed Nameplate Ratings The measurement of calculation sshall 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 s~~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~~ **specified under Section 2.5.4.1.**	▪ To refer the appropriate section of the WESM manual for amendment	**MERALCO:** Consistent with our comment in section 2.5.4.1, the burden of instrument transformer should not have a cap. If a parameter will have to be set then it should be a minimum. Moreover, the minimum requirements for instrument transformers used by embedded generators should be based on PDC 2017 Edition. Proposed Revised Wording:	NGCP to MERALCO The amendment being proposed by MERALCO is on the specifications for the rated burden of the CT while this provision is about the actual connected burden such as the secondary wires, meters etc. The intention of the provision is to ensure that the actual connected burden shall not exceed the rated burden limits of the CT. It provides the maximum allowable connected burden consistent with the provisions of PGC 2016 GRM 9.2.3.2	The RCC adopted the NGCP's original proposal: *2.5.5.2. Not to Exceed Nameplate Ratings* *The measurement ~~of calculation s~~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~~* ***specified under Section 2.5.4.1.***

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					2.5.5.2. Not to Exceed Nameplate Ratings The measurement shall verify that actual burdens in service ~~do not exceed the rated burden limits~~ **meets the minimum requirements** specified under Section 2.5.4.1. **Moreover, the minimum requirements for instrument transformers used by embedded generators shall adhere to the prevailing requirements of the PDC 2017 Edition.**	"The total burden of the metering circuit, consisting of the burdens coming from all the connected devices and the secondary cable shall not exceed fifty percent (50%) of the specified burden of the Current Transformer in Appendix 2;"	
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~~	▪ To refer the appropriate section of the WESM manual for amendment	**MERALCO:** Consistent with our comment in section 2.5.4.1, the burden of instrument transformer should not have a cap. If a parameter will have to be set then it should be a minimum.	NGCP to MERALCO The amendment being proposed by MERALCO is on the specifications for the rated burden of the VT while this provision is about the actual connected burden such as the	The RCC adopted the NGCP's original proposal: *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~~*

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
			~~0.3 of any instrument transformer~~ **specified under Section 2.5.4.1.**		Moreover, the minimum requirements for instrument transformers used by embedded generators should be based on PDC 2017 Edition. Proposed Revised Wording: 2.5.5.4. Not to Exceed Nameplate Ratings The measurement shall verify that actual burdens in service ~~do not exceed the rated burden limits~~ **meets the minimum requirements** specified under Section 2.5.4.1. **Moreover, the minimum requirements for instrument transformers used by embedded generators shall adhere to the prevailing requirements of the PDC 2017 Edition.**	secondary wires, meters etc. The intention of the provision is to ensure that the actual connected burden shall not exceed the rated burden limits of the VT. It provides the maximum allowable connected burden consistent with the provisions of PGC 2016 GRM 9.2.3.1 The total burden of the metering circuit, consisting of the burdens coming from all the connected devices and the secondary cables shall not exceed the specified burden of the Voltage Transformer in Appendix 2;	~~*IEC 6044-2 Class 0.2 or ANSI C57.13 Class 0.3 of any instrument transformer*~~ ***specified under Section 2.5.4.2.***

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

<table>
<tr><th>Title</th><th>Section</th><th>Provision</th><th>Proposed Amendment</th><th>Rationale</th><th>Stakeholder's Comment</th><th>NGCP's Response</th><th>RCC Discussion/ Agreements</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr>
<td>Instrument Transformers</td>
<td>2.5</td>
<td>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:
<table>
<tr><th>Nominal System Voltage</th><th>Max. Rated Voltage</th><th>Standard Lightning Impulse Withstand Voltage</th><th>Max. Continuous Operating Voltage</th><th>Max. Nominal Discharge Current</th></tr>
<tr><td>[KV]</td><td>[KV]</td><td>[KV]</td><td>[KV]</td><td>[KA]</td></tr>
<tr><td>13.8</td><td>15</td><td>95</td><td>12</td><td>10</td></tr>
<tr><td>34.5</td><td>36</td><td>170</td><td>29</td><td>10</td></tr>
<tr><td>69</td><td>72.5</td><td>325</td><td>58</td><td>10</td></tr>
<tr><td>115</td><td>123</td><td>550</td><td>98</td><td>10</td></tr>
<tr><td>138</td><td>145</td><td>650</td><td>116</td><td>10</td></tr>
<tr><td>230</td><td>245</td><td>900</td><td>196</td><td>10</td></tr>
<tr><td>500</td><td>525</td><td>1550</td><td>420</td><td>20</td></tr>
</table>
</td>
<td>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:
<table>
<tr><th>Nominal System Voltage</th><th>Max. Rated Voltage</th><th>Standard Lightning Impulse Withstand Voltage</th><th>Max. Continuous Operating Voltage</th><th>Max. Nominal Discharge Current</th></tr>
<tr><td>[KV]</td><td>[KV]</td><td>[KV]</td><td>[KV]</td><td>[KA]</td></tr>
<tr><td>13.8</td><td>15</td><td>95</td><td>12</td><td>10</td></tr>
<tr><td>34.5</td><td>36</td><td>170</td><td>29</td><td>10</td></tr>
<tr><td>69</td><td>72.5</td><td>325</td><td>58</td><td>10</td></tr>
<tr><td>115</td><td>123</td><td>550</td><td>98</td><td>10</td></tr>
<tr><td>138</td><td>145</td><td>650</td><td>116</td><td>10</td></tr>
<tr><td>230</td><td>245</td><td>900</td><td>196</td><td>10</td></tr>
<tr><td>500</td><td>525</td><td>1550</td><td>420</td><td>20</td></tr>
</table>
</td>
<td>▪ To clarify that the requirements applies to WESM Metering in general

▪ To clarify that there is no more need for redundant Surge Arresters for the metering facility if there are already Surge Arresters in the facility which can provide the same required protection</td>
<td><u>TC:</u>

<u>Proposed wording:</u>
"Metering installations shall be protected against electrical surges. Surge Arresters that are installed shall meet the minimum requirements listed below."

(The last proposed clause can be removed with the proposed wording)</td>
<td>NGCP to TC

NGCP maintains its proposal for clarity</td>
<td>The RCC adopted the NGCP's original proposal:

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:
<table>
<tr><th>Nominal System Voltage</th><th>Max. Rated Voltage</th><th>Standard Lightning Impulse Withstand Voltage</th><th>Max. Continuous Operating Voltage</th><th>Max. Nominal Discharge Current</th><th>Maximum Discha Clas</th></tr>
<tr><td>[KV]</td><td>[KV]</td><td>[KV]</td><td>[KV]</td><td>[KA]</td><td>IEC</td></tr>
<tr><td>13.8</td><td>15</td><td>95</td><td>12</td><td>10</td><td>CL 2</td></tr>
<tr><td>34.5</td><td>36</td><td>170</td><td>29</td><td>10</td><td>CL 2</td></tr>
<tr><td>69</td><td>72.5</td><td>325</td><td>58</td><td>10</td><td>CL 2</td></tr>
<tr><td>115</td><td>123</td><td>550</td><td>98</td><td>10</td><td>CL 2</td></tr>
<tr><td>138</td><td>145</td><td>650</td><td>116</td><td>10</td><td>CL 2</td></tr>
<tr><td>230</td><td>245</td><td>900</td><td>196</td><td>10</td><td>CL 2</td></tr>
<tr><td>500</td><td>525</td><td>1550</td><td>420</td><td>20</td><td>CL 4</td></tr>
</table>
</td>
</tr>
</table>

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
			If there are already existing Surge Arresters in the facility where the Metering Installation is located which already provides the protection as required by this WESM Manual, installation of additional metering Surge Arresters is no longer necessary.				***If there are already existing Surge Arresters in the facility where the Metering Installation is located which already provides the protection as required by this WESM Manual, installation of additional metering Surge Arresters is no longer necessary.***
Primary Connections	2.6	2.6.1. Location of Primary Terminals of Current Transformer The primary terminals of each current transformer shall be located as close as practicable to the Metering Point.	2.6.1. Location of Primary Terminals of Current Transformer The primary terminals of each current transformer shall be located as close as practicable to the **prescribed Connection** ~~Metering~~ Point.	▪ To designate the prescribed connection point of the metered facility as reference	**PEMC:** Since it is provided in the PGC that the connection and metering point shall be collocated, the change is not necessary.	NGCP to PEMC NGCP's proposal is intended to provide clarification on the original provision "The primary terminals of each current transformer shall be located as close as practicable to the Metering Point." Current Transformer is a component of a metering point as defined in PGC 2016 9.2.2.3 (a). Its already part of the metering point so there is no need for the primary terminals of CT to be as close as	The RCC adopted the NGCP's original proposal: *2.6.1. Location of Primary Terminals of Current Transformer* *The primary terminals of each current transformer shall be located as close as practicable to the* ***prescribed Connection*** *~~Metering~~ Point.*

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
						practicable to the metering point. NGCP assumes that the provision is referring to the "metered facility" instead of the metering point. We recommended the use of connection point to be consistent with the general term use to define the metering point location	
Primary Connections	2.6	2.6.2. Location of Primary Terminals of Voltage Transformer The primary terminals of each voltage transformer shall be located as close as practicable to the Metering Point.	2.6.2. Location of Primary Terminals of Voltage Transformer The primary terminals of each voltage transformer shall be located as close as practicable to the **prescribed Connection** ~~Metering~~ Point.	▪ To designate the prescribed connection point of the metered facility as reference	**PEMC:** Same as above.	NGCP to PEMC NGCP's proposal is intended to provide clarification on the original provision "The primary terminals of each voltage transformer shall be located as close as practicable to the Metering Point." Voltage Transformer is a component of a metering point as defined in PGC 2016 9.2.2.3 (a). Its already	The RCC adopted the NGCP's original proposal: *2.6.2. Location of Primary Terminals of Voltage Transformer* *The primary terminals of each voltage transformer shall be located as close as practicable to the* ***prescribed Connection*** *~~Metering~~ Point.*

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
						part of the metering point so there is no need for the primary terminals of the VT to be as close as practicable to the metering point. NGCP assumes that the provision is referring to the "metered facility" instead of the metering point. We recommended the use of connection point to be consistent with the general term use to define the metering point location	
Secondary Connections for Instrument Transformers	2.7	2.7.3. Codes and Conditions Instrument transformer secondary cabling and cabling accessories shall comply with the following codes and conditions: 2.7.3.1. the Philippine Electrical Code; 2.7.3.2. the main meter shall be supplied from dedicated	2.7.3. Codes and Conditions Instrument transformer secondary cabling and cabling accessories shall comply with the following codes and conditions: 2.7.3.1. the Philippine Electrical Code; 2.7.3.2. the ~~main~~ **revenue** meter**s** shall be ~~supplied~~	▪ 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 back-up meters as the minimum requirements for redundancy. (Sections 2.7.3.3 and	**TC:** Suggest to reword: 2.7.3.2. the **revenue** meter**s** shall be **provided with** dedicated current **and voltage** transformers used **only for WESM Metering, except as permitted in Section 2.5.2**;	NGCP to TC NGCP recommends to adopt the proposed wordings of TC **"2.7.3.2. the meters shall be provided with dedicated current and voltage transformers used only for WESM Metering, except as permitted in Section 2.5.2;"**	On MERALCO's comment, Mr. Estravez stated that the proposal aims to ensure security over economy. The requirement prevents a single point of failure, such that if one cable is cut-off, the other cables will not be affected. Likewise, this is consistent with the 9.3.2.1 (f) of Philippine Grid Code.

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
		current transformers used for no other purpose; 2.7.3.3. voltage transformers with one secondary winding shall be dedicated to the main metering and used for no other purpose; 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; 2.7.3.5. electrical connection to the instrument transformer secondary terminals shall not be outside of the meter box; 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 2.7.3.7. each secondary terminal of each instrument transformer shall be brought to the test block on a separate conductor.	~~from~~ **provided with** dedicated current **and voltage** transformers used for no purpose **other than WESM Metering, except as permitted in Section 2.5.2**; ~~2.7.3.3. voltage transformers with one secondary winding shall be dedicated to the main metering and used for no other purpose;~~ ~~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;~~ **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;** **2.7.3.4. voltage transformer may be supplied with more than**	2.7.3.4 for deletion of Issue 12.0) ▪ 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	**PEMC:** *Same comment for 2.5.2* **MERALCO:** For high voltages, the proposed provision would be applicable as having separate conductors facilitates testing and maintenance. On the other hand, for low voltages, there is no additional benefit in bringing each secondary terminal of each voltage transformer to the test block on a separate conductor. Requiring this for voltage transformers would result in additional costs to the customers. However, there is benefit in doing this for current transformers. Imposing grid-level requirements on the connection of embedded generators may hinder DUs from performing its duties as MSP for	NGCP to PEMC See response of NGCP on PEMC Comment on Section 2.5.2 NGCP to MERALCO For RCC's consideration of MERALCO's comments on Section 2.7.3.7 of WESM Manual on Metering 12.0 In NGCP's opinion, the rationale behind the separate conductors as prescribed in this WESM Manual and PGC is to ensure security of the secondary wirings over economy	The RCC adopted the revised wording based on TC's comment: *2.7.3. Codes and Conditions* *Instrument transformer secondary cabling and cabling accessories shall comply with the following codes and conditions:* *2.7.3.1. the Philippine Electrical Code;* *2.7.3.2. the ~~main~~ meters shall be ~~supplied~~**provided** ~~from~~**with** dedicated current and voltage transformers used ~~no other purpose~~ **only for WESM Metering, except as permitted in Section 2.5.2**;* ~~*2.7.3.3. voltage transformers with one secondary winding shall be dedicated to the main metering and used for no other purpose;*~~ ~~*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;*~~ ***2.7.3.3 current transformers may be supplied with more***

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
			one secondary windings intended for the revenue meters and used for no other purpose; 2.7.3.5. electrical connection to the instrument transformer secondary terminals shall not be outside of the meter box; 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 2.7.3.7. each secondary terminal of each instrument transformer shall be brought to the test block on a separate conductor.		embedded generators and increase the costs to provide the service to these customers. Further, many DUs have also developed their own best practices over the years that would be more tailor-fit for the embedded generators connected to their network. Proposed Revised Wording: 2.7.3.7 each secondary terminal of each ~~instrument~~ **current** transformer shall be brought to the test block on a separate conductor.		***than one secondary core. However, no secondary core other than those intended for metering may be provided;*** ***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;*** *2.7.3.5. electrical connection to the instrument transformer secondary terminals shall not be outside of the meter box;* *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* *2.7.3.7. each secondary terminal of each instrument transformer shall be brought to the test block on a separate conductor.*
Security of Metering Installati	2.9		2.9.1.1. Instrument transformers connections	▪ To include primary terminals in the security provision.	**PEMC:** *Retain original provision. It covers the concerns.*	NGCP to PEMC NGCP has no objection on the comments and recommends adopting	The NGCP relayed that a ratio-tap changing facility is part of an instrument transformer. Secondary tap-changing facilities are commonly secured with a

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
on and Data		2.9.1.1.Instrument transformers connections Secondary cabling shall be secure, tamper-resistant and compliant with the PGC requirements on security of registered revenue metering Installations and metering data.	**Primary and** secondary cablings**s and connections** shall be secure, tamper-resistant and compliant with the PGC requirements on security of registered revenue metering Installations and metering data. **Any ratio-tap changing facility which cannot be secured using security seal or its equivalent shall not be permitted**	▪ To emphasize the need for securing the ratio tap changing facility with security seals or equivalent	Proposed Revised Wording: **Primary and** secondary cablings **and connections** shall be secure, tamper resistant and compliant with the PGC requirements **of the prevailing Philippine Grid Code** on security of registered revenue metering Installations and metering data. **Any ratio-tap changing facility which cannot be secured using security seal or its equivalent shall not be permitted**	the proposed rewording of PEMC **"2.9.1.1. Instrument transformers connections** **Primary and secondary cablings and connections shall be secure, tamper-resistant and compliant with the requirements of the prevailing Philippine Grid Code on security of registered revenue metering Installations and metering data. Any ratio-tap changing facility which cannot be secured using security seal or its equivalent shall not be permitted"**	box, while primary tap-changing facilities are located at the high-voltage side. Most primary tap changing facilitates are not secured. From experience, Mr. Estravez stated that tap changing facilities can still be accessed regardless where they are located. A significant amount of meter data may disappear or be compromised if this facility is stolen or tampered. The RCC adopted PEMC's comment: ***2.9.1.1. Instrument transformers connections*** ***Primary and*** *~~S~~secondary cablings* ***and connections*** *shall be secure, tamper-resistant and compliant with the ~~PGC~~ requirements* ***of the prevailing Philippine Grid Code*** *on security of registered revenue metering Installations and metering data.* ***Any ratio-tap changing facility which cannot be secured using security seal or its equivalent shall not be permitted.***
					MERALCO: Primary taps and cabling for medium and high voltage metering facilities cannot be practically and safely secured because these are high voltage.	NGCP to MERALCO NGCP disagrees with the position of MERALCO. Being high voltage does not provide deterrence to pilferage and tampering.	

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					Being high voltage already deters pilferage or tampering at this point. It is not common engineering practice to secure the Ratio-tap changing facility, which is high voltage, using security seal or its equivalent. **Proposed Revised Wording:** We propose to retain the original provision: 2.9.1.1 Instrument transformers connections Secondary cabling shall be secure, tamper-resistant and compliant with the PGC requirements on security of registered revenue metering Installations and metering data.	It is also not impossible to security primary tap changing facilities with security seals	

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
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 Tabl7)	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. **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 is no longer necessary.** Metering perimeter shall also be well lighted and free from any unwanted materials, equipment, vegetation, etc. (refer Table 7)	▪ 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	**PEMC:** *Retain original provision. It covers the concerns.*	NGCP to PEMC For clarity, NGCP proposes to amend the original provision in consideration also of MERALCO's concern	The RCC adopted the proponent's revision: *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.* ***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 is no longer necessary. A perimeter fence is also not required for pole-mounted, vault-type and other similarly secured metering installations.*** *Metering perimeter shall also be well lighted and free from any unwanted materials, equipment, vegetation, etc. (refer Table 7).* ***Lighting shall be provided by the owner of the perimeter where the metering installation is located.***
					MERALCO: As mentioned in the final report for the 3rd Retail Metering Installation Audit (3rd RMIA) page 75, in cases wherein the metering installation is pole-mounted there is no need to have a perimeter fence. The same should also apply to metering installations inside a vault. Lighting in the metering parameter should be provided by the customer, since the delivery voltage of the DU is high voltage. Having low voltage may increase the risk of illegal connection. Proposed Revised Wording:	NGCP to MERALCO NGCP has no objection on the proposed amendments of MERALCO and is considered in the following new proposed wordings: **"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. If the Metering Installation is located inside a perimeter which already provides equivalent**	

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					2.9.1.7. Metering Perimeter	**security as required by this WESM Manual, installation of additional perimeter fence is no longer necessary. A perimeter fence is also not required for pole-mounted, vault-type and other similarly secured metering installations.** **Metering perimeter shall also be well lighted and free from any unwanted materials, equipment, vegetation, etc. (refer Table 7). Lighting shall be provided by the owner of the perimeter where the metering installation is located."**	

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					The Metering Installation shall be secured by a perimeter fence similar to Figure 7 if applicable and its gate properly padlocked, sealed and secured. 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 is no longer necessary. **A perimeter fence is also not required for pole-mounted, vault-type and other similarly secured metering installations.** Metering perimeter shall also be well lighted and free from any unwanted materials, equipment, vegetation, etc. **Lighting shall be provided by the generator, load customer, or embedded generator** (refer Table 7)		

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
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 2.10.2. The minimum requirement is partial redundant metering using a single set of instrument	2.10.1 A redundant Metering Installation can be achieved **using a single set of instrument transformers approved by the Market Operator where the main and alternate meters are connected to either common or separate core.** ~~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~~	▪ 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 comparison i.e. KW and KWH	**TC:** Correct abbreviation of kilowatt-hour is kWh not kWH. Please replace kWH with **kWh** in the entire document **PEMC:** *Metering data is a more general term. Suggest to retain original provision.* **IEMOP:** The Market Operator will only approve the application of redundant metering installation based on the criteria in this manual. It is proposed that the approval of the Market Operator be removed in the provision Proposed Revised Wording:	NGCP to TC NGCP agrees with the comment of TC NGCP to PEMC NGCP proposes the used of specific parameters for clarity. There are other recorded parameters which do not require comparison as they are not used for settlement in the WESM NGCP to IEMOP NGCP has no objection on the comment of IEMOP and has adopted the recommendation in the new proposed wordings **"2.10.1 A redundant Metering Installation can be achieved using a single set of instrument transformers to either common or separate core"**	Mr. Estravez stated that dual metering is costly and is not practiced. As for the MO being the proposed approving authority on redundant metering, IEMOP explained that it does not have the expertise and capability to perform this task. The proponent agreed with IEMOP and stated that securing approval on redundant metering may already not be necessary. For MERALCO's suggestion to add "…**or in cases where the deviations are noticeable…",** Mr. Estravez stated that there should be first criteria to qualify what is 'noticeable'. The RCC adopted the proponent's revision based on the comments received: ***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.*** ~~*a. Dual metering using two independent sets of instrument transformers*~~

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
		transformers where the main and back-up meters are in series or in parallel and connected to a common core. 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.	2.10.2. The minimum requirement ~~is partial~~ **for** redundant metering **is** using a single set of instrument transformers where**in** the main and back-up meters are in series-parallel and connected to a common core. 2.10.3. The ~~metering~~ **metered energy (kWH) and demand (kW)** 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.		2.10.1 A redundant Metering Installation can be achieved **using a single set of instrument transformers** ~~approved by the Market Operator~~ **where the main and alternate meters are connected to either common or separate core.** ~~in one of two ways:~~ ~~c. 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~~ ~~d. Partial redundant metering using a single set of instrument transformers approved by the~~		~~*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*~~ *2.10.2. The minimum requirement* ***for****~~is partial~~ redundant metering is using a single set of instrument transformers wherein the main and* ***alternate****~~back-up~~ meters are in series****-parallel*** *~~or in parallel~~ and connected to a common core.* *2.10.3. The meter****ed****~~ing~~* ***energy (kWh) and demand (kW)*** *data recorded by the main and* ***alternate****~~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*

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					~~Market Operator where both the main and alternate meters are connected to either common or separate core~~ 2.10.2. The minimum requirement ~~is partial~~ **for** redundant metering **is** using a single set of instrument transformers where**in** the main and back-up meters are in series-parallel and connected to a common core. 2.10.3. The ~~metering~~ **metered energy (kWH) and demand (kW)** 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		*exceeds this value, the MSP must investigate and correct the causes of such deviations not later than three (3) months from discovery.*

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					three (3) months from discovery.		
					<u>MERALCO:</u> ▪ For consistency with PGC 2016 Edition, change back-up meter to alternate meter in Sections 2.10.2 and 2.10.3. ▪ To be specific and to provide upper and lower limit on the deviation of metering data between main and alternate meter. ▪ To consider deviations between main and alternate meters based on historical comparison of meter data. Proposed Revised Wording "2.10.2. The minimum requirement for redundant metering is using a single	NGCP to MERALCO NGCP has no objection on the comment of MERALCO and has adopted the recommendation in the new proposed wordings **"2.10.2. The minimum requirement for redundant metering is using a single set of instrument transformers wherein the main and alternate meters are in series-parallel and connected to a common core."** NGCP agrees with the following comments of MERALCO ▪ For consistency with PGC 2016 Edition, change back-up meter to alternate meter in	

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					set of instrument transformers wherein the main and **alternate** meters are in series-parallel and connected to a common core." "2.10.3. The metered energy (kWh) and demand (kW) data recorded by the main and **alternate** Meters must not deviate by more than **+/-** 0.6% of the monthly average values recorded by the meters for three (3) consecutive billing periods **or in cases where the deviations are noticeable in the historical comparison of main and alternate meter data**. The MSP must investigate and correct the causes of such deviations not later than three (3) months from discovery."	Sections 2.10.2 and 2.10.3. □ To be specific and to provide upper and lower limit on the deviation of metering data between main and alternate meter. The following are recommended for adoption **"2.10.3. The metered energy (kWh) and demand (kW) data recorded by the main and alternate 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)**	

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
						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: 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; b. ERC has tested/verified and sealed the meter; c. All non-compliant meters shall be replaced within six (6) months from the effectivity of registration in the WESM; d. All non-compliant instrument transformers	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: ~~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;~~ ~~b~~**a.** ERC has tested/verified and sealed the meter; ~~c~~**b**. All non-compliant meters **to Section 2.4 of this manual, unless the only non-compliance is the mass memory requirements,** shall be replaced within six (6)	▪ To recommend deletion of section 2.11a which is being recommended for transfer to section 2.4 ▪ 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	**PEMC:** *Suggest to retain, this shall cover existing metering installation which may need not be replaced if already capable.* *Retain original provision. This covered by item a* *Suggest to remove the term "existing" as the section provides for existing metering installations.*	NGCP to PEMC Section 2.11 provides conditions for non-compliant facilities to be permitted to remain in service The mass memory requirements is one of the reason for non-compliance of a metering facility b. NGCP proposes to insert a provision allowing a different transitory period for replacement of meters wherein the noncompliance is only related to mass memory in consideration of the large capital investments for the metering equipment. This is in compliance with the instruction of DOE on their letter to	The RCC adopted the proponent's revision: *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:* ~~*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;*~~ ~~*b*~~***a.*** *ERC has tested/verified and sealed the meter;* ***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*~~ ***permitted to remain in***

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
		shall be replaced within the period of two (2) years from the effectivity of registration in the WESM. Continued non-compliance of metering installations shall be subject to sanctions or penalties.	months from the effectivity of **this version of WESM Manual on Metering**; **c. Existing meters which are non-compliant to the mass memory requirements shall be permitted to remain in service until they become defective or until they reach the end of their economic life.** d. All **existing** non-compliant instrument transformers shall be replaced within the period of two (2) years from the effectivity of **this version of** WESM **Manual on Metering**. Continued non-compliance of metering installations shall be subject to sanctions or penalties.			NGCP dated Dec 7, 2018 to initiate amendment of sec 2.11c of this manual on metering 12.0 c. NGCP agrees with the suggestion of PEMC to remove the term existing **"c. Meters which are non-compliant to the mass memory requirements shall be permitted to remain in service until they become defective or until they reach the end of their economic life.** **d. All non-compliant instrument transformers shall be replaced within the period of two (2) years from the effectivity of this version of WESM Manual on Metering."**	***service until they become defective or until they reach the end of their economic life;*** ***c~~d~~. All non-compliant instrument transformers shall be replaced within the period of two (2) years from the effectivity of ~~registration in the WESM~~ this version of WESM Manual on Metering.*** *Continued non-compliance of metering installations shall be subject to sanctions or penalties.*
Require ments for Registra	4.3	4.3.2. To initiate the registration of a metering installation, the WESM Metering Services Provider,	4.3.2. To initiate the registration of a metering installation, the WESM Metering Services Provider,	▪ To harmonize with the new procedure of the Market Operator in the	**IEMOP:** Electronic confirmation of accomplished MIRF can	NGCP to IEMOP NGCP has no objection on the comments of	The RCC adopted the proponent's revised wording based on IEMOP's comment:

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
tion of Metering Installations		on behalf of its Trading Participant, shall submit the following to the Market Operator: a. Accomplished Metering Installation Form signed 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).	on behalf of its Trading Participant, shall submit the following to the Market Operator: a. Accomplished Metering Installation Form signed by both the MSP and the Trading Participant, **or;** b. **Registration of metering installation by the MSP confirmed by the Trading Participant through Central Registration and Settlement System (CRSS) of the Market Operator** 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).~~	registration of metering installation thru CRSS ▪ 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. No design calculations are included in the registration documents which require the review and signature of a PEE.	be included in the original provision for the requirement (4.3.2(a)). The revised wording is proposed to include electronic confirmation of accomplished MIRF in the original provision for the requirement (4.3.2(a)). Proposed Revised Wording: 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: a. Accomplished Metering Installation Form **confirmed** ~~signed~~ by ~~both the MSP and~~ the Trading Participant~~, **or;**~~ ~~b. **Registration of metering installation by the MSP confirmed by the**~~	IEMOP. However, we propose to maintain "signed" in the provision **"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:** **a. Accomplished Metering Installation Form signed or confirmed by both the MSP and the Trading Participant"**	*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:* *a. Accomplished Metering Installation Form signed **or confirmed** 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).*~~

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					~~Trading Participant through Central Registration and Settlement System (CRSS) of the Market Operator~~ 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).~~		
Requirements for Registration of Metering Installations	4.3	[none]	**4.3.5. All requests of the Trading Participant for clarifications and/or reconsideration concerning the approval of registration of metering facility shall be addressed to the Market Operator for resolution.**	▪ To provide additional provision to clarify the roles of the MSP and MO in the registration of a metering facility to the WESM While the Metering Service Provider is responsible for the assessment and certification of	**IEMOP:** The Market Operator is not the appropriate organization to address clarifications and/or reconsideration concerning the approval of registration of metering facility. ERC is the appropriate organization that can	NGCP to IEMOP NGCP would like to request the opinion of the RCC on the comment of IEMOP.	In addition to IEMOP's comments, Mr. Cacho, Jr. stated that non-compliance to the relevant WESM Manual, which is a ground for disapproval of registration, also means non-compliance to the PGC. Therefore, it would not be appropriate for the MO to accept a registration application, even temporarily, if the applicant does not adhere to the PGC in the first place. NGCP additionally stated

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
				readiness of a WESM Metering Facility, the approval of registration is within the jurisdiction and function of the Market Operator.	address clarifications and/or reconsideration concerning the approval of registration of metering facility. Proposed Revised Wording: **4.3.5. All requests of the Trading Participant for clarifications and/or reconsideration concerning the approval of registration of metering facility shall be addressed to the ~~Market Operator~~ Energy Regulatory Commission (ERC) for resolution.**		that it does not accept non-compliant metering equipment. Ms. Rivera (TeaM Energy) also remarked that it is the responsibility of the applicant to procure compliant metering parts or equipment, so whether there should be reconsideration or not should not be a subject for discussion. Noting that the MO and SO does not provide leeway to register or reconsider non-compliant metering parts or equipment, the RCC agreed to altogether remove this proposed new provision from the proposal.
Collection and Submission Procedure	5.3.1	Requirements a. Data The metering data shall contain the following: i. … ii. The metering data in kWh (Active Energy), kvarh (reactive energy), voltage per phase and current per phase in their assigned channel	Requirements b. Data The metering data shall contain the following: i. … ii. The metering data in kWh (Active Energy), kvarh (reactive energy), voltage per phase and current per phase in their assigned channel	▪ 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	**TC:** Correct abbreviation for the unit of reactive energy is kVARh, not kvarh nor kVARH. Please use the correct abbreviation which is **kVARh**	NGCP to TC NGCP agrees with the comment of TC.	The RCC adopted the TC's comment: *Requirements* *a. Data* *The metering data shall contain the following:* *i. …* *ii. The metering data in kWh (Active Energy), **kVARh**~~kvarh~~ (reactive energy), voltage per*

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
		iii. … vii. Resolution (every 15 minute)	**(for daily meter data delivery)** iii. … iv. Resolution (every ~~1~~**5 minute**)	resolution of the meter which was mandated by the DOE.			*phase and current per phase in their assigned channel* ***(for daily meter data delivery)*** iii. *…* iv. *Resolution (every ~~1~~**5 minute**)*
Collection and Submission Procedure	5.3.2	Daily Process 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	Daily Process b. All collected meter data shall be submitted by the Metering Services Provider to the Market Operator's Meter Data Warehouse starting 0400H ~~until~~ **to** 0800H of the succeeding trading day. **However, for MPs with failed communication, MSP can attempt for remote meter data retrieval and submit to the MO not later than 1600H of the same 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	▪ 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.	**PEMC:** *Retain "until".* *Suggest to spell out Metering Point (MP).*	NGCP to PEMC NGCP has no objection on the comments and recommends adopting the wording of PEMC To retain "until" and to spell out Metering Point (MP) Daily Process b. All collected meter data shall be submitted by the Metering Services Providers to Market Operator's Meter Data Warehouse starting 0400H until 0800H of the succeeding trading day. However, for Metering Points with failed communication, MSP can attempt for remote meter data retrieval and submit to the MO not	In general, the NGCP proposes that MSPs be allowed to submit meter data to the MO twice a day, one in the morning and another in the afternoon. This is to allow ample time for the MSP to retrieve meter data in instances of failed communication with the metering point and submit them to the MO in the afternoon. Mr. Cacho, Jr. explained that the MO provides to the Trading Participants all meter data received for validation. If the MSP is only able to complete the meter data in the afternoon, this will reduce the TPs' time to validate the meter data, which they use their declaration of bilateral contract quantity. Currently, the MO processes the data (e.g., calculates SSLA) within 3 hours for wholesale and within 6 hours for retail upon receipt of data from MSPs. Ms. Rivera agreed that the proposed 4PM second

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
						later than 1600H of the same day.	submission will already be quite late for TPs' validation timeframe.
					<u>IEMOP:</u> Late submission of daily meter data may result in delays on the meter data processes of the Market Operator (e.g. transmittal of daily MQ data to TPs, MQ calculations). To avoid possible delays on the meter data processes of the Market Operator due to late submission by MSPs, the data for metering points with failed communication shall be submitted to the Market Operator by 0900H at the latest. Proposed Revised Wording: xxx All collected meter data shall be submitted by the Metering Services Provider to the Market Operator's Meter Data Warehouse on or before	NGCP to IEMOP. NGCP agrees that all meter data shall be submitted by the Metering Services Provider to the Market Operator's Meter Data Warehouse on or before 0800H of the succeeding trading day. NGCP would like to be clarified if the Market Operator can transmit available MQ to TPs. NGCP would be like to be clarified on the meter data processes that may be affected if meter data of MPs with failed communication will be submitted not later than 1600H.	On the part of NGCP, Ms. Cumpas (NGCP) stated that the reason for the twice-a-day submission is for them to still be able to complete the submission of all meter data within the day. Presently, if they are not able to submit all data until 8AM, then they will submit the missing ones on the following day already. Also, if there are still missing data at all, it will only be 2-5% of the all the data. As a compromise, the IEMOP agreed with the twice-a-day submission of meter data by the MSP, but with the second submission be done only until 12PM, not until 4PM as originally proposed by the NGCP. The RCC adopted the proponent's revision based on PEMC and IEMOP's comment: *Daily Process* *b. All collected meter data shall be submitted by the Metering Services Provider to the Market Operator's Meter Data*

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					~~starting 0400H until~~ ~~to~~ 0800H of the succeeding trading day. **However, for metering facilities with failed communication, the Metering Service Provider can attempt for remote meter data retrieval and submit to the Market Operator not later than 0900H of the same 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		*Warehouse on or before ~~starting 0400H until~~ ~~to~~ 0800H of the succeeding trading day. **However, for metering facilities with failed communication, the Metering Service Provider can attempt for remote meter data retrieval and submit to the Market Operator not later than 1200H of the same 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.*
Collection and Submission Procedure	5.3.3	Monthly Process 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	Monthly Process 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~~ **Digital Video Disk (DVD) or File Transfer Protocol (FTP),** monthly preliminary metering data of all metering points of its	▪ To change the compact disk to digital video disk (DVD) since CD is no longer widely available in the market today. ▪ To recommend the submission of data can also be through File Transfer Protocol (FTP).	**PEMC:** For consistency with the defined term in the WESM Rules Proposed Revised Wording: Monthly Process Not later than three (3) **calendar**~~business~~ days after the end of the billing	NGCP to PEMC For consistency with DOE DC2013-03-005, NGCP recommends the use of "working" days for all settlement related transactions	The RCC agreed to not specifically cite DVDs and opted to provide a general term for any secure file storage device as back-up to FTP. NGCP also agreed with IEMOP's suggestion for the MSP to correct meter trouble within 7 working days instead of the proposed 10 calendar days. The body adopted the revised provision as follows: *Monthly Process*

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
		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 b. … 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.	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~~ b. ….. c. Not later than ~~two (2) business~~ **ten (10) calendar** days after the issuance of the Meter Trouble Report, the Metering Services Provider shall correct the metering data in accordance with the	▪ To recommend the deletion of this provision since the daily MTR is sufficient to comply with the required report on discrepancies between the monthly and daily metering data values. ▪ To recommend the change after the issuance of MTR from two (2) days to 10 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.	period, the Metering Services Provider shall submit, via a ~~compact disk~~ **Digital Video Disk (DVD) or File Transfer Protocol (FTP),** 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~~ **IEMOP:**	NGCP to IEMOP	*a. Not later than three (3)* ***working****~~business~~ days after the end of the billing period, the Metering Services Provider shall submit, via* ***File Transfer Protocol (FTP) or any secure file storage device*** *~~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~~* *b. …* *c. Not later than ~~two (2) business~~* ***seven (7) working*** *days after the issuance of the*

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
			procedures set forth in Section 6.4.3 of this Manual.		The mode of submission can be deleted for flexibility on meter data transmittal. The mode of submission is suggested to be deleted for flexibility on meter data transmittal. The Market Operator may only allow up to seven (7) days for the MSP to resolve the MTR and submit corrected meter data. This is to ensure that the corrected meter data will be incorporated for the calculation of final settlement statement of Trading Participants. Proposed Revised Wording: 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~~ ~~**Digital Video Disk**~~	NGCP agrees with the suggestion of IEMOP to delete the mode of submission for flexibility on meter data transmittal. and allow up to seven (7) working days for the MSP to resolve the MTR and submit the corrected meter data to ensure that the corrected meter data will be incorporated for the calculation of final settlement statement of the Trading Participants	*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.*

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					~~(DVD) or File Transfer Protocol (FTP),~~ 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~~ a. …..		

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					b. Not later than ~~two (2) business~~ **seven (7) calendar** 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.		
					SPC: Although NGCP suggested ten (10) calendar days, immediate resolution of Meter Trouble Report (MTR) should be observed as applicable so that the issuance of WESM Preliminary Settlement Statement/Data reflect the correction to the MTR.	NGCP to SPC NGCP agrees with the comment of SPC that the immediate resolution of Meter Trouble Report should be observed as applicable so that the issuance of WESM Preliminary Settlement Statement/Data reflect the correction to the MTR.	
					DOE: Lengthy days for processing MTRs may have impact to other market operations (e.g. billing and settlement).	NGCP to PEMC: NGCP to adopt the suggestion of IEMOP to allow up to seven (7) working days for the MSP to resolve the MTR and submit the	

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					Suggest to retain original provision.	corrected meter data to ensure that the corrected meter data will be incorporated for the calculation of final settlement statement of the Trading Participants.	
VEE – Essential Indicators	6.4.3	Meter Data Estimation and Editing 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. The following shall be hierarchy of methods to be used by the Metering Services Provider for meter data estimation and editing: a. … b. Meter Data from Back-up Meter If more than four (4) intervals of main meter are missing or have invalid data, the values	Meter Data Estimation and Editing 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. The following shall be hierarchy of methods to be used by the Metering Services Provider for meter data estimation and editing: a. … b. Meter Data from Back-up Meter If more than ~~four (4)~~ **twelve (12)** intervals of main meter are missing or have invalid data, the	▪ To clarify that this is only applicable to the 15-minute programming. With the planned implementation of the 5-minute programming,	**IEMOP:** Existing estimation procedures are described with details in the Manual. Final corrective action is not required in the estimation section. It is suggested that additional details be provided for the proposed new estimation procedures (i.e., parallel lines, correction factor). Remove final corrective action in this section. The revised wording is proposed to reflect the suggested basis for the use of back-up meter data.	NGCP to IEMOP NGCP has provided the additional details on the proposed new estimation procedures, see below. In Section 6.4.3.1.b NGCP recommends the twelve (12) intervals based on the 5 min intervals with one (1) hour of missing data or invalid meter data. This is the same with four (4) intervals based on 15 min intervals with one (1) hour of missing data. In Section 6.4.3.1c NGCP has no objection on the comments and recommends adopting the wordings of IEMOP to provide clarity on how the average	NGCP explained that, presently, there is still no communication infrastructure with their back-up meters since it is only fairly recent that their installation was required. Hence, retrieval of only 20 minutes~~'~~ worth of missing data from the back-up meters would be too tight for NGCP in the absence of a communication link. As an aside, Ms. Cumpas explained that should there be missing data, those from back-up/alternate meters will be retrieved first. If still unavailable, the NGCP has a hierarchy of data estimation methods. She added that NGCP's current back-up meters are configured for 15-minute intervals, which means it would have to divide any retrieved data into 3 to have 5-minute data. To cover for missing data for 4 intervals (20 mins) would yield an inexact interpolation.

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
		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. c. Use of Average Phase Voltage or Average Phase Current 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:	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. c. Use of ~~Average~~ **Computed** Phase Voltage **and** ~~or Average~~ Phase Current **using % Phase Voltage or % Phase Current method** 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	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.	Proposed Revised Wording: Meter Data Estimation and Editing 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. The following shall be hierarchy of methods to be used by the Metering Services Provider for meter data estimation and editing: a. … b. Meter Data from Back-up Meter If more than four (4) ~~twelve (12)~~ **consecutive** intervals of main meter are	percentages will be used in computing for the missing values. However, the basis of the valid data should be minimum of fourteen (14) days regardless these data are within the same billing month for good sample size. c. Use of Computed Phase Voltage and Phase Current using % Phase Voltage or % Phase Current method 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:	Based on the comments and the discussion, the RCC agreed to adopt the revised provision as follows: *Meter Data Estimation and Editing* *6.4.3.2 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.* *The following shall be hierarchy of methods to be used by the Metering Services Provider for meter data estimation and editing:* *a. …* *b. Meter Data from* ***Alternate****~~Back-up~~ Meter* *If more than ~~four (4)~~* ***twelve (12) consecutive*** *intervals of main meter are missing or have invalid data, the values from the* ***alternate****~~back-up~~ meter may directly be substituted to the main meter*

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
		$Total\ Power$ = $[(V_{an} * I_a)$ + $(V_{bn} * I_b)$ + $(V_{cn} * I_c)] *$ cos $\theta * M$ 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 θ - average power factor M - multiplier	accordance with the following formula: $Total\ Power$ = $[(V_{an} * I_a)$ + $(V_{bn} * I_b)$ + $(V_{cn} * I_c)] *$ cos $\theta * M$ **Missing Ia:** **% Ia = Ia / (Ia + Ib + Ic)** **Total % Ia = sum of % Ia of all intervals** **Average % Ia = Total %Ia / No. of intervals** **Note: Computation is the same with other phases.** **Missing Van:** **% Van = Van / Van + Vbn + Vcn)** **Total % Van = sum of % Van of all intervals** **Average % Van = Total %Van / No. of intervals** **Note:**	▪ To document the current practice of WESM MSP on the estimation and substitution of meter data with defects.	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. c. Use of ~~Average~~ **Computed** Phase Voltage **and** ~~or Average~~ Phase Current **using % Phase Voltage or % Phase Current method** If there is a loss of a phase current or phase voltage, the estimation shall be computed by the Metering Services	$Total\ Power$ = $[(Van * Ia)$ + $(Vbn * Ib)$ + $(Vcn * Ic)] *$ cos $\theta * M$ where: Ia, Ib, Ic - phase current vaues Van,Vbn, Vcn - phase voltage vaules cos θ - average power factor M - mulitpier Missing values of Ia: % Ia = Ia / (Ia + Ib + Ic) using the valid data of at least fourteen (14) days Total % Ia = sum of % Ia of all intervals Average % Ia = Total %Ia / No. of intervals Ia = Average %Ia x (Ib + Ic)/(1-Average % Ia) where: Ia - computed phase A current	*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* ***alternate*** ~~*back-up*~~ *meter is greater than 0.2% but not to exceed 0.6%, a correction factor shall be applied.* *c. Use of* ~~*Average*~~ ***Computed*** *Phase Voltage* ***and*** ~~*or Average*~~ *Phase Current* ***using % Phase Voltage or % Phase Current method*** *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:* $Total\ Power$ = $[(V_{an} * I_a)$ + $(V_{bn} * I_b)$ + $(V_{cn} * I_c)] *$ cos $\theta * M$ *where:*

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
			Computation is the same with other phases. 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 θ - average power factor M - multiplier **Additional to the Hierarchy of methods to be used by MSP for meter data estimation and substitution:** **6.4.3 i. Parallel lines** **6.4.3 j. Temporary Use of correction factor In multiplier for Instrument Transformer in service that failed in accuracy limit. Final corrective**	For parallel lines, hierarchy from a, to c should be done first.	Provider, in coordination with the Market Operator and concerned Trading Participant, in accordance with the following formula: $Total\ Power$ = $[(V_{an} * I_a)$ + $(V_{bn} * I_b)$ + $(V_{cn} * I_c)] * \cos\theta * M$ **where:** **I_a, I_b, I_c - phase current values** **V_{an}, V_{bn}, V_{cn} - phase voltage values** **cos θ - average power factor** **M - multiplier** **Missing values of Ia:** **% Ia = Ia / (Ia + Ib + Ic) using the valid data within the same billing month**	Ib, Ic - actual recorded per phase current Note: Computation is the same with other phases. Missing values of Van: % Van = Van / Van + Vbn + Vcn) using the valid data minimum of fourteen (14) days Total % Van = sum of % Van of all intervals Average % Van = Total %Van / No. of intervals Van = Average % Van x (Vbn + Vcn) / (1 - Average % Van) where Van - computed phase A voltage Vbn, Vcn - actual recorded per phase voltage Note:	*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* ***values*** *cos θ - average power factor* *M - multiplier* ***Missing values of Ia:*** ***% Ia = Ia / (Ia + Ib + Ic) using the valid data within the same billing month*** ***Total % Ia = sum of % Ia of all intervals*** ***Average % Ia = Total %Ia / No. of intervals*** ***Ia = Average % Ia x (Ib + Ic) / (1 – Average % Ia)*** ***where:*** ***I_a - computed phase A current*** ***I_b, I_c -actual recorded per phase current***

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
			action is replacement.		**Total % Ia = sum of % Ia of all intervals** **Average % Ia = Total %Ia / No. of intervals** **Ia = Average % Ia x (Ib + Ic) / (1 – Average % Ia)** **where:** **I_a - computed phase A current** **I_b, I_c -actual recorded per phase current** **Note:** **Computation is the same with other phases.** **Missing values of Van:** **% Van = Van / Van + Vbn + Vcn) using the valid data within the same billing month**	Computation is the same with other phases. Additional to the Hierarchy of Methods to be used by MSP for meter data estimation and substitution: 6.4.3 i. Parallel lines **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). Note: Adjustment Factor based on the historical data within the same billing month or minimum of fourteen (14) days excluding spike, 30% difference, invalid	***Note:*** ***Computation is the same with other phases.*** ***Missing values of Van:*** ***% Van = Van / Van + Vbn + Vcn) using the valid data within the same billing month*** ***Total % Van = sum of % Van of all intervals*** ***Average % Van = Total %Van / No. of intervals*** ***Van = Average % Van x (Vbn + Vcn) / (1 – Average % Van)*** ***where:*** ***V_{an} - computed phase A voltage*** ***V_{bn}, V_{cn} -actual recorded per phase voltage***

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					Total % Van = sum of % Van of all intervals **Average % Van = Total %Van / No. of intervals** **Van = Average % Van x (Vbn + Vcn) / (1 – Average % Van)** **where:** **V_{an} - computed phase A voltage** **V_{bn}, V_{cn} -actual recorded per phase voltage** **Note:** **Computation is the same with other phases.** ~~where:~~ ~~I_a - computed phase A~~ ~~I_b, I_c - actual recorded per phase current~~	interval data and with power outage 6.4.3 j. Temporary Use of correction factor in multiplier for Instrument Transformer in service that failed in accuracy limit. For Current Transformer Ratio Correction Factor (RCF) = True Primary Current /(True Secondary Current x Marked Ratio) For Voltage Transformer Ratio Correction Factor (RCF) = True Primary Voltage /(True Secondary Voltage x Marked Ratio)	***Note:*** ***Computation is the same with other phases.*** *d. xxx* *e. xxx* *f. xxx* *g. xxx* *h. xxx* ***i. Parallel lines*** ***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).*** ***Note: Adjustment Factor based on the historical data.*** ***j. Temporary Use of correction factor In multiplier for Instrument Transformer in service that failed in accuracy limit.***

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					~~V_{an}, V_{bn}, V_{cn} - actual recorded per phase voltage~~ ~~cos θ - average power factor~~ ~~M - multiplier~~ **Additional to the Hierarchy of methods to be used by MSP for meter data estimation and substitution:** **6.4.3 i. Parallel lines** **[Additional Details** **6.4.3 j. Temporary Use of correction factor In multiplier for Instrument Transformer in service that failed in accuracy limit. ~~Final corrective action is replacement.~~** **[Additional Details]**		***i. For Current Transformer*** ***Ratio Correction Factor (RCF) = True Primary Current /(True Secondary Current x Marked Ratio)*** ***ii. For Voltage Transformer*** ***Ratio Correction Factor (RCF) = True Primary Voltage /(True Secondary Voltage x Marked Ratio)***
					MERALCO: ▪ For consistency with PGC 2016 Edition,	NGCP to MERALCO NGCP agrees with the suggestion of	

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					change "back-up meter" to "alternate meter". ▪ May we seek clarification on the requirement to apply a correction factor if the average deviation between the main and back-up meter is between 0.2% and 0.6% when the requirement in section 2.10.3 is only 0.6%? ▪ The methodology to be used on the temporary use of CF (sec. 6.4.3) for instrument transformer in service that failed in accuracy limit must be explained further (i.e. use of accuracy test result of Instrument transformer?) May we also seek clarification on how the correction factor would be determined?	MERALCO to change "back-up meter" to "alternate meter" In Section 2.10.3, deviation of 0.6% is for accumulated 3 months reading while the deviation between 0.2% and 0.6% is for more than an hour reading or for short period of time. Error in short period of time is different from the longer period, the longer the period, error accumulates. NGCP clarifies the methodology to be used on the temporary us of CF For Current Transformer Ratio Correction Factor (RCF) = True Primary Current /(True Secondary Current x Marked Ratio) For Voltage Transformer	

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					Proposed Revised Wording: b. Meter Data from **Alternate** Meter. If more than twelve (12) intervals of main meter are missing or have invalid data, the values from the **alternate** 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 **between** ~~greater than~~ **+/-**0.2% **and** ~~but not to exceed~~ **+/-** 0.6%, a correction factor shall be applied.	Ratio Correction Factor (RCF) = True Primary Voltage /(True Secondary Voltage x Marked Ratio) NGCP recommends to adapt the proposed wordings of MERALCO . Meter Data from **Alternate** Meter. If more than twelve (12) intervals of main meter are missing or have invalid data, the values from the **alternate** 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 **between** **+/-**0.2% **and** **+/-** 0.6%, a correction factor shall be applied.	
	7.2	Initiation	Initiation		**PEMC:**	NGCP to PEMC	

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
Meter Trouble Report		A Meter Trouble Report may be initiated due to the following: a…. b…… 7.2.1. Improving Efficiency in Resolving MTRs 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	A Meter Trouble Report may be initiated due to the following: a…. b… **c. 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 failed 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 had collected the meter data remotely or manually and transmitted to MO. In such cases, the MO shall inform the affected customer of the temporary**	▪ 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.	*Shouldn't it be the MSP that shall inform its affected customer of the estimation?* *The customers are the MSPs customers.* *Clerical revisions may be introduced to clarify the proposed item c.*	Based on PGC 2016 GRM 9.3.4.2, for meter data that is used for WESM settlement, the substitution or editing of Metering Data may only be performed by the Market Operator in accordance with the approved WESM procedures. Hence, MSP shall only recommend the estimation, with this, the Market Operator has the position to inform the affected TP on the meter data estimation 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 failed to deliver the meter data of the remaining Metering Point/s to MO, MO shall consider the estimation	The proponent seeks to properly document in the Manual that cases where there is a massive communication link failure due to force majeure and TelCO issues are excluded in the MO's monitoring of MSP compliance, hence item (c) should be retained despite the MO's clarification. As for PEMC's comment, Mr. Estravez stated that the MSP, TP and the MO do hold discussions among themselves as part of the procedures to reconcile discrepancies in estimated meter data. The RCC adopted NGCP's original proposal: *Initiation* *A Meter Trouble Report may be initiated due to the following:* *a….* *b…* ***c. 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***

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
		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.	**estimation made by the MSP.** 7.2.1. Improving Efficiency in Resolving MTRs In case of outages, a Trading Participant and/or its Metering Services Provider shall notify the Market Operator **and Metering Service Provider** 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.	▪ 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.		of meter data of the affected MPs until such time that the MSP had 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.	***beyond the control of the MSP. In cases that MSP still failed 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 had 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.*** *7.2.2. Improving Efficiency in Resolving MTRs* *In case of outages, a Trading Participant and/or its Metering Services Provider shall notify the Market Operator **and Metering Service Provider** 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*
					IEMOP: MTRs issued related to massive communication link failure due to force majeure and TELCO related problems are not included in the computation of MSP performance rating. It is proposed to remove provision 7.2 (c) since the MTRs issued related to massive communication link failure due to force majeure and TELCO related problems are not included in the computation of MSP performance rating.	NGCP to IEMOP NGCP appreciates the exclusion made by IEMOP in the computation of MSP performance rating. However, item c was proposed in the absence of provisions pertaining to TelCo related problems and force majeure events.	

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					Proposed Revised Wording: Initiation A Meter Trouble Report may be initiated due to the following: a…. b… ~~c. 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 failed 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 had collected the meter~~		*have been issued. A sample of the form and instructions for completion may be found in the Appendices.*

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					~~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.~~ 7.2.1. Improving Efficiency in Resolving MTRs In case of outages, a Trading Participant and/or its Metering Services Provider shall notify the Market Operator **and Metering Service Provider** 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		

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					issued. A sample of the form and instructions for completion may be found in the Appendices.		
Meter Trouble Report	7.3	Issuance 7.3.1 Timeline 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. 7.3.2 Unresolved Meter Trouble Reports a. Estimation 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 b. Late Resolution The Metering Services Provider may still resolve a Meter Trouble Report and provide metering	Issuance 7.3.1 Timeline Upon receipt of the Meter Trouble Report, the Metering Services Provider shall submit the correct metering data to the Market Operator within ~~two (2)~~ **ten (10)** business days. 7.3.2 Unresolved Meter Trouble Reports a. Estimation 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 b. Late Resolution	▪ 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 required. Ten (10) business days is reasonable. ▪ To clarify that the two (2) days prior to the issuance of the final settlement statement of the affected trading day is reasonable	**PEMC:** *For alignment with the defined terms in the WESM Rules* Proposed Revised Wording: Upon receipt of the Meter Trouble Report, the Metering Services Provider shall submit the correct metering data to the Market Operator within ~~two (2)~~ **ten (10) calendar**~~business~~ days. 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	NGCP to PEMC For consistency with DOE DC2013-03-005, NGCP recommends the use of "working" days for all settlement related transactions	To clarify the procedures for settling MTRs, Mr. Estravez explained that if there are still daily corrected meter data coming in on the 25th day of the month, the monthly MTR will prevail and considered in the final statement. As suggested by IEMOP, the RCC adopted a 7-working day timeline for MSPs to provide corrected meter data specified in the MTRs. For accepting late resolutions of meter data, a deadline of 2-working days prior to the issuance of final statement was also adopted (item b). The revision is provided below: *Issuance* *7.3.1 Timeline* *Upon receipt of the Meter Trouble Report, the Metering Services Provider shall submit the correct metering data to the Market Operator within ~~two (2)~~* ***seven (7)*** *~~business~~* ***working*** *days.*

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
		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. c. … 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. e. …	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)~~ **two (2)** ~~business~~ days prior to the issuance of the final settlement statement of the affected trading day. c. … 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**. e.…	considering that the corrected meter data needs to be reconciled and agreed upon by the affected parties and MO. ▪ 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.	7.3.1. For late resolutions, the deadline to be reflected in the final settlement statement is ~~four (4)~~ **two (2) calendar**~~business~~ days prior to the issuance of the final settlement statement **IEMOP:** Corrected meter data shall be submitted by MSPs to the Market Operator in a timely manner to ensure that the said data will be incorporated in the computation of the final billing statement of the Trading Participants. The proposed 10-day period for the resolution of meter data is too long and the suggested deadline for the late submissions may result in corrected meter data not being inputted for the preparation of final billing statements. For corrected daily metering data, it is	NGCP to IEMOP: NGCP is amenable with the proposed Seven (7) working days MTR resolution period of IEMOP. NGCP recommends to retain its original proposal on item 7.3.2.d.	*7.3.2. Unresolved Meter Trouble Reports* *a. xxx* *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)~~* ***two (2) working***~~*business*~~ *days prior to the issuance of the final settlement statement* *c. xxx* *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****.* *xxx*

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					suggested to retain the original deadline of two (2) days upon issuance of MTR to make sure that all daily meter data are received by the MO prior to MSP's submission of monthly meter data. For late resolution, it is also suggested to retain the original deadline of four (4) days before the issuance of final settlement statement to ensure that the Market Operator will have enough time to process the meter data for the final settlement run. Proposed Revised Wording: 7.3 Issuance 7.3.1 Timeline Upon receipt of the Meter Trouble Report, the Metering Services Provider shall submit the correct **daily** metering data to the Market		

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					Operator within two (2) ~~ten (10)~~ business days. 7.3.2 Unresolved Meter Trouble Reports a. Estimation 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 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		

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					reflected in the final settlement statement is four (4) days prior to the issuance of the final settlement statement of the affected trading day. c. … c. Certification The Metering Service Provider **and the affected Trading Participant** ~~**Market Operator**~~ **shall certify their agreement** ~~provide a certification~~ on the adjusted metering data **by signing the appropriate document** ~~showing the agreement of all affected parties and the Market Operator~~ ~~**Metering Services Provider**~~.		
					SPC:	NGCP to SPC	

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					▪ NGCP suggested ten (10) calendar days on Section 5.3.3 c, thus to be consistent Section 7.3.1 should be the ten (10) calendar days also. ▪ For Late Resolution, NGCP suggested two (2) days which may be very tight for the Market Operator in their preparation for the issuance of Final Settlement Statement/Data. To reconcile, SPC suggest that the four (4) business days be changed to three (3) business days to observe the needs of NGCP and the Market Operator.	NGCP suggest to use the 7 working days as proposed by IEMOP in item 5.3.3.c.	
Site – Specific Loss Adjustment	8.6	8.6. Roles and Responsibilities The involvement of the Metering Services Provider, Network Service Providers	8.6. Roles and Responsibilities The involvement of the Metering Services Provider, Network Service Providers		**TC:** • Reword: a. Transformer **Winding** Resistance, R • Reword: b. Transformer **Winding** Reactance, X	NGCP to TC For IEMOP's comment.	On the TC's suggestion to include no-load loss among the data to be submitted to the MO, Mr. Cacho, Jr. explained that the larger the transformer (in MVA), the larger are the no-load losses. He stated that perhaps the TC is concerned

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
		and Trading Participants are as follows: 8.6.1. Network Service Provider: 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. a. Conductor Data i. Conductor size ii. Conductor Type iii. Number of conductors per circuit iv. Line Length (km) v. Line Voltage vi. Line Configuration b. Power Transformer Data i. Rated kVA ii. Core Loss (Open Circuit Test result)	and Trading Participants are as follows: 8.6.1. Network Service Provider: … 8.6.2. Metering Service Provider **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.** **a. Transformer Resistance, R** **b. Transformer Reactance, X** **c. Transmission Line Circuit Branch Resistance, R** **d. Transmission Line Circuit Branch Reactance, X** **e. Transmission Line Circuit Total**	▪ The revision is being proposed to harmonize with the requirement of Market Network Model Development and Maintenance – Criteria and Procedures Issue 4.0	• Include the transformer no-load loss in the required data to be submitted **IEMOP:** The responsibility of the NSP to submit line and transformer parameters can be deleted since such responsibility is already proposed to be transferred to the MSP. The responsibility of TP can also be revised to align with the proposed change on MSP's responsibilities. The proposed re-wording is suggested to clarify that the responsibility of submitting line and transformer parameters to the MO is the responsibility of the MSP and that the NSP shall assist the MSP on the preparation of the said information. The responsibilities of TP are also proposed to be revised to align with the	NGCP to IEMOP NGCP recommends to maintain its original proposal	with better accuracy for the purpose of calculating SSLA, hence its suggestion to include said information to be provided to the MO. However, he added that this data is not used in the computation of SSLA. As for IEMOP's comment to delete 8.6.1.1 related to the NSP's responsibility for provision of certain data, the proponent disagreed stating that the provision ensures all required data will be provided to the MO even those that need not be coursed through the MSPs. The RCC adopted the revised provision based on the TC's comments as follows: *8.6. Roles and Responsibilities* *The involvement of the Metering Services Provider, Network Service Providers and Trading Participants are as follows:* *8.6.1. Network Service Provider:* *…* *8.6.2. Metering Service Provider*

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
		iii. Full-load Copper Loss (Short-Circuit Test result) iv. Percent Impedance (% Z) v. xr ratio 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. Significant changes refer to any changes in the network data as provided in Section 8.6.1.1.	**Branch Susceptance, B** 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		proposed change on MSP's responsibilities. Proposed Revised Wording: The involvement of the Metering Services Provider, Network Service Providers and Trading Participants are as follows: 8.6.1. Network Service Provider: ~~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~~		***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.*** ***a. Transformer Winding Resistance, R*** ***b. Transformer Winding Reactance, X*** ***c. Transmission Line Circuit Branch Resistance, R*** ***d. Transmission Line Circuit Branch Reactance, X*** ***e. Transmission Line Circuit Total Branch Susceptance, B*** *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*

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					~~metering point and the market trading node.~~ ~~a. Conductor Data~~ ~~i. Conductor size~~ ~~ii. Conductor Type~~ ~~iii. Number of conductors per circuit~~ ~~iv. Line Length (km)~~ ~~v. Line Voltage~~ ~~vi. Line Configuration~~ ~~b. Power Transformer Data~~ ~~i. Rated kVA~~ ~~ii. Core Loss (Open Circuit Test result)~~ ~~iii. Full-load Copper Loss (Short-Circuit Test result)~~ ~~iv. Percent Impedance (% Z)~~ ~~v. *xr* ratio~~ 8.6.1.~~2~~**1**. **Assist the *Metering Services Provider* in the preparation of the information to be submitted to the *Market Operator* under Section**		

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					8.6.2.1 and Section 8.6.2.2. ~~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.~~ ~~Significant changes refer to any changes in the network data as provided in Section 8.6.1.1.~~ 8.6.2. Metering Service Provider **8.6.2.1 The *Metering Services Provider* shall submit to the *Market Operator* all significant line and transformer parameters between the *metering point* and the *market trading node*, including the single line diagram, upon registration of the**		

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					***Metering Installation* and as often as it implements significant changes in the actual physical connections between the *metering point* and the *market trading node*.** **a. Transformer Resistance, R** **b. Transformer Reactance, X** **c. Transmission Line Circuit Branch Resistance, R** **d. Transmission Line Circuit Branch Reactance, X** **e. Transmission Line Circuit Total Branch Susceptance, B** 8.6.2.2 The Metering Service Provider shall submit to the Market Operator the meter data containing the daily energy consumption or		

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					delivery of all Trading Participants 8.6.3. Trading Participant The *Trading Participant* ~~, in coordination with the *Network Service Provider*, shall submit to the *Market Operator*~~ **shall coordinate with its *Metering Services Provider* for the submission by the *Metering Services Provider* of** 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 Section 8.6.1.~~		
	9.4	Performance Measures	Performance Measures		**IEMOP:**	NGCP to IEMOP	

ANNEX B

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
Metering Services Provider Performance Measurement		9.4.1 Service Delivery 9.4.1.1 Data Meter Data Delivery 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. 9.4.1.2 Integrity of Metering Data 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).	9.4.1 Service Delivery 9.4.1.1. Data Meter Data Delivery Daily Meter Data Delivery or Meter Retrieval Success is the ratio of number of metering installation 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 **in Luzon and Visayas and 85% Mindanao.** 9.4.1.2. Integrity of Metering Data 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	▪ To clarify that the metering point on shutdown or suspended should not be included in the total number of registered metering installations. MPs with TELCO network problem should not be considered in the computation, since this is beyond the control of the MSP. ▪ 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	For corrected daily metering data, it is suggested to retain the original deadline of two (2) days upon issuance of MTR to make sure that all daily meter data are received by the MO prior to MSP's submission of monthly meter data. For corrected monthly metering data submission, the MO may only allow up to seven (7) days to ensure that the meter data will be included in the processing of final settlement statements. The mode of submission is suggested to be deleted for flexibility on meter data transmittal. Proposed Revised Wording: Performance Measures	NGCP suggest to use the 7 working days as proposed by IEMOP in item 5.3.3.c. NGCP is amenable to the seven 7 days corrected monthly data submission proposal of IEMOP.	The RCC adopted IEMOP's revision as amended: *Performance Measures* *9.4.1 Service Delivery* *9.4.1.1. Data Meter Data Delivery* *Daily Meter Data Delivery or Meter Retrieval Success is the ratio of number of metering installation 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 **in Luzon and Visayas and 85% in Mindanao.*** *9.4.1.2. Integrity of Metering Data* *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*

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
		Required average daily result shall be greater than or equal to 95% as reported. 9.4.1.3 Timeliness and Percentage Resolution to the Daily Meter Trouble Report 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. 9.4.1.4 Timeliness and Percentage Resolution to the Monthly The MTR issued (for each metering installation) based on the submitted monthly compact disc containing all meter data for the billing period shall	retrieved (communicated) **excluding suspended MP and with no meter data.** Required average daily result shall be greater than or equal to 95% as reported **in Luzon and Visayas and 85% Mindanao.** 9.4.1.3 Timeliness and Percentage Resolution to the Daily Meter Trouble Report 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. 9.4.1.4 Timeliness and Percentage Resolution to the Monthly The MTR issued (for each metering installation) based	retrieval rate in Mindanao ranges from 83% to 87% only. ▪ 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)	9.4.1 Service Delivery 9.4.1.1. Data Meter Data Delivery Daily Meter Data Delivery or Meter Retrieval Success is the ratio of number of metering installation 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 **in Luzon and Visayas and 85% Mindanao.** 9.4.1.2. Integrity of Metering Data 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		*(communicated)* ***excluding suspended MP and with no meter data.*** *Required average daily result shall be greater than or equal to 95% as reported* ***in Luzon and Visayas and 85% Mindanao.*** *9.4.1.4 Timeliness and Percentage Resolution to the Daily Meter Trouble Report* *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* ***seven (7)*** *~~10~~* ***working*** *days. Required average daily result shall be greater than or equal to 90% as reported.* *9.4.1.5 Timeliness and Percentage Resolution to the Monthly* *The MTR issued (for each metering installation) based on the submitted monthly ~~compact disc containing all~~ meter data for the billing period shall be*

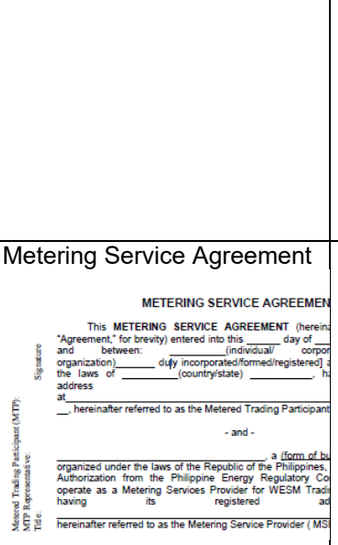
Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
		be resolved and corrected within 2 business days. Required result shall be greater than or equal to 90% as reported.	on the submitted monthly compact disc containing all meter data or **via File Transfer Protocol (FTP)** 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.		installation successfully retrieved (communicated) **excluding suspended MP and with no meter data.** Required average daily result shall be greater than or equal to 95% as reported **in Luzon and Visayas and 85% Mindanao.** 9.4.1.3 Timeliness and Percentage Resolution to the Daily Meter Trouble Report 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 **2** ~~10~~ **working** days. Required average daily result shall be greater than or equal to 90% as reported. 9.4.1.4 Timeliness and Percentage		*resolved and corrected within **2** **working** days. Required result shall be greater than or equal to 90% as reported.*

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					Resolution to the Monthly The MTR issued (for each metering installation) based on the submitted monthly ~~compact disc containing all~~ meter data ~~or~~ ~~**via File Transfer Protocol (FTP)**~~ for the billing period shall be resolved and corrected within 7 ~~2~~ **working** days. Required result shall be greater than or equal to 90% as reported.		
					DOE: Minor revision. Proposed Revised Wording:	NGCP to DOE NGCP agrees to adopt the proposed revised wording of DOE. Daily Meter Data Delivery or Meter	

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					Xxx Daily Meter Data Delivery or Meter Retrieval Success is the ratio of number of metering installation 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 **in Luzon and Visayas and 85% in Mindanao.**	Retrieval Success is the ratio of number of metering installation 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 **in Luzon and Visayas and 85% in Mindanao.**	
Appendices	Appendix D	Metering Service Agreement  METERING SERVICE AGREEMEN This METERING SERVICE AGREEMENT (herein "Agreement," for brevity) entered into this _____ day of ___ and between: _____(individual/ corpor organization)_____ duly incorporated/formed/registered] a the laws of _____(country/state) _____, ha address at_____ __, hereinafter referred to as the Metered Trading Participant - and - _____, a (form of bu organized under the laws of the Republic of the Philippines, Authorization from the Philippine Energy Regulatory Co operate as a Metering Services Provider for WESM Tradi having its registered ad _____ hereinafter referred to as the Metering Service Provider (MSI Signature Metered Trading Participant (MTP) MTP Representative: Title:	**To adopt the existing MSA Form of the Metering Service Provider (see Appendix D)**	▪ To adopt the existing MSA Form of the Metering Service Provider.	**MERALCO:** There is no attached Metering Service Agreement Form Appendix D. Or are we referring to the Appendix D in issue no. 12 of the market manual?	NGCP to MERALCO Please see attached Appendix D	The RCC adopted NGCP's original proposal.
Appendices	Appendix L	Specifications for Transmission Revenue Meters	Specifications for Transmission Revenue Meters	▪ To harmonize with the Chapter GRM 9.2.3.3	**IEMOP:** References to current specifications in the	NGCP to IEMOP	The RCC adopted NGCP's original proposal.

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
			(see attached revised Appendix L)	of the PGC 2016 Edition	annexes may require revisions in the manual every time the PGC and PDC standards are updated. References to current specifications are proposed to be deleted to remove necessity to revise manual every time the PDC standards are updated. Proposed Revised Wording: (proposed to be deleted)	NGCP recommends to maintain its original proposal	
Appendices	Appendix N	Specifications for Current Transformers	Accuracy Class: ~~IEC 44-1 Class 0.2/ ANSI C57.13 Class 0.3 or better~~ **<u>See section 2.5.4.1</u>** 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)~~ **<u>See section 2.5.4.1</u>**	▪ To refer section 2.5.4.1 of the proposed amendments of WESM Manuals	**<u>IEMOP:</u>** References to current specifications in the annexes may require revisions in the manual every time the PGC and PDC standards are updated. References to current specifications are proposed to be deleted to remove necessity to revise manual every time	NGCP to IEMOP NGCP recommends to maintain its original proposal	The RCC adopted NGCP's original proposal.

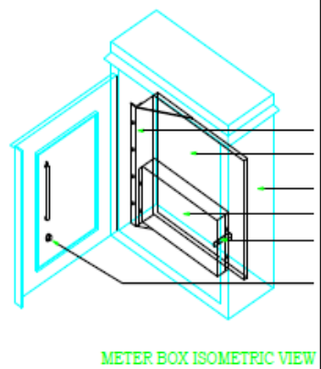
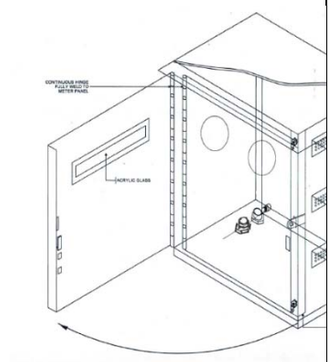
Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
			(see attached revised Appendix N)		the PDC standards are updated. Proposed Revised Wording: (proposed to be deleted)		
Appendices	Appendix O	Specifications for Voltage Transformers	Accuracy Class: ~~IEC 6044-2 Class 0.2/ANSI C57.13 Class 0.3 or better~~ **See section 2.5.4.2** 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 section 2.5.4.2** Termination: ~~Line to Ground~~ **(see attached revised Appendix O)**	▪ To refer section 2.5.4.2 of the proposed amendments of WESM Manuals	**IEMOP:** References to current specifications in the annexes may require revisions in the manual every time the PGC and PDC standards are updated. References to current specifications are proposed to be deleted to remove necessity to revise manual every time the PDC standards are updated. Proposed Revised Wording: (proposed to be deleted)	NGCP to IEMOP NGCP recommends to maintain its original proposal	
Appendices	Appendix P		**(see attached Appendix P)**	▪ To provide detailed technical specifications	**IEMOP:**	NGCP to IEMOP	The RCC adopted NGCP's original proposal.

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
				requirement for current transformers of Embedded Generators in the WESM Metering Manual	References to current specifications in the annexes may require revisions in the manual every time the PGC and PDC standards are updated. References to current specifications are proposed to be deleted to remove necessity to revise manual every time the PDC standards are updated. Proposed Revised Wording: (proposed to be deleted)	NGCP recommends to maintain its original proposal	
Appendices	Appendix Q		**(see attached Appendix Q)**	▪ To provide detailed technical specifications requirement for voltage transformers of Embedded Generators in the WESM Metering Manual	**IEMOP:** References to current specifications in the annexes may require revisions in the manual every time the PGC and PDC standards are updated. References to current specifications are proposed to be deleted to	NGCP to IEMOP NGCP recommends to maintain its original proposal	The RCC adopted NGCP's original proposal.

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					remove necessity to revise manual every time the PDC standards are updated. Proposed Revised Wording: (proposed to be deleted)		
Figure	Figure 5			▪ 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)	**<u>IEMOP:</u>** References to current specifications in the annexes may require revisions in the manual every time the PGC and PDC standards are updated. References to current specifications are proposed to be deleted to remove necessity to revise manual every time the PDC standards are updated. Proposed Revised Wording: (proposed to be deleted)	NGCP to IEMOP NGCP recommends to maintain its original proposal	The RCC agreed with MERALCO's comment that the provided design of the meter box is just an indicative design. The body agreed to specify this in the appropriate Appendix.

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					MERALCO: For Embedded Generators: Metering box should not be specific to the NGCP standard. It should also be allowed to use existing standard of the DU as long as it can meet the required performance, access and security for the meter. Further, there are other designs that can offer the same or better security. Certain designs may also be more appropriate depending on the circumstances of the connected entity. The MSP should have the flexibility to utilize a metering box that will comply with the requirements of the manual while at the same time meeting the specific needs of the customer and his facilities. While it may ensure that the metering box will meet the requirements, having too	NGCP to IEMOP NGCP recommends to maintain its original proposal	

Proposed Amendments to the WESM Manual on Metering Standards and Procedures

Title	Section	Provision	Proposed Amendment	Rationale	Stakeholder's Comment	NGCP's Response	RCC Discussion/ Agreements
					rigid a specification may force the MSP to provide a metering solution that may not fully meet the needs of the customer.		
Tables	Table 5	Table 5 – Ratios and Ratings of Voltage T Rated Voltage (V) / Marked Ratio 14,400 Grd Y/8,400 — 70/120:1 24,940 Grd Y/14,400 — 120/200:1 34,500 Grd Y/20,125 — 175/300:1 69,000 Grd Y/40,250 — 350/600:1 115,000 Grd Y/69,000 — 600/1000:1 138,000 Grd Y/80,500 — 700/1200:1 230,000 Grd Y/138,000 — 1200/2000:1 500,000 Grd Y/287,500 — 2500/4500:1	34.5kV Secondary Voltage ~~120V~~ **115V** **(See attached revised Table 5)**	▪ To achieve whole Nominal Voltage Ratio (GRM 9.2.3.1 (c) of PGC 2016)	**<u>IEMOP:</u>** References to current specifications in the annexes may require revisions in the manual every time the PGC and PDC standards are updated. References to current specifications are proposed to be deleted to remove necessity to revise manual every time the PDC standards are updated. Proposed Revised Wording: (proposed to be deleted)	NGCP to IEMOP NGCP recommends to maintain its original proposal	The RCC adopted NGCP's original proposal.

Note: For convenience, please underline and put in bold letters the proposed changes to the proposed change

ANNEX C

Proposed Amendments to the WESM Manual on Monitoring of Forecast Accuracy Standards

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Response	RCC Discussion/ Agreements
General Comments					**IEMOP:** In a letter sent to IEMOP, the DOE recommends that a study be performed to consider the following: • appropriate denominator for FPE; • seasonal thresholds for MAPE and Perc95; and • treatment of intervals with no projected output or metered quantity. In addition, the DOE recommends to consider non-submission of projected output for a specific interval as non-compliance, regardless whether the VRE resource has actual generation or not.	All DOE recommendations were considered in the proposal except for the setting of seasonal thresholds. With the proposed changes to the computation of FPE, we deem that there is no need to provide for a seasonal threshold since the projected quantity (PQ) is already reflective of the actual capacity of a VRE in a specific dispatch interval within a particular season; The non-submission of projected output for a specific interval as non-compliance is proposed only on intervals where there are no nominations from VRE plants and there are meter readings.	The RCC noted the proponent's responses to the general comments. Ms. Javier (APC) stated that APC's VREs are currently uncertain how it will perform in terms of its forecasting during the commercial implementation of the 5-minute dispatch interval. Also, as mentioned in APC's comment, the formula for FPE is being proposed for amendment yet the standards indicated in the PGC were left unchanged. Ms. Javier recommended to first gather data within a certain period after the commercial operation of the enhanced market design and thereafter asses what formula and standards are appropriate and achievable to measure the performance of the VREs. Since no actual data is available at
					APC: We suggest that the Rules be harmonized with the Philippine Grid Code. For generating companies, it is of vital importance that the rules and standards are aligned	The proposed rules change was drafted with due consideration of the provisions provided in the Philippine Grid Code. In fact, the proposed new calculation is more aligned	

Proposed Amendments to the WESM Manual on Monitoring of Forecast Accuracy Standards

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Response	RCC Discussion/ Agreements
					with one another especially for standards. From the compliance perspective, it would be very difficult to keep an eye on the same standard with a different formula. Having different formula in computing the forecast accuracy model with the same table of standards might confuse the market participants. Our suggestion is to propose this measure first to the subsequent amendment to the Philippine Grid Code and then, come up with a harmonized standard that will solely represent the forecast accuracy standard for renewable energy resources.	with the FPE formula specified in the Philippine Grid Code. The proposed new FPE formula is better suited for the shorter dispatch interval in the NMMS. Such formula provides for a more reasonable opportunity to comply. There is no necessary amendments to the PGC, as the proposal is consistent with the PGC.	present, one cannot say if the proposed formula or the current standards are fair for the VREs. The RCC agreed to provide 1-year transition period (see discussion on proposed Section 5.3.2). The body also noted that the Section 4.5.2 of the current FAS Manual already provides that no sanctions will be imposed on must-dispatch generating units as regards their compliance to FPE during the transition period.
					SACASUN: We believe that the 5-min interval forecasting will be a challenge for all VREs. If this will be implemented, we still have to determine the forecast accuracy that is achievable and at the same time will promote reliability of the grid. Currently, we cannot	With the on-going parallel operations of the new MMS which commenced on 26 April 2019, VREs may be able to monitor its performance based on a 5-minute dispatch interval. We would like to differ with the expectation that the	

Proposed Amendments to the WESM Manual on Monitoring of Forecast Accuracy Standards

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Response	RCC Discussion/ Agreements
					simulate the forecasting error of the 5-min intervals for our own VREs, as we do not have any historical data for this. We expect however, that the count of potential breach will be significantly higher than the 1-hour interval forecasts. If the 5-min forecasts will be implemented, we propose that there should still be no penalties for the 1st year. The data for that said 1-year period should be used to determine the fair forecast accuracy standards. After which, industry participants shall already comply.	potential breach will significantly be higher with the proposed calculations since nominations may now be revised on a 5-minute dispatch interval and shall address the extreme deviations between the projected quantities and the metered quantities. The applicable penalties shall be in accordance with the proposed Penalty Manual currently with the DOE which includes the non-compliance to MAPE standards. Section 4.5 provides for Transition Period which shall be specified by the DOE. A timeframe may be proposed, subject to discussion of the RCC. We deem that the standards provided in the PGC are appropriate.	
Background	1.1.1	The *WESM Rules* require *generation companies* to submit to the *Market Operator projected outputs* in respect of their	The *WESM Rules* require *generation companies* to submit to the *Market Operator projected outputs* in respect of their *must dispatch*	For consistency with the implementation of 5-minute dispatch interval and the WESM Rule Clause 3.5.5.5 as amended by DOE DC			The RCC adopted the proposed amendment.

ANNEX C

Proposed Amendments to the WESM Manual on Monitoring of Forecast Accuracy Standards

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Response	RCC Discussion/ Agreements
		must dispatch generating units on an hourly basis.	*generating units* **for each *dispatch interval***.	No. 2016-10-0014 dated 14 October 2016.			
Background	1.1.4	Moreover, the *Market Operator* is required by the *WESM Rules* report to the *PEM Board* and *DOE* the annual compliance of each *must dispatch generating unit* to the forecast accuracy standards with respect to its *projected outputs.*	Moreover, the ~~*Market Operator*~~ ***Enforcement and Compliance Office (ECO)* of the *Philippine Electricity Market Corporation (PEMC)*** is required by the *WESM Rules* **to** report to the *PEM Board* and *DOE* the annual compliance of each *must dispatch generating unit* to the forecast accuracy standards with respect to its *projected outputs.*	• To transfer the responsibility of monitoring the Trading Participants' compliance to the forecast accuracy standards from the Market Operator to PEMC, as the WESM governing body. • Clerical.			
Glossary	2.1.2(a)	Forecast percentage error. Error (in %) of the *projected output* submitted by a *must dispatch generating unit* with respect to its *installed capacity* calculated in accordance with Section 4.2.3.	Forecast percentage error. Error (in %) of the *projected output* submitted by a *must dispatch generating unit* with respect to its ***projected output* over a dispatch interval**~~*installed capacity*~~ calculated in accordance with Section 4.2.3	For consistency with the proposed amendments to Section 4.2.3 (Forecast percentage error calculation)			The RCC adopted the proposed amendment.
Glossary	2.1.2(b)	Initial loading. Loading (in MW) assumed for the beginning of the *trading interval* assumed in, or estimated by, the *dispatch optimization* performed prior to the beginning of that *trading interval* as indicated in Clause	Initial loading. Loading (in MW) ~~assumed~~ for the beginning of the ~~*trading*~~ ***dispatch** interval* assumed in, or estimated by, the *dispatch optimization* performed prior to the beginning of that ***dispatch** interval* ~~as indicated in Clause 3.13.5.1 of the *WESM Rules*~~.	For consistency with the implementation of 5-minute dispatch interval. Clause 3.13.5.1, which provided the Gross Ex-ante Energy Settlement Quantity in consideration of the			The RCC adopted the proposed amendment.

Proposed Amendments to the WESM Manual on Monitoring of Forecast Accuracy Standards

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Response	RCC Discussion/ Agreements
		3.13.5.1 of the *WESM Rules.*		initial loading and RTD schedule, has been deleted from the WESM Rules under DOE DC 2016-10-0014 (Adopting Further Amendments to the WESM Rules – Enhancements to WESM Design and Operations, dated 14 October 2016).			
Glossary	2.1.2(c)	(c) Installed capacity. Refers to the *Nameplate Rating* of a *generating unit*	~~(c) Installed capacity. Refers to the *Nameplate Rating* of a *generating unit*~~	Removed definition of installed capacity and installed capacity quantity since it is not used in the manual.			The RCC adopted the proposed amendment.
Glossary	2.1.2(d)	(d) Installed capacity quantity**.** *Generation* by a *generating unit* at its *installed capacity* for a *trading interval* calculated in accordance with Section 4.2.3 (e) xxx (f) xxx (g) xxx (h) xxx (i) xxx	~~(d) Installed capacity quantity. *Generation* by a *generating unit* at its *installed capacity* for a *trading interval* calculated in accordance with Section 4.2.3~~ **(c)**~~(e)~~ xxx **(d)**~~(f)~~ xxx **(e)**~~(g)~~ xxx **(f)**~~(h)~~ xxx **(g)**~~(i)~~ xxx	Renumbering.			
Glossary	2.1.2(j)	(j) Projected quantity. Estimated *generation* of a *must dispatch generating unit* over a *trading interval* based on its submitted	~~(j)~~ **(h)** Projected quantity. Estimated *generation* of a *must dispatch generating unit* over a ***dispatch*** *interval* based on its submitted	For consistency with the implementation of 5-minute dispatch interval.			The RCC adopted the proposed amendment.

ANNEX C

Proposed Amendments to the WESM Manual on Monitoring of Forecast Accuracy Standards

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Response	RCC Discussion/ Agreements
		projected output assuming linear ramping calculated in accordance with Section 4.2.4 (k) xxx	*projected output* assuming linear ramping calculated in accordance with Section 4.2.4 ~~(k)~~ **(j)** xxx	Renumbering.			
Responsibilities	3.1	Market Operator	~~Market Operator~~ **PEMC**	To transfer the responsibility of monitoring the Trading Participants' compliance to the forecast accuracy standards from the Market Operator to PEMC, as the WESM governing body.			The RCC adopted the proposed amendment.
Responsibilities	3.1.1	The *Market Operator* shall review annually the forecast accuracy standards in this Market Manual.	~~The *Market Operator*~~ ***PEMC*** shall review annually the forecast accuracy standards in this Market Manual.				
Responsibilities	3.1.2	The *Market Operator* shall report to the *PEM Board* and the *DOE* the monthly and annual compliance of each *must dispatch generating unit* to the forecast accuracy standards with respect to its *projected outputs*.	The ~~*Market Operator*~~ **ECO** shall report to the *PEM Board* and the *DOE* the monthly and annual compliance of each *must dispatch generating unit* to the forecast accuracy standards with respect to its *projected outputs*.				The RCC adopted the proposed amendment.
Responsibilities – Generation Companies	3.4.2	*Generation companies* shall immediately advise the *System Operator* and *Market Operator* of any circumstances which threaten a significant probability of material adverse change in the state of their facilities in any *trading interval* of any *trading day* in the current *week-ahead market*	*Generation companies* shall immediately advise the *System Operator* and *Market Operator* of any circumstances which threaten a significant probability of material adverse change in the state of their facilities in any ***dispatch*** *interval* of any *trading day* in the current *week-ahead market horizon*. After the occurrence of the	For consistency with the implementation of 5-minute dispatch interval.			The RCC adopted the proposed amendment.

Proposed Amendments to the WESM Manual on Monitoring of Forecast Accuracy Standards

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Response	RCC Discussion/ Agreements
		horizon. After the occurrence of the significant event referred to above, the *Generation Company* shall submit a written report to the *Market Operator* with supporting data immediately within the following *trading day*.	significant event referred to above, the *Generation Company* shall submit a written report to the *Market Operator* with supporting data immediately within the following *trading day*.				
		NEW	**3.5 Market Operator** **3.5.1 The *Market Operator* shall advise the *must dispatch generating units* of their *real-time dispatch schedules*, and any output restrictions imposed on them by the *Market Management System* or the *System Operator*.**	To clearly state the responsibilities of the Market Operator in providing information to Trading participants regarding the real-time dispatch schedules and output restrictions imposed on their must dispatch generating units.	**IEMOP:** WESM Rules Clause 3.8.1(h) only requires the MO to inform must dispatch generating units restrictions imposed by the MMS. **3.5 Market Operator** **3.5.1 The *Market Operator* shall advise the *must dispatch generating units* of their *real-time dispatch schedules*, and any output restrictions imposed on them by the *Market Management System* ~~or the System Operator~~.**	We agree. Suggest to further revise as follows: **3.5 Market Operator** **3.5.1 The *Market Operator* shall advise the *must dispatch generating units* of their *real-time dispatch schedules*, and any output restrictions imposed as a result of the dispatch scheduling process or by the System Operator**	The RCC adopted the proponent's revision: ***3.5 Market Operator*** ***3.5.1 The Market Operator shall advise the must dispatch generating units of their real-time dispatch schedules, and any output restrictions imposed as a result of the dispatch scheduling process or by the System Operator.***

ANNEX C

Proposed Amendments to the WESM Manual on Monitoring of Forecast Accuracy Standards

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Response	RCC Discussion/ Agreements
Standards	4.1.1	Each *must dispatch generating unit* shall comply with the following standards with respect to its *mean absolute percentage error* (*MAPE*) and *percentile 95 of the forecasting error* (*Perc95*) determined in accordance with Section 4.2 and calculated over the period specified in Section 4.1.2: Technology: St MAP Solar: < 18% Wind Run of River Hydro*: < 9% ** subject to the determ ERC/Grid Managemer*	Each *must dispatch generating unit* shall comply with the following standards with respect to its *mean absolute percentage error* (*MAPE*) and *percentile 95 of the forecasting error* (*Perc95*) determined in accordance with Section 4.2 and calculated over the period specified in Section 4.1.2: Technology: Stanc MAPE Solar: < 18% Wind Run of River Hydro*: < 9% ~~** subject to the determi the ERC/Grid Man Committee*~~	Standards for run-of-river hydro are already provided under Table 8.3 of the latest version of the Grid Code.	**TC:** Footnote stricken out? Any proposal to change these numbers, especially at shorter dispatch interval?	Footnote is stricken-out since the standards are already approved by the ERC and are being implemented already. We deem that the standards are still applicable for the proposed changes in the computation of MAPE.	The RCC adopted the proposed amendment.
	4.1.3.	Subject to Section 4.5 of this Market Manual, must dispatch generating units who fail to meet the requisite forecast accuracy standards set out in Section 4.1.1 of this Market Manual may be liable for sanctions	Subject to Section 4.5 of this Market Manual, must dispatch generating units who fail to meet the requisite forecast accuracy standards set out in Section 4.1.1 of this Market Manual may be liable for sanctions imposed under Clause 7.2 of the WESM Rules. **For this purpose, the**	To ensure that there are clear procedures in the: (a) conduct of compliance monitoring of forecast accuracy standards, (b) review by MSC of the results of compliance monitoring, and (c)			The RCC adopted the proposed amendment.

ANNEX C

Proposed Amendments to the WESM Manual on Monitoring of Forecast Accuracy Standards

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Response	RCC Discussion/ Agreements
		imposed under Clause 7.2 of the WESM Rules.	**ECO shall develop the necessary procedures and guidelines for monitoring the compliance with the forecast accuracy standards including the procedure for the review by the Market Surveillance Committee of the results of the monitoring, and the approval and imposition of appropriate penalty by the PEM Board.**	approval of penalties by the PEM Board.			
Calculations	4.2.1	The *MAPE* of a *must dispatch generating unit* for a period shall be calculated using the following formula: $MAPE_{i,p} = \frac{\sum_{t=1}^{n_p} FPE_{i,t}}{n_p}$ Where, MAPEi,p *mean absolute percentage error* (in %) of *must dispatch generating unit* i for period p n_p number of *trading intervals* within period p wherein *forecast percentage errors* were calculated	The *MAPE* of a *must dispatch generating unit* for a period shall be calculated using the following formula: $MAPE_{i,p} = \frac{\sum_{t=1}^{n_p} FPE_{i,t}}{n_p}$ Where, MAPEi,p *mean absolute percentage error* (in %) of *must dispatch generating unit* i for period p n_p number of *trading intervals* within period p wherein *forecast percentage errors* were calculated $FPE_{i,t}$ *forecast percentage error* (in %) of *must dispatch generating unit* i for ***dispatch***	For consistency with the implementation of 5-minute dispatch interval.	**IEMOP:** Denominator should indicate number of 5-minute dispatch intervals instead 1-hour trading intervals The *MAPE* of a *must dispatch generating unit* for a period shall be calculated using the following formula: $MAPE_{i,p} = \frac{\sum_{t=1}^{n_p} FPE_{i,t}}{n_p}$ Where, MAPEi,p *mean absolute percentage error* (in %) of *must dispatch generating unit* i for period p	We agree	The RCC adopted IEMOP and SPC's revision.

Proposed Amendments to the WESM Manual on Monitoring of Forecast Accuracy Standards

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Response	RCC Discussion/ Agreements
		$FPE_{i,t}$ *forecast percentage error* (in %) of *must dispatch generating unit* i for *trading interval* t calculated in accordance with Section 4.2.3	*interval* t calculated in accordance with Section 4.2.3		n_p number of ~~*trading*~~ ***dispatch*** *intervals* within period p wherein *forecast percentage errors* were calculated $FPE_{i,t}$ *forecast percentage error* (in %) of *must dispatch generating unit* i for ***dispatch*** *interval* t calculated in accordance with Section 4.2.3		
					SPC: The *MAPE* of a *must dispatch generating unit* for a period shall be calculated using the following formula: $$MAPE_{i,p} = \frac{\sum_{t=1}^{n_p} FPE_{i,t}}{n_p}$$ Where, MAPEi,p *mean absolute percentage error* (in %) of *must dispatch generating unit* i for period p n_p number of ~~*trading*~~ ***dispatch*** *intervals* within period p wherein *forecast percentage errors* were calculated $FPE_{i,t}$ *forecast percentage error* (in %) of *must dispatch*	We agree.	

Proposed Amendments to the WESM Manual on Monitoring of Forecast Accuracy Standards

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Response	RCC Discussion/ Agreements
					generating unit i for ***dispatch*** *interval* t calculated in accordance with Section 4.2.3		
					• Philippine Grid Code (PGC) 2016 Edition provides the following definition of Mean Absolute Percentage Error (MAPE): *"A statistical measure of the accuracy of the method utilized in forecasting future values of VRE generation calculated monthly and over a complete calendar year, expressed as an average percentage of the Dependable Capacity as follows:* $MAPE = \frac{1}{n} \cdot \sum_{t=1}^{n} \left\lvert \frac{F_t - A_t}{A_{t_{DC}}} \right\rvert$ *Where:* *A_t is the actual average value of VRE generation (integrated over one hour) at a particular level t, [kWh];*		

Proposed Amendments to the WESM Manual on Monitoring of Forecast Accuracy Standards

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Response	RCC Discussion/ Agreements
					$A_{t(DC)}$ is the actual value of dependable capacity of VRE generation (integrated over one hour) at a particular interval, t, [kWh]; *F_t is the forecasted average VRE generation (integrated over one hour) for that particular interval [kWh]* *n is the number of observations; and* *||represent the absolute value"* If PEMC proposing to amend the above-mentioned provision, PEMC shall request for derogation to the ERC in accordance with Chapter GC 1.4. of the PGC 2016 Edition. NGCP recommends that "*trading interval*" and "*dispatch interval*" should be defined in the Manual since it is used interchangeably in the proposed amendment.	We deem that the proposed revised calculation is still in line with the objectives and intention of the PGC. The terms trading interval and dispatch interval are defined in the WESM Rules. As provided in Section 2.1.1 of the manual, *"Unless otherwise defined in Section 2.1.2 of this document or unless the context provides otherwise, all terms used in this Market Manual that are defined in the WESM Rules shall take the meaning as so defined in the WESM Rules."*	

ANNEX C

Proposed Amendments to the WESM Manual on Monitoring of Forecast Accuracy Standards

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Response	RCC Discussion/ Agreements
Calculations	4.2.3	The *forecast percentage error* for a *trading interval* of a *must dispatch generating unit* shall be calculated using the following formula: $FPE_{i,t}=\left\lvert\frac{PQ_{i,t}-MQ_{i,t}}{ICQ_i}\right\rvert\times100\%$ Where, $FPE_{i,t}$ *forecast percentage error* (in %) of *must dispatch generating unit* i for *trading interval* t $PQ_{i,t}$ *projected quantity* (in MWh) of *must dispatch generating unit* i for *trading interval* t calculated in accordance with Section 4.2.4 $MQ_{i,t}$ *metered quantity* (in MWh) of *must dispatch generating unit* i for *trading interval* t as provided by the *Metering Services Provider* ICQ_i *installed capacity quantity* (in MWh) of *must*	The *forecast percentage error* for a ***dispatch*** *interval* of a *must dispatch generating unit* shall be calculated using the following formula: $FPE_{i,t}=\left\lvert\frac{PQ_{i,t}-MQ_{i,t}}{\cancel{ICPQ_{i,t}}}\right\rvert\times100\%$ Where, $FPE_{i,t}$ *forecast percentage error* (in %) of *must dispatch generating unit* i for ***dispatch*** *interval* t $PQ_{i,t}$ *projected quantity* (in MWh) of *must dispatch generating unit* i for ***dispatch*** *interval* t calculated in accordance with Section 4.2.4 $MQ_{i,t}$ *metered quantity* (in MWh) of *must dispatch generating unit* i for ***dispatch*** *interval* t as provided by the *Metering Services Provider* ~~ICQ_i *installed capacity quantity* (in MWh) of *must dispatch generating unit* i calculated by multiplying the~~	For consistency with the implementation of 5-minute dispatch interval. Revised formula to consider a more appropriate calculation of the FPE as a factor of its maximum "projected quantity" over a billing period for a VRE generation plant. The original formula, as provided in the PGC 2016 Edition and the WESM Manual on Forecast Accuracy Standards, gives VRE resources with higher installed/dependable capacity an avenue to have a lower result of MAPE. This would then be a disadvantage for those plants with low installed/dependable capacity.	**IEMOP:** We note that using PQ as the denominator may not be the original consideration when the standards were first established. If PQ is being proposed, PEMC should therefore propose a new set of MAPE and PERC95 standards as written in Section 4.1.1 (i.e., 18% MAPE, 30% PERC95). Using PQ as the denominator will result in higher forecast percentage errors; hence, if the current standards are maintained, the standards would be more restrictive. For example, a 10 MW solar plant projected an output of 2 MWh for 7AM of a certain day. If its actual production is 4 MWh, its forecast percentage error (FPE) under the current formula is 20% ((4-2)/10); on the other hand, its FPE under the proposed formula is 100% ((4-2)/2). This is supported by the simulation by PEMC which showed that only 1 would have passed the	We wish to note that the provided example comes from the context of an hourly interval. Within the span of 1 hour, VREs are subjected to various external factors such that the projected quantity prior the interval can be very different from the actual production. We believe that this should not be the case for a 5-minute interval where the adverse effect of external factors will be kept to a minimum. In line with this comment, the use of current standards should pose as a less strict threshold for VREs. It should be noted that this parameter is subject for periodic review as provided in the manual. For the provided example, using the installed capacity as the denominator would not be fair for all the VREs. Referring to the example provided, a 2 MW deviation from a VRE with 10MW installed capacity would	The RCC adopted the proposed amendment.

Proposed Amendments to the WESM Manual on Monitoring of Forecast Accuracy Standards

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Response	RCC Discussion/ Agreements
		dispatch generating unit i calculated by multiplying the *installed capacity* (in MW) of *must dispatch generating unit* i provided during registration in the *WESM* by the duration of a *trading interval* (in hours)	~~*installed capacity* (in MW) of *must dispatch generating unit* i provided during registration in the *WESM* by the duration of a *trading interval* (in hours)~~		MAPE standard while only 3 would have passed the PERC95 standard in 2018 if the proposed formula were used. Alternatively, if PEMC will retain the current standards (i.e., 18% MAPE, 30% PERC95), we suggest that a different denominator be considered (e.g., dependable capacity based on installed capacity less deratings).	incur 20% percentage error. As compared to a 50MW VRE it just be 4% and just 2% for a 100MW plant. In drafting the proposal, the consideration of computing the "forecast error" against "forecasted/projected quantity" has been the main objective and not against its installed capacity. In addition, the current formula as it is specified does not accurately capture the accuracy of forecast but rather it simply shows the percentage error relative to total capacity of the plant.	
					WEDAP: Accurate forecasts are needed in order for the System Operator to plan ahead and schedule capacity required to meet demand. This is to maintain the reliability and integrity of the transmission system at all times. Any deviation from forecast to actual generation are measured in terms of forecast error. Customarily, the higher the error, the	We agree that accurate forecasts are needed in order for the System Operator and the Market Operator to plan ahead and schedule capacity to meet the demand. The simulation, as provided, based the calculation on a 1-hour dispatch interval. This will be problematic and may result in excessively	

Proposed Amendments to the WESM Manual on Monitoring of Forecast Accuracy Standards

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Response	RCC Discussion/ Agreements
					higher is the "notional effect" of the absolute value of the deviation to the grid. WEDAP simulated the original formula and the proposed formula, the old formula more or less accurately reflects the nature of VRE generation in relation to forecast errors both during low wind forecast and high wind forecast. As shown in the attached presentations for wind, the degree of error during low generation is excessively high. More importantly, IN REALITY such deviations from forecast have little or no effect at all to the system and there is no disadvantage to the system because there is actually a forecasted "low generation". Based on the attached presentations on MAPE and PERC calculations, if we use the new formula, the calculated values for both MAPE and PERC will be	high numbers as this is during the regime where VREs are only allowed to submit nominations for an entire hour. Theoretically and practically, operators will not be able to accurately forecast what may happen during the intra-hour which may cause high percentage error based on the projected quantity. With the proposed calculation which is hinged on the commercial operations of the new Market Management System, operators will have an avenue to improve their forecasts since nominations may be subjected to revisions on a dispatch interval basis (5-minute dispatch interval). This way, more accurate forecasts will then be available for the Market and System Operator to properly manage the operation of the market with less deviations. Lastly, the previous computation is referenced against installed capacity,	

Proposed Amendments to the WESM Manual on Monitoring of Forecast Accuracy Standards

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Response	RCC Discussion/ Agreements
					unusually high. The new formula skews the error upwards during periods of low wind resource. Considering that there will be penalties for failure to comply with FAS, the low wind generation scenario which has little or no effect on system dispatch and where forecasting errors are more frequent and more likely under the new calculation would be inequitable. In conclusion, the old or original formula better reflects the magnitude of the forecast error that needs to be corrected by the system at both high and low wind/solar resource.	which may not necessarily be the dependable capacity of a VRE plant. It will then be unfair for VREs having small capacities which incurred the same deviation with VREs having large installed capacities. Please refer to the explanation in the comment above.	
					<u>NGCP:</u> • NGCP recommends considering the Available Capacity of must dispatch generating units as reference to calculate FPE. • In order to address the issue of not accurately	The PGC specifies the use of dependable capacity instead of available capacity. We deem that with the proposal, the projected quantities submitted by the VREs may more qualify as the dependable capacity considering ambient variations.	

Proposed Amendments to the WESM Manual on Monitoring of Forecast Accuracy Standards

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Response	RCC Discussion/ Agreements
					reflect the percentage errors, NGCP recommends that separate set of thresholds in MAPE and PERC95 must be formulated for must dispatch generating unit with high value capacity. • The suggested formula is more appropriate for System Operator in maintaining the balance of supply and demand. $FPE_{i,t} = \sum_{t=1}^{n_p} \frac{(P_{forecast} - P_{actual})_{i,p}}{Available\ Cap_i}$ Where: $P_{forecast}$ = Projected Power, MW P_{actual} = Actual Power Generation, MW Available Cap = Rated Capacity subject to equipment deration or outage	In addition, FAS Manual categorically excludes observations where the generating plant experiences outage/deration.	

Proposed Amendments to the WESM Manual on Monitoring of Forecast Accuracy Standards

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Response	RCC Discussion/ Agreements
					DOE: *It is better to use the average of the PQ and MQ for the denominator to consider the discrepancy with the current formula (i.e. using IC as the denominator).* The *forecast percentage error* for a ***dispatch*** *interval* of a *must dispatch generating unit* shall be calculated using the following formula: $FPE_{i,t} = \left\lvert \frac{PQ_{i,t} - MQ_{i,t}}{\cancel{IC}(\boldsymbol{P}Q_{i,t} + MQ_{i,})/2} \right\rvert \times$ Where, $FPE_{i,t}$ *forecast percentage error* (in %) of *must dispatch generating unit* i for ***dispatch*** *interval* t $PQ_{i,t}$ *projected quantity* (in MWh) of *must dispatch generating unit* i for ***dispatch*** *interval* t calculated in accordance with Section 4.2.4 $MQ_{i,t}$ *metered quantity* (in MWh) of *must dispatch generating unit* i for ***dispatch***	Aside from the provided explanations, the proposed new calculation likewise aims to align the computation with international practices which uses the following: $PE = \left\lvert \frac{Theoretical - Experiment}{Theoretical} \right.$ $= \left\lvert \frac{Reference - Act}{Reference} \right.$ This computation is likewise used in universities for its studies and by the Bangko Sentral ng Pilipinas in determining its forecast error for inflation rates. We recommend to retain the proposed FPE calculation.	

ANNEX C

Proposed Amendments to the WESM Manual on Monitoring of Forecast Accuracy Standards

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Response	RCC Discussion/ Agreements
					interval t as provided by the *Metering Services Provider* ~~ICQ_i – *installed capacity quantity* (in MWh) of *must dispatch generating unit* i calculated by multiplying the *installed capacity* (in MW) of *must dispatch generating unit* i provided during registration in the *WESM* by the duration of a *trading interval* (in hours)~~		
Calculations	4.2.4	The *projected quantity* for each *trading interval* of a *must dispatch generating unit* shall be calculated using the following formula: $PQ_{i,t}=\frac{IL_{i,t}+PO_{i,t}}{2}$ Where, $PQ_{i,t}$ *projected quantity* (in MWh) of *must dispatch generating unit* i for *trading interval* t $IL_{i,t}$ *initial loading* (in MW) of *must dispatch generating unit* i used during the scheduling process for *trading interval* t	The *projected quantity* for each ***dispatch*** *interval* of a *must dispatch generating unit* shall be calculated using the following formula: $PQ_{i,t}=\frac{IL_{i,t}+PO_{i,t}}{2} \boldsymbol{x} \frac{\mathbf{1}}{\boldsymbol{n}}$ Where, $PQ_{i,t}$ *projected quantity* (in MWh) of *must dispatch generating unit* i for *trading interval* t $IL_{i,t}$ *initial loading* (in MW) of *must dispatch generating unit* i used during the scheduling process for ***dispatch*** *interval* t	For consistency with the implementation of 5-minute dispatch interval.	**TC:** Make sure that the units (MW and/or MWh are consistent)	Duly noted. The result of the equation will have a MWh unit.	The RCC adopted the proposed amendment.

ANNEX C

Proposed Amendments to the WESM Manual on Monitoring of Forecast Accuracy Standards

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Response	RCC Discussion/ Agreements
		$PO_{i,t}$ *projected output* (in MW) of *must dispatch generating unit* i used during the scheduling process for *trading interval* t	$PO_{i,t}$ *projected output* (in MW) of *must dispatch generating unit* i used during the scheduling process for ***dispatch*** *interval* t **n number of dispatch interval(s) within a *trading interval***				
Calculations	NEW		**4.2.5 A one hundred (100) percent FPE shall be imposed to a *must dispatch generating unit* on a particular *dispatch interval* where its *Projected Quantity* is equal to zero (0) and a metered quantity has been recorded in its metering data.**	To provide the basis for imposition of 100 percent FPE value to instances when FPE shall become incalculable caused by projected quantity having zero (0) value.			The RCC adopted the proposed amendment.
Exclusions	4.3.1	(b) xxx *footnote 13 - Clause 3.8.3.4, WESM Rules*	(b) xxx *footnote 13 - Clause ~~3.8.3.4~~* ***3.8.3.5****, WESM Rules*	For consistency with the WESM Rules as amended by DOE DC No. 2016-10-0014 dated 14 October 2016.			The RCC adopted the proposed amendment.
	4.3.1	(c) a *market suspension* or *market intervention* was declared for the *trading interval*; (d) xxx; or (e) xxx.	(c) a *market suspension* or *market intervention* was declared for the ***dispatch*** *interval*; (d) xxx; or (e) xxx**; or**	For consistency with the implementation of 5-minute dispatch interval.			The RCC adopted the proposed amendment.
	NEW		**4.3.1 (f) the projected quantity and the metered**	If a must dispatch generating unit has no			The RCC adopted the proposed amendment.

Proposed Amendments to the WESM Manual on Monitoring of Forecast Accuracy Standards

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Response	RCC Discussion/ Agreements
			quantity both reflect zero (0) MWh.	nomination and has no actual output (via the metered quantity), then that generating unit did not have any effect in the determination of prices and schedules in the WESM. Thus, these are recommended to be excluded. It shall also cover solar generating units that do not project any output during night time.			
Monitoring, Reporting, and Review	4.4.1	The *Market Operator* shall report to the *PEM Board* and *DOE* the annual compliance of each *must dispatch generating unit* to the forecast accuracy standards with respect to its *projected outputs* within two (2) calendar months after the end of the period specified in Section 4.1.2.	The ~~*Market Operator*~~ ***ECO*** shall report to the *PEM Board* and *DOE* the annual compliance of each *must dispatch generating unit* to the forecast accuracy standards with respect to its *projected outputs* within two (2) calendar months after the end of the period specified in Section 4.1.2.	To transfer the responsibility of monitoring the Trading Participants' compliance to the forecast accuracy standards from the Market Operator to PEMC, as the WESM governing body.			
Monitoring, Reporting, and Review	4.4.2	The *Market Operator* shall report to the *PEM Board* and *DOE* the status of the compliance of each *must dispatch generating unit* to the *forecast accuracy standards* as of the most	The ~~*Market Operator*~~ ***ECO*** shall report to the *PEM Board* and *DOE* the status of the compliance of each *must dispatch generating unit* to the *forecast accuracy standards* as of the most				The RCC adopted the proposed amendment.

Proposed Amendments to the WESM Manual on Monitoring of Forecast Accuracy Standards

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Response	RCC Discussion/ Agreements
		recent *Billing Period* with a *final statement* on a monthly basis.	recent *Billing Period* with a *final statement* on a monthly basis.				
Monitoring, Reporting, and Review	4.4.3	The *Market Operator* shall review annually the forecast accuracy standards set in Section 4.1.	~~The *Market Operator*~~ **PEMC** shall **periodically** review ~~annually~~ the forecast accuracy standards set in Section 4.1.	To transfer the responsibility of reviewing the forecast accuracy standards from the Market Operator to PEMC, as the WESM governing body.	**TC:** Do we really need to review this annually? What is involved in that review? Proposal: "as the need arises;" how about Sec. 4.4.3? As proposed: Sec. 4.4.3: ~~The *Market Operator*~~ **PEMC** shall **periodically** review ~~annually~~ the forecast accuracy standards set in Section 4.1.	We agree	The RCC adopted the proposed amendment.
					DOE: Suggest to retain wherein MO shall review the said Manual, similar to other market manuals.	The entire Section 3 of this Manual which refers to the Market Operator has been replaced with PEMC in view of the agreed transfer of functions from the market operator to the WESM governing body. We defer the discussion to the RCC.	
Publication	5.2	This *Market Manual*, as it may be amended from time to time, shall be published in the *market information website*	This *Market Manual*, as it may be amended from time to time, shall be published ~~in the *market information website* maintained~~ by **PEMC**~~ the *Market Operator*~~.		**DOE:** Suggest to retain wherein the said Manual, similar to other market manuals shall be published in the MO website.	The entire Section 3 of this Manual which refers to the Market Operator has been replaced with PEMC in view	

Proposed Amendments to the WESM Manual on Monitoring of Forecast Accuracy Standards

Title	Section	Provision	Proposed Amendment	Rationale	Comments	Response	RCC Discussion/ Agreements
		maintained by the *Market Operator.*				of the agreed transfer of functions from the market operator to the WESM governing body. We defer the discussion to the RCC.	
Effectivity	5.3.2	NEW	**The proposed *forecast percentage error* calculation shall only be applicable during the commencement of the commercial operations of the new Market Management System for a full calendar year.**	To provide an interim FPE calculation pending the commercial operations of the new Market Management System.			The RCC agreed to include a provision stating a transition period of 1 year. During this period, the performance of VREs will be monitored by PEMC. The MAPE and Perc95 standards may be subjected to changes based on the data gathered and the actual performance of VREs.
NIST Method for Calculating Percentiles	Appendix A	Sample list: $Y_{[k]}$ = {3%, 5%, 12%, 15%, 20%}; N = 5	Sample list: $Y_{[k]}$ = {**5**~~3~~%, **12**~~5~~%, **3**~~12~~%, **20**~~15~~%, **15**~~20~~%}; N = 5 **Sample ordered data: $Y_{[k]}$ = {3%, 5%, 12%, 15%, 20%}; N = 5**	To show the method in ordering the data.	**IEMOP:** Request for clarification	This is just to provide a more detailed example on how the ordering is done.	The RCC adopted the proposed amendment.