



Technical Committee 2022 Annual Report

January 2022 to December 2022

MARCH 2023

This Report is prepared by the
Philippine Electricity Market Corporation –
Corporate Planning and Communications Department
for the WESM Technical Committee

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1.0 INTRODUCTION

Pursuant to Section 3.3.1 of the Technical Committee (TC) Market Manual¹ Issue 3.0, this Report is submitted to the PEM Board to provide the Committee's accomplishment, pending issues, and activities for the period covering January to December 2022. It shall also include the work plan of the Committee for the succeeding calendar year.

2.0 TC RESPONSIBILITIES AND MEMBERSHIP

2.1 Responsibilities

The responsibilities of the TC are set out in the WESM Rules² as follows:

- i. Monitor technical matters relating to the operation of the spot market;
- ii. Provide a report to the PEM Board on any matter of a technical nature relating to any WESM member which in the reasonable opinion of the TC causes:
 - a. That WESM Participant to be unable to comply with the WESM Rules; or
 - b. Unintended or distortionary effects to the operation of the WESM;
- iii. Assist the PEM Board by providing expertise in relation to:
 - a. Information technology;
 - b. Metering technology and metering data; and
 - c. Any other matter of a technical nature relating to the spot market;
- iv. From time to time if the TC in its discretion deems necessary or appropriate, propose amendments to the WESM Rules in relation to technical matters, in accordance with chapter 8 with a view to:
 - a. Improving the efficiency and the effectiveness of the operation of the spot market; and
 - b. Improving or enhancing the prospects for the achievement of the WESM objectives; and
- v. Assist the Rules Change Committee in relation to its assessment of proposals of a technical nature to amend the WESM Rules under chapter 8.

In addition, the TC is also tasked to conduct technical reviews and studies pursuant to the guidelines³ set forth in the TC Market Manual.

¹ Section 3.3.1 of the Technical Committee Market Manual – The TC shall prepare an Annual Report to be submitted to the PEM Board not later than three (3) months from the end of the calendar year. The report shall cover the Committee's accomplishments and pending issues and activities for the stated period. It shall also include the work plan of the Committee for the succeeding calendar year.

² WESM Rules Clause 1.7.2. *Responsibilities of the Technical Committee*

³ WESM-TCMM-003 Section 4.3 *Procedures*

2.2 Membership

Pursuant to Section 8.01 of the WESM Manual on Guidelines Governing the Constitution of the PEM Board Committees Issue 4.0, the TC shall consist of at least five (5) members with a representative from the following:

Composition	PEM Board-Appointed Member/Representative	Date of Appointment
Two (2) Independent Members	Mario R. Pangilinan	1 st term <ul style="list-style-type: none"> March 2022 to present (as Chairperson) November 2021 to February 2022 (as Member)
	Jaime V. Mendoza	1 st term <ul style="list-style-type: none"> December 2022 to present
	Jordan Rel C. Orillaza	3 rd term <ul style="list-style-type: none"> March 2022 to November 2022 (as Member) November 2019 to February 2022 (as Chairperson) 2 nd term <ul style="list-style-type: none"> June 2016 to June 2019 (as Chairperson) 1 st term <ul style="list-style-type: none"> July 2013 to June 2016 (as Chairperson)
One (1) Member from the Grid Management Committee	N/A	
One (1) Member from the Distribution Management Committee	N/A	
One (1) Member from the System Operator	Ermelindo R. Bugaoisan Jr.	<ul style="list-style-type: none"> August 2018 to present

In performing its responsibilities, the TC conducted regular monthly meetings and special meetings. For 2022, the TC conducted twelve regular meetings and two special meetings. The TC has conducted most of their meetings and discussions through an online platform due to the ongoing COVID-19 pandemic with one conduct of a face-to-face TC regular meeting.

New TC Composition

In December 2022, the Department of Energy (DOE) has promulgated a Circular, DC 2022-12-0038, entitled *Adopting Further Amendments to the Wholesale Electricity Spot Market (WESM) Market Manual on the Guidelines Covering the Constitution of the PEM Board Committee* which aims to provide clear and sound guidelines in appointing the working groups of the PEM Board in undertaking its governance functions and to update the Guidelines in view of developments in WESM governance.

Among the revisions introduced in the said Manual pursuant to the DOE Circular, the TC Composition was increased from five (5) to seven (7) members as follows:

- a. Three (3) Independent Members;
- b. One (1) member representing the System Operator;
- c. One (1) member representing the Market Operator;
- d. One (1) member representing the Generation Sector registered under the WESM Rules; and
- e. One (1) member representing the Distribution Sector registered under the WESM Rules.

3.0 TC ACCOMPLISHMENTS FOR 2022

3.1 Study on Demand-Side Bidding (DSB) in the WESM – Part 2

As a follow through to the market participant consultation on the customers' awareness of, interest in, and preparedness for Demand-Side Bidding (DSB) conducted by the TC in March 2021, the TC prepared a supplementary report on DSB which explains the existing demand side management programs in the Philippines and provides initial results in its attempt to quantify the potential benefit of DSB based on a one-year demand and prices in the WESM.

While there are more factors that need to be considered in the TC's proposed methodology, the TC, based on its initial calculation, illustrates that with submission of demand bids in the WESM, there will be a potential reduction in Load Weighted Average Price (LWAP), to the benefit of the customers.

Furthermore, the TC believes that DSB is an important program to empower the demand side and it will benefit the industry stakeholders with the necessary support and guidance from the policy and regulatory bodies. Hence, the TC recommends the following activities for consideration of PEMC, DOE, and/or ERC to further encourage participation and promote the active implementation of DSB in the WESM:

1. Focused consultative discussions and coordination meetings with industry players, DOE, and ERC;
2. Critical review of relevant documents and formulation of DSB procedures and guidelines;
3. Formulation of implementation plan for active participation in DSB; and
4. Joint effort of DOE, ERC, and other stakeholders in support for participants' readiness.

The TC submitted its report on Demand Side Bidding Part 2 to the Office of the Chief Governance Officer (OCGO) in March 2022. As recommended by the Office of the Chief Governance Office, TC is expected to present this study to the PEM Board in 2023.

3.2 Study on Distribution System Operator (DSO)-Managed Network

The TC was tasked to identify potential technical issues that may affect the operation of WESM in the Mindanao region and to recommend possible solutions to address such issues specifically on the participation of embedded generators (EG) in the WESM.

Since 2019, the TC conducted various consultations, meetings, and survey to further determine and appreciate EG-related issues and provide recommendations to address them. Since EGs are connected to the Distribution System and indirectly connected to the Transmission System, the TC proposed the role of a Distribution System Operator (DSO).

Introducing a DSO empowers the DU to host and manage new and emerging distributed energy resources (DER) which are expected to grow in terms of number of installations and capacities. Even though the TC has not yet quantified the benefits of the DU acting as the DSO, this new role of the DU may be beneficial for the industry in terms of wider options for dispatch, delayed network investment, optimal asset utilization, and even reduced losses when managed well.

In addition, the TC is in the opinion that greater participation in various existing programs such as the Interruptible Load Program (ILP) and DSB are beneficial which will also prepare the DUs in taking new roles to efficiently manage their distribution networks.

The TC submitted its paper on DSO-managed network to the OCGO in March 2022. Subject to the OCGO's instruction, the TC may present this study to the PEM Board in 2023.

3.3 Study on the Viability of Embedded Generator (EG) as Insurance Generators in Highly Urbanized Cities

Noting the challenges in the energy sector brought about by previous calamities, the TC, upon the instruction of the OCGO, conducted a review to determine the viability of EG in providing emergency power supply in calamity-prone areas specifically the highly urbanized areas.

Based on the TC's assessment, the viability of EGs as emergency power supply during periods of natural calamities should consider the following factors:

- **Relative Location** – the distance between the EG from the disaster area should be close enough to allow the transport of equipment and supplies or delivery of power over short distance. However, the distance should also consider the radius of the disaster area which may adversely affect the generator operation.
- **Transportability and Logistics** – if the EG is transportable, safe access to the disaster area should be determined for transport of equipment and fuel supplies as well as suitable site for operations.
- **Electrical Networks** – if the EG is stationary, the conditions of distribution and transmission networks intended for power delivery should be determined for safety and reliability.
- **Operational Safety** – operating generating equipment and high voltage networks requires qualified technical personnel for safety and reliability.

The TC submitted its document report on the subject to the OCGO in July 2022. As mentioned during the TC Regular Meeting No. 2022-08 held last 06 July 2022, the OCGO will review the study and consider consulting with the Office of Civil Defense (OCD) particularly on their relevant response protocols in order to gain further inputs for this study.

3.4 Studies on Variable Renewable Energy (VRE) Integration and Other New Technologies

3.4.1 Provide Inputs to the PEMC-Energy Transition Program (ETP) Study on the Establishment of Framework for the Coordinated Operations and Governance of Battery Energy Storage Systems (BESS) and Energy Storage Systems (ESS)

The TC provided comments and recommendations to the draft final report entitled “Upgrading Design and Implementation of Energy Battery Storage Market Mechanism of the Philippines Electricity Market Mechanism” conducted by Nel Consulting Limited (NCL)/Intelligent Energy Systems (IES) in July 2022.

Below are the TC comments and suggestions that applies to the draft final report in general:

1. Review of local technical standards such as the Philippine Grid Code (PGC), Philippine Distribution Code (PDC), and Philippine Electrical Code (PEC) to assess their adequacy for BESS/ESS conformance to safety, reliability, and security would provide a more complete scan of the industry. Problems in the market such as System Operator (SO) intervention or non-compliance of participant often originates from lack of understanding of technical standards and practices.
2. The phrase “technology neutral” should be defined clearly in the context of ESS participation in the WESM. Guiding principles for “technological neutrality” will also be helpful for consistency of application in the WESM.
3. The TC suggests the use of the concept of Market Resource as used in the Market Network Model (MNM) and Market Dispatch Optimization Model (MDOM) in introducing the ESS in registration, dispatch, and pricing. This will provide a structured and clearer understanding on the role of ESS in the market.
4. Lastly, the decision to develop stand-alone BESS/ESS or integrated/hybrid system should be based on sound business decision and not necessarily by policy or regulation. The following should be considered:
 - a. The benchmark life-cycle cost of energy (LCOE) of BESS is still way above solar and wind power technology as of 2019 even if there is a steep downtrend. The local taxes and other costs need to be considered since BESS is not covered by the Renewable Energy (RE) Law and all these systems are imported.

- b. The realistic comparison of LCOE should include conventional power resources which were not shown in the said graph. This would be a better benchmark of competitiveness in the market.
- c. An integrated RE and BESS development will result in higher investment cost even if the latter is piggy backed to avail of the benefits from RE Law. On the other hand, a stand-alone BESS development cannot enjoy the benefits of RE Law and maybe subject to regulations that are yet to be defined. The resulting real LCOE from integrated and stand-alone developments should be closely compared considering these factors mentioned.
- d. While the primary objective of BESS/ESS development is to promote the RE policies of the government, it will have more far-reaching applications across the industry (i.e., wholesale power, distribution, and utilization). Ancillary Service (AS) and Demand Side Bidding (DSB) are obvious applications in the WESM but reliability and power quality solutions across the three industry sectors may also be driving increasing interest in BESS/ESS.
- e. Like any new technology application, BESS/ESS will have a point of saturation when increase in capacity investment will yield lower financial returns or economic benefits. Although it may still be at the infant stage, policymakers should keep this in mind.

The TC submitted their comments to the PEMC-Energy Transition Partnership (PEMC-ETP) Technical Working Group (TWG) in August 2022. Noting the possible extension of the PEMC-ETP study to cover hybrid or integrated systems in 2023, the TC will likewise provide inputs and comments accordingly.

3.4.2 Review of the Adequacy of Rules and Procedures for Battery Energy Storage System (BESS) Participation in the WESM

As part of the 2022 TC Work Plan and to further expound the comments of the TC to the draft final report of the NCL/IES Study, the TC conducted a review on existing relevant WESM Rules and procedures to determine if these are adequate to support the participation of BESS and other ESS in the WESM.

Based on the review and assessment, the TC concludes that the existing WESM Rules and relevant Manuals need further revisions and update to properly accommodate the ESS' participation in the WESM and into the Grid. The same conclusion may apply to the current provisions of the PGC and the PDC.

Furthermore, there is a need to delineate ESS according to its connection as either stand-alone or hybrid noting that ESS connection to the Grid (stand-alone) and integration to conventional or RE generating plants (hybrid) are two different development approaches. Although stand-alone and hybrid ESS can integrate to the grid to participate in the WESM, their connection standards and operational requirements vary widely.

Given the increasing interest in BESS and ESS, the TC believes that the following recommendations should be considered with urgency by the concerned organizations:

- Modify the WESM rules and procedure recognizing ESS operator as a new trading participant in the market with uniform treatment as load and generation resources.
- Update the PGC and PDC to provide the minimum standards for connection and operation of ESS in the grid which recognize their capabilities and limitations.
- Review policies and regulations relating to ESS recognizing their potential contribution to market efficiency, grid reliability, and the environment.

The TC finalized the report in December 2022 and submitted the same to the OCGO in January 2023. As instructed by the OCGO, the TC presented the results of the study to the DOE-Electric Power Industry Management Bureau (EPIMB) on 08 February 2023.

3.5 Review and Proposed Revision to the WESM Manual on Market Network Model Development and Maintenance - Criteria and Procedures

The TC undertook a review of the WESM Manual on Market Network Model Development and Maintenance - Criteria and Procedures Issue 5.1 to demonstrate, by example, how WESM documents can be improved to make them easier to read, more informative and useful for WESM governance and operations.

The TC believes that the following considerations should always be an inherent part of the deliberation process when writing or revising market rules and procedures.

- Promote clarity and deeper understanding,
- Recognize long-term objective of the market,
- Maintain wider and more balanced operational perspective, and

- Encourage compliance and improve accountability.

The revisions proposed by the TC on the MNM manual can be summarized into the following three major groups:

1. Rearrange Contents
 - a. Logical order and structure
 - b. Clarity and consistency of contents
 - c. Explain relevance of MNM in the WESM
2. Differentiate MNM Development from Maintenance
 - a. Define MNM development process
 - b. Define MNM maintenance process
 - i. Updates – grid, connection points, metering, EMS, MMS
 - ii. Alterations – corrections, approximations, enhancements
3. Improve Terminology
 - a. Revise defined terms
 - b. Definitions for Undefined terms
 - c. Introduce new terms as necessary

As an initial step, the TC submitted a document report to the OCGO in September 2022 which contains the proposed revisions to the MNM Manual. Moreover, and as instructed by the OCGO, the TC will coordinate with the Market Operator and with the Market Assessment Group – Rules Review Division (MAG-RRD), and with other WESM Governance Committees (WGC) as necessary, regarding the intent to revise the MNM Manual prior to submitting the report to the PEM Board, for the Board's information and further instruction.

3.6 Study on the Implementation of Day-ahead Market in the WESM

The TC conducted a preliminary study on Day-ahead Market which aims to encourage interests and discussions on the subject among market participants, service providers, and WESM Governance Committees to arrive at a consensus on the future design of the market in the next five to ten years.

The TC further recommends the conduct of a more detailed feasibility study with the following scope of work:

- Determination of suitable day-ahead market design considering local conditions and current developments using historical data, system simulations, and cost-benefit analyses.
- Review and update of market policies, regulations, rules, and procedures that will be affected by, or will influence the implementation.
- Cost estimate of implementation including but not limited to information system changes, consultancy, training, and system impact studies.
- Project implementation and transition plans and schedules covering selection of consultants, procurement of systems, acceptance testing, operator/participant training, limited live dispatch, and commercial operations.

Relative to this, the TC submitted a position paper on the subject to the OCGO in December 2022 and presented the results of their study to the PEM Board during its meeting on 25 January 2023. The PEM Board requested the TC to proceed with its recommendations. Consequently, the TC conducted a consultation meeting with DOE Undersecretary Rowena Guevarra and with the DOE-EPIMB on 08 February 2023.

3.7 Review of Proposed Amendments to the WESM Rules and Manuals

As part of its mandates under the WESM Rules 1.7.2⁴, the TC reviewed and submitted to the RCC its comments to five (5) proposed amendments below:

- i. Proposed amendments to the WESM Manuals to include pricing error notice event as pricing condition category for claiming additional compensation (ORCP-WM-22-01)
- ii. Proposed general amendments to the WESM Rules, Retail Rules and Various Market Manuals on the Implementation of the Green Energy Option Program (ORCP-WR-RR-WM-RM-22-02)
- iii. Proposed General Amendments to the WESM Manual on Dispatch Protocol regarding Non-security Over-riding Constraints (ORCP-WM-22-04)
- iv. Proposed Amendments to the WESM Manuals regarding Penalty Framework on Test and Commissioning (ORCP- WM-22-05)
- v. Proposed General Amendments to the WESM Rules and WESM Manuals regarding updates and enhancements in view of various policy and regulatory issuances and the eventual implementation of the Reserve Market (ORCP-WR-WM-21-13)

⁴ WESM Rules 1.7.2 – TC Responsibilities- Assist the Rules Change Committee (RCC) in relation to its assessment of proposal of a technical nature

The TC likewise attended four RCC Meetings to participate in the deliberation of various proposed amendments.

3.8 Provide Technical Assistance to the Rules Change Committee (RCC)

As part of the responsibilities of the TC particularly under Clause 3.1.2⁵ of the TC Market Manual (WESM-TCMM), the TC provided technical assistance to the RCC as follows.

3.8.1 Request for Interpretation of Philippine Grid Code (PGC) 2016 regarding Loading Levels

In response to the RCC's request for interpretation of the PGC 2016 relative to the Proposed Amendments to the WESM Manual on System Security and Reliability Guidelines (SSRG Manual) Issue 1.0 and Dispatch Protocol Issue 16.0 for the implementation of the Reserve Market, the TC submitted a Technical [Opinion] Paper regarding the subject to the RCC in May 2022.

Moreover, the TC recommends the following in relation to the foregoing:

1. To conduct further validation on the impact of fixing the loading level noting that this may lead to higher frequency of MI declaration by the SO, sub-optimal dispatch, and higher nodal prices.
2. To examine regulatory impact on NSP availability performance.
3. To harmonize the provisions of the DOE Circular DC 2019-12-0018, PGC, and SSRG Manual relevant to reserves and operating margins noting its significant effects to the Ancillary Services procurement, cost recovery, and the reserve market implementation, and submit the results to the DOE and ERC.

3.9 Attendance to PEMC Membership Meetings and other Market Participants' Events

The TC attended and actively participated in the following events organized by PEMC and other stakeholders:

1. Market Participants Townhall on 05 May 2022.
2. PEMC Annual General Membership Meeting and Electricity Market Exchanges (EMX) held on 20 July 2022.

⁵ Assist the Rules Change Committee in relation to its assessment of Proposals of a technical nature to amend the WESM Rules under Chapter 8.

3. WESM Compliance Officer (WCO) Summit 2022 on 13-14 October 2022.

4.0 ONGOING ACTIVITY

4.1 Review of the threshold for price substitution (Price Trigger Factor)

In accordance with Clause 6.2.4 of the WESM Manual on Price Determination Methodology (WESM-PDM) Issue 3.0, the WESM TC shall (1) evaluate the results of the assessment of the application of the price trigger to be conducted by PEMC and (2) determine as to whether a change in the value of the price trigger is warranted.

Noting the ongoing assessment by PEMC on the subject, the TC will provide its evaluation to the assessment once accomplished.

5.0 2023 TC WORK PLAN

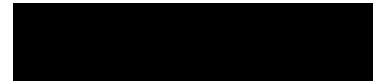
Annex A provides details of the TC's program of activities for 2023 consistent with PEMC's Corporate Strategic Plan for 2023-2025, which was approved by the PEM Board on 25 January 2023.

Submitted by:

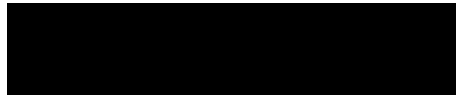
TECHNICAL COMMITTEE



MARIO R. PANGILINAN
Chairperson



EDWIN N. MOSA
Member



ERMELINDO R. BUGAOISAN, JR.
Member



JAIME V. MENDOZA
Member

Contributor:

JORDAN REL C. ORILLAZA
Former TC Member/Chairperson

ANNEX A - TECHNICAL COMMITTEE 2023 WORK PLAN

The table below provides the TC's 2023 Work Plan consistent with the PEM-Board approved 2023-2025 Corporate Strategic Plan of PEMC.

No.	Activity	TC Output	Indicative Timeline
Continuing TC Activities/Studies			
1	Day-ahead Market (DAM) in the WESM PEM Board Directive: Proceed with the study on the Day-Ahead Market (DAM) in the WESM and report to the Board the outcome of the study, for submission to the DOE and ERC.	A. Discuss the TC recommendations with the DOE and ERC	Q1
		B. As recommended by DOE-EPIMB, submit a study/review on the DAM design and implementation in other jurisdictions.	Q2
		C. Assist PEMC in the engagement of external Consultant for the study on DAM.	Q3 to Q4
		i. Provide inputs to the proposed scope of work and terms of reference; and ii. Review of technical and financial proposals of the bidders	
2	Review of Adequacy of Rules on Battery Energy Storage System (BESS) Participation in the WESM PEM Board Directive: Proceed with the study on the adequacy of Rules on BESS Participation in the WESM and report to the Board the outcome of the study especially with the rise of renewable energy in coordination with IEMOP.	A. Coordination with DOE, ERC, and IEMOP	Q1
		B. Provide comments to the draft DOE Policy on ESS and to the resulting proposed amendments relative to the market governance of ESS.	As scheduled (Q1 and Q2)
		C. Provide inputs and/or comments in relation to the ERC's consultancy project regarding update/revisions to the PGC and PDC	
		D. Provide inputs and/or comments to the Phase 2 of the NCL study covering hybrid/ integrated BESS/ESS	Subject to the Consultant's timeline (Final report – April 2023)
3	Holistic presentation of various TC studies (DSO, DAM, DSB, Review of MNM Manual, etc.)	For consideration, and future presentation to the PEM Board.	Q4

No.	Activity	TC Output	Indicative Timeline
New TC Activities			
4	<p>Submit one full report which will cover the following:</p> <ol style="list-style-type: none"> 1. Congestion issues experienced by the regions considering that the main driver for the application of PSM is the possibility of a spring-washer effect during extraordinary network congestion. 2. Assessment of price trigger factor in various regions covering the transition period from 29 December 2020 to 28 December 2023. <p>Other WGC involved: Market Surveillance Committee (i.e., effects on prices)</p>	Provide comments to PEMC's outputs during the conduct of study for their compliance to ERC Directives.	For presentation to the PEM Board by Q1 2024
5	Request for Study regarding the Inclusion of Biomass Plants as Must-Dispatch under DOE DC. No. 2022-10-0031	Submit a position paper on the subject matter and to further recommend the TC's proposed resource-based dispatch scheduling, among others.	Q2
TC Regular Activities			
6	TC 2022 Annual Report and 2023 Work Plan	Submission to the PEM Board and publication of TC 2022 Annual Report and 2023 TC Work Plan	Q1
7	<p>Conduct Regular Audits for the WESM:</p> <ul style="list-style-type: none"> • 4th RMIA 	Assist the PEM Audit Committee (PAC) in the conduct of activities for 4 th RMIA, as required.	Subject to the audit timeline

No.	Activity	TC Output	Indicative Timeline
		Submit comments/suggestions to the Review of Metering Installations and Arrangements (RMIA) report, as required.	
8	Submit comments to the following as requested or required within specified timelines: <ul style="list-style-type: none"> • RCC Rule Change Proposals • DOE Circulars • ERC Issuances 	Provide comments as necessary and/or applicable	As scheduled
9	Submit proposed amendments to the RCC as a result of market studies or best practice recommendations (e.g., MNM revision)	A. Consultation with IEMOP and MAG-RRD regarding the TC's intent to revise the Market Network Model (MNM) Manual	Q1
		B. Preparation/review of provisions for revision and submission of the proposal to the RCC.	Q4
10	Conduct Review and Studies as requested through the TC Request for Study or Review	Report/Response to the Request for TC Study/Review	As requested
11	Attend PEMC events and trainings	Attendance to PEMC Membership meetings, WCO Summit, and trainings	As scheduled
12	Regular conduct of TC Meetings (every 1st Wednesday of the month, alternate face-to-face and online)	Participation in TC Meetings	As scheduled

TC 2023 Work Plan Timeline

Legend: - Final Output
 - Regular Activity / Preparatory Activities

No.	Activity	2023			
		Q1	Q2	Q3	Q4
1	Day-ahead Market (DAM) in the WESM				
	• Discuss the TC recommendations with the DOE and ERC				
	• Submit a report on the DAM design and implementation in other jurisdictions.				
	• Assist PEMC in the engagement of external Consultant for the study on DAM.				
2	Review of Adequacy of Rules on BESS Participation in the WESM				
	• Coordination with DOE, ERC, and IEMOP				
	• Provide comments to the draft DOE Policy on ESS and to the resulting proposed amendments relative to the market governance of ESS.				
	• Provide inputs in relation to the ERC's consultancy project regarding update to the PGC and PDC				
	• Provide inputs and/or comments to the Phase 2 of the NCL study (hybrid BESS/ESS)				
3	Holistic presentation of various TC studies (DSO, DAM, DSB, etc.)				
4	Compliance with ERC Directives				
5	Request for Study regarding the Inclusion of Biomass Plants as Must-Dispatch under DOE DC. No. 2022-10-0031				
6	TC 2022 Annual Report and 2023 Work Plan				
7	Conduct Regular Audits for the WESM*				
8	Submit comments to various proposals (RCC, DOE, ERC) as requested*				
9	Submit proposed amendments to the RCC as a result of market studies or best practice recommendations (e.g., MNM revision)				
	• Consultation with IEMOP and MAG-RRD regarding the TC's intent to revise the MNM Manual				
	• Preparation/review of provisions for revision and submission of the proposal to the RCC				
10	Conduct Review and Studies as requested through the TC Request for Study or Review*				
11	Attend PEMC events and trainings (AGMM – Q2, WCO – Q3)				
12	Regular conduct of TC Meetings				

*No specified timeline / with dependencies, specifically on the Management/PEM Board's approval or instructions