



Day-ahead Market in the WESM

DECEMBER 2022

This Report is prepared by the
WESM Technical Committee

Contents

1.0 INTRODUCTION	2
2.0 OBJECTIVE.....	3
3.0 METHODOLOGY	3
4.0 PROPOSED DAY-AHEAD MARKET ARRANGEMENTS	3
5.0 PREVIOUS EXPERIENCE WITH IMEM.....	6
6.0 RECOMMENDATION	6
7.0 REFERENCES	7
8.0 APPENDICES.....	7

1.0 INTRODUCTION

In June 2021, the market started the commercial operation of the Enhanced WESM Design and Operations (EWDO) and completed the migration to the New Market Management System (NMMS). The EWDO was brought about by recommendations from the WESM Design Study (WDS) which was completed in 2014. On the other hand, the procurement of the NMMS addressed the end of economic life of the old MMS which has been in operation since 2006. The introduction of the NMMS provided the opportunity to implement some of the WDS recommendations.

The WDS was prepared by a group of consultants led by Intelligent Energy Systems (IES) for the PEMC to address several market design and implementation issues undermining the efficiency of the market, as identified in the first Market Operations Audit undertaken by Deloitte and IES (2010) and in the second audit undertaken by PA Consulting (2011).

The study published a comprehensive report in three phases. Phase 1¹, published November 2013, addressed a range of issues in the WESM that currently prevent it from operating correctly. Phase 2², published December 2013, addressed the specific issue of whether the dispatch interval should be shortened from the current one hour to a shorter interval of, say, 5 or 10 minutes, as now applies in many other markets. Phase 3³, published January 2014, covered advise on the design and issues around introducing a Day-Ahead Market (DAM) into the WESM.

The recommendations in the first and second phases of the WDS were mostly implemented through the EWDO and the NMMS. However, the day-ahead market which was covered in the third phase has not been implemented to date. The possible reasons are: (a) the Phase 3 study requires that the recommendations of the first and second phases be implemented before DAM is implemented or (b) the first option, (i.e., status quo, information only day-ahead process) of the phase 3 study was already chosen.

Regardless, the TC believes that the DAM implementation contained in Phase 3 of the WDS should be revisited for the following reasons:

- The EWDO and NMMS implementation based solely on the first and second phases of the WDS may or may not achieve all the desired resolutions to the current WESM issues and the other challenges in parallel market developments (e.g., Mindanao WESM, Reserve Market, Renewable Energy Market, Retail competition, Green Energy Option Program, Battery Energy Storage System, etc.). Although it may be too early to make a conclusion, a proactive plan can help PEMC on future market developments.
- The WDS on DAM published in 2014 requires updating of information relating to new developments in the market and with more focus on application to local market and industry conditions instead of other jurisdictions.
- In cases where PEMC and DOE decide to pursue the development of DAM, this will be an expensive and time-consuming effort covering all aspects of WESM from policy, regulations, rules, procedures, system design, and participant readiness. As a strategy, a feasibility study of DAM can be performed while observing the effectiveness of EWDO.

¹ WESM Design Study Phase 1. <https://www.wesm.ph/downloads/download/TWFya2V0IFJlcG9ydHM=/MTg4>

² WESM Design Study Phase 2. <https://www.wesm.ph/downloads/download/TWFya2V0IFJlcG9ydHM=/MTg4Nw==>

³ WESM Design Study Phase 3. <https://www.wesm.ph/downloads/download/TWFya2V0IFJlcG9ydHM=/MTg4OA==>

It is the opinion of the TC that a day-ahead process with commitment and transparency among participants can provide transparency and certainty to the market and, in the process, facilitate any future developments and expansions. This paper is an attempt to explain this position and revive the interest on the subject.

2.0 OBJECTIVE

The objective of this paper is 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.

3.0 METHODOLOGY

This document was prepared to explain the position of the TC about day-ahead market (DAM) as it applies to the WESM. The TC does not have the time and resources necessary to undertake a thorough investigation or feasibility study on the subject nor to provide the forums for discussion. The position paper was based primarily on documentary research and limited consultations with the Market Operator (MO) and the System Operator (SO).

In particular, the primary document referred to in this paper is the WESM Design Study of IES consultants published by PEMC in three phases as explained in the introduction. The third phase which was published in January 2014, provided assessment of a DAM in other jurisdictions and how it may apply to the WESM.

To engage a discussion with MO and SO, the TC sent a questionnaire relating to the implementation of recommendations in the WDS with the start of EWDO and the NMMS in June 2021. The TC also exchanged views with MO and SO on the implementation of DAM as next logical step after the completion of the EWDO.

4.0 PROPOSED DAY-AHEAD MARKET ARRANGEMENTS

The position of TC can be summarized into two major points: (1) Day-ahead bilateral scheduling (DABS) and (2) Day-ahead market. These arrangements are explained in the following sections:

1. Day-Ahead Bilateral Scheduling (DABS)

DABS is a scheme that requires submission of the bilateral contract quantities (BCQ) for dispatch scheduling prior to the operating day. This is a shift from the existing procedure whereby all available generating capacities are offered for central dispatching (i.e., “gross pool”) regardless of whether they are contractually committed or not. Currently, BCQ are only declared after the actual dispatch for settlement purpose. Further, the generator will have to manage their offers to address their unit commitment concerns (e.g., start-up, Pmin, etc.). A practice termed as “self-commitment” or what experts describe as “decentralized” decision-making.

The TC recommends the introduction of DABS based on the following rationale:

- Accountability of bilateral contract holders – suppliers and customers will be bound by their BCQs during scheduling, dispatch, and settlement. Any contractual or schedule imbalances will be handled more transparently by the WESM.

- Unit-commitments according to contract – generators can use their BCQ as basis for unit commitment and advanced scheduling. Manipulation of offers for self-commitment will be unnecessary with high level of contracted capacity (usually averaging 85-90%⁴ of demand).
- Decongest real-time market processes – if the schedules of contracted capacities are already determined day ahead, there will be more time for planning, preparation, and management for real-time dispatch not only by MO and SO but also for participants.
- Benefits similar with DAM – with less market exposure and advanced bilateral schedule, demand-supply certainty can be improved, and spot price volatility can be reduced. Demand side participation will also be encouraged.
- Easier to implement than DAM – implementation will require procedural change with minor system changes.
- Facilitate market settlement – any issues associated with post-dispatch BCQ declaration can be eliminated.

There are two possible issues that needs to be resolved with the DABS implementation: (1) the change of the WESM from a “gross pool” to a “net pool” model and (2) the Open Access Transmission Service (OATS) priority which will become “first come, first served” for bilateral scheduling and market-based for the uncontracted portion of demand.

2. Day-Ahead Market (DAM)

Generally, the implementation of DAM in other jurisdictions have led to less spot price volatility with higher certainties in demand and supply. Application of DAM in the WESM can encourage greater demand participation and facilitate other market developments. These are explained in many published documents from different electricity markets with DAM and were also discussed in Phase 3 of the WESM Design Study (WDS).

The WDS Phase 3 also evaluated four possible approaches/options for implementing the DAM in the WESM, namely (1) day-ahead information only (status quo), (2) compulsory technical AM, (3) compulsory financial DAM, and (4) optional financial DAM. The evaluation assumes that all recommendations in Phases 1 and 2 of the WDS have been implemented (EWDO).

The same study recommended that “the new MMS (NMMS) should be rolled out not only with the Phase 1 and 2 improvements but also with facilities that could be used to support nodal or zonal forward trading and an optional financial DAM.” (88)

The report concluded that “Option (4) is essentially Option (1) with an optional day-ahead and intra-day financial contract trading facility added. Because this facility is optional and independent of the physical scheduling process, it would supplement but not change the decentralized design of the WESM. Particular advantages that such a facility could bring include:

⁴ Based on the latest available Monthly Market Assessment Reports (September 2021 to February 2022) being published by PEMC's Market Surveillance Committee. <https://www.wesm.ph/market-outcomes/market-assessment-reports/monthly-market-assessment-report>

- A voluntary contracting facility to support decisions on unit commitment a day ahead and, importantly, within the day;
- A voluntary contracting facility for demand-side participation, with desirable flexibility during the day;
- A voluntary contracting facility for participants to adjust contract positions a day ahead and within the day, prior to locking in a schedule for physical dispatch.” (86)

The TC agrees with these recommendations and conclusion of the Phase 3 WESM Design Study to pursue an optional DAM. However, with the introduction of DABS, the TC is of the opinion that the optional DAM is more physical rather than financial. The advantages that were pointed out in the conclusion would support this opinion. Nevertheless, a more detailed design and feasibility study is necessary for benchmarking.

Table 1 shows a comparative design feature of the market with and without commitment in the day-ahead process. The first column represents the design features in the WESM. Requirement refers to the action required from participants: “voluntary” is for information only while “mandatory” requires compliance or action from participants. Commitment refers to financial obligations/entitlements that come with the requirements. Note that the hour-ahead projection becomes binding in the real-time market when pricing error correction is applied for certain intervals.

Table 1. Comparison of market design features of existing and proposed day-ahead processes.

Market Features	Existing Design (EWDO)		Proposed Design	
	Requirement	Commitment	Requirement	Commitment
Week-ahead Projections	Voluntary	Non-binding	Voluntary	Non-binding
Day-ahead Projections	Voluntary	Non-binding	Voluntary	Non-binding
Hour-ahead Projections	Voluntary	RTM/D reference for price correction	Voluntary	RTM/D reference for price correction
Real-time Market/ Dispatch	Mandatory – gross pool	Financially binding for non-BCQ only	Mandatory – net of DABS and DAM	Financially binding for non-BCQ only
Bilateral Contract Quantities	Post-dispatch declaration	BCQ settled outside WESM	Scheduled day-ahead	BCQ settled outside WESM
Day-ahead Bilateral Scheduling	N/A	N/A	Mandatory	BCQ settled outside WESM
Day-ahead Financial Market	N/A	N/A	Voluntary – net of DABS	Binding

The DABS and DAM are envisioned to be operated sequentially based on a revised WESM timetable. The early introduction of the DABS prior to the implementation of the DAM may provide key advantages of day-ahead preparations and offer insights into the appropriate design and development of the DAM.

5.0 PREVIOUS EXPERIENCE WITH IMEM

The implementation of the Interim Mindanao Electricity Market (IMEM) in 2013 follows the principle of a binding day-ahead market and provided real-time imbalance correction through the use of a merit order table. However, the IMEM was short-lived and was suspended in early 2014 having been plagued by many issues including a lack of liquidity, payment issues, and grid interruptions⁵. There were also issues related to failure to honor (bilateral) contracts and clarity of the rules with respect to the customers' energy withdrawal from available IMEM resources which resulted in payment issues, among others, during the IMEM's commercial operations.

One of the key differences of IMEM compared to the proposed DAM is that IMEM required having a default supplier to handle uncontracted demand while the DAM intends to use a day-ahead trading scheme in the WESM to handle the supply for the uncontracted demand or scheduled capacity outages. In the proposed DABS, the high level of bilateral contract is sufficient to address the unit-commitment of base load plants while those uncontracted portions will remain uncontracted and will be exposed in the real-time market.

The TC believes that the industry can learn from the previous experience with IMEM leading to the introduction and/or implementation of DABS/DAM in the WESM.

6.0 RECOMMENDATION

The TC position is based on the best available information and the opinions of its members. The paper should be subjected to review and consultation with market participants and stakeholders for validation. Depending on the consultative outcome, it should be supported by 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.

The feasibility study shall allow stakeholders, policymakers, and regulators to make a more informed decision on whether to pursue the implementation of a day-ahead market or retain the status quo.

⁵ Philippines Energy Sector Assessment, Strategy, and Road Map.
<https://www.adb.org/sites/default/files/publication/463306/philippines-energy-assessment-strategy-road-map.pdf>

7.0 REFERENCES

Asian Development Bank. October 2018. *Philippines Energy Sector Assessment, Strategy, and Road Map*. <https://www.adb.org/sites/default/files/publication/463306/philippines-energy-assessment-strategy-road-map.pdf>

Department of Energy. June 2021. *Department Circular No. DC2021-06-0015: Declaring the Commercial Operations of Enhanced Wholesale Electricity Spot Market (WESM) Design and Providing Further Policies*. https://www.doe.gov.ph/sites/default/files/pdf/issuances/dc2021-06-0015_0.pdf

Hugh Bannister. January 2014. *Wholesale Electricity Spot Market (WESM) Design Study Phase 3. Intelligent Energy Systems (IES)*. <https://www.wesm.ph/downloads/download/TWFya2V0IFJlcG9ydHM=/MTg4OA==>

Stephen Wallace and Stuart Thorncraft. November 2013. *Wholesale Electricity Spot Market (WESM) Design Study Phase 1. Intelligent Energy Systems (IES) and SW Advisory*. <https://www.wesm.ph/downloads/download/TWFya2V0IFJlcG9ydHM=/MTg4>

Stephen Wallace and Stuart Thorncraft. December 2013. *Wholesale Electricity Spot Market (WESM) Design Study Phase 2. Intelligent Energy Systems (IES) and SW Advisory*. <https://www.wesm.ph/downloads/download/TWFya2V0IFJlcG9ydHM=/MTg4Nw==>

8.0 APPENDICES

- Appendix A – WESM Design Study Phase 1
- Appendix B – WESM Design Study Phase 2
- Appendix C – WESM Design Study Phase 3
- Appendix D – Department Circular No. DC2021-06-0015

Submitted by:

TECHNICAL COMMITTEE

[signed]

MARIO R. PANGILINAN
Chairperson

[signed]

ERMELINDO R. BUGAOISAN, JR.
Member

[signed]

JORDAN REL C. ORILLAZA
Member