



Assessment on Economic Impact of Market Intervention and Market Suspension

2021 - 2023

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Philippine Electricity Market Corporation –
Market Assessment Group for the
Market Surveillance Committee

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The information contained in this document is based on data that are subject to continuous verification by the Philippine Electricity Market Corporation (PEMC). The same information is subject to change as updated figures come in.

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1.0 INTRODUCTION

The Wholesale Electricity Spot Market (WESM) has been established under Section 30 of the Electric Power Industry Reform Act (EPIRA). It serves as a centralized venue for large-scale buyers and sellers of electricity where price is based on the interaction of demand and supply. It is where the generators sell their excess capacities not covered by contracts and where the customers buy additional capacities on top of their contracts. The WESM will likewise facilitate the transparent and reliable market for electricity. The objectives of the spot market are to establish a competitive, efficient, transparent and reliable market for electricity where: (a) A level playing field exists among WESM Participants, (b) Trading of electricity is facilitated among WESM Participants within the spot market, (c) Third parties are granted access to the power system in accordance with the Act, (d) Prices are governed as far as practicable by commercial and market forces, and (e) Efficiency is encouraged¹. In June 2006, the WESM began operating commercially in the Luzon grid, followed by the integration of the Visayas grid in December 2010, and by Mindanao in January 2024.

The WESM Rules, which serves as the guiding principles for the operations of the WESM, provides in its Chapter 6, the procedures for the declaration of the Market Intervention or Suspension (MI/MS). These provisions are likewise merited in other electricity markets but are only limited to certain extents. As originally provided in the WESM Rules, MI or MS shall provide for procedures to be followed during an Emergency, Threat to System Security, or for instances when the Energy Regulatory Commission (ERC) will suspend the WESM, considering the specified conditions therefor.

As the WESM transitions to a shorter dispatch interval (5-minute market), from previously following a 1-hour dispatch interval, the number of MI declarations have gone up due to the count of intervals that are affected by each declaration. Since then, 1,610 intervals or 56 events have been declared in the WESM.

During instances of MI or MS, WESM Rules Clause 6.2.3 which requires the Market Operator to impose administered prices during intervals affected by an MI/MS declaration. Based on historical information, administered prices have affected WESM settlement prices, both positively and negatively, as it uses historical prices that do not reflect the actual economics of the market. Generators affected by administered prices may file for additional compensation which will be collected to the consumers based on the approved methodology of the ERC.

Considering the number of MI or MS impositions in the WESM, the Market Surveillance Committee (MSC) finds it necessary to look at its economic impact and recommend appropriate measures to address any issues determined in this study.

2.0 OBJECTIVE

In this study, the MSC aims to, among other things:

1. Provide assessment to the economic impact of the MI or MS from the year 2021 to 2023 to the WESM and Market Participants;

¹ WESM Rules Clause 1.2.5

2. Survey other jurisdictions on their best practices and methodologies that are relevant to the MI or MS in the WESM; and
3. Provide recommendations on how to alleviate the economic impact of MI or MS.

3.0 REVIEW OF RELATED LITERATURES

3.1. Market Intervention

Market Intervention (MI) is defined by the WESM Rules as a measure taken by the System Operator when the grid is in alert or emergency state as established in the Grid Code arising from a threat to system security, force majeure event or emergency, or by the Market Operator in relation to the simulation or implementation of the business continuity or disaster recovery procedures developed in accordance with Clause 6.8.1. During such event, the administered price shall be used for settlements².

As currently practiced, MI may be initiated by either the Market Operator or the System Operator depending on the following circumstances:

- a. Grid-related events initiated by the System Operator
 - Emergency condition
 - Threat to system security
 - Force majeure
- b. Market-related events initiated by the Market Operator
 - System hardware or software failure
 - Interruption in the operations of market software used to support various processes in the WESM

3.2. Market Suspension

As defined by the glossary of the WESM Rules, Market Suspension (MS) is an event wherein the *ERC* declares the operation of the *spot market* to be suspended in cases of natural calamities or national and international security emergencies. During such event, the *administered price cap* shall be used for *settlements*³.

3.3. Administered Price

Lastly, the Administered Price (AP) is defined under the WESM Rules as a price imposed by the Market Operator to the Trading Participants during market suspension and market intervention to be used for settlements, which price is determined in accordance with the methodology developed and published by the Market Operator and approved by the *ERC*⁴.

² WESM Rules Glossary. Effective Date: 15 August 2023.

³ *Ibid.*

⁴ *Ibid.*

In the ERC Decision back in 2006⁵, PEMC was required by the WESM Rules to establish an Administered Price Determination Methodology (APDM) which shall prevail in the market during instances of MI/MS. PEMC then proposed for a mechanism which requires the WESM trading participants to submit their Default Dispatch Offer (DDO) which is a price that they are willing to generate energy, with a proposed audit mechanism to ensure that the submitted prices do not result in taking advantage of participants during an MI/MS. Due to lack of substantial foundation, the ERC found that there are no proper safeguards to ensure that market manipulation will be fully mitigated. This then led to the submission of PEMC's review on the implementation and methodologies in other jurisdictions, wherein the ERC noted that Ontario Electricity Market's mechanism is a straightforward one which utilizes the average prices from four (4) most recent business days or non-business days, excluding those hours which have previously been administered.

The aforementioned methodology is still currently implemented but was retrofitted for the 5-minute dispatch interval. Such computation price is provided under the WESM Manual on Price Determination Methodology (PDM), Section 7.2.4. In simplest terms, AP is the weighted average of the previous four (4) similar day, similar trading intervals when the MI or MS is declared, regardless if the same has been administered or not.

$$\text{Administered Price}^6 = \frac{\sum_{d=D-1}^{D-n} \text{FEDP} * \text{SQ}}{\sum_{d=D-1}^{D-n} \text{SQ}}$$

Where:

FEDP	refers to the final nodal energy dispatch price for a generator resource for a dispatch interval within a trading day
SQ	refers to the snapshot quantity for a generator resource for a dispatch interval within a trading day
D	refers to the current trading day
D-n	refers to the nth most recent similar trading day of D
N	refers to the number of similar trading days and similar dispatch intervals that have not been administered from the four (4) most recent similar trading days and similar dispatch intervals

Furthermore, Section 8.3.1.a of the WESM PDM Manual provides that a generator may be entitled to additional compensation when the settlement applied to them during instances of, among other things, MI/MS is not sufficient covered.

4.0 REVIEW OF OTHER JURISDICTION

Among the objectives of this study is to survey the best practices in other jurisdictions in terms of market intervention or suspension. The closest approach applied in other jurisdictions that were looked at in this study were with Australia and Ontario, Canada. Table 1 below provides for the comparison among these reference markets:

⁵ ERC Case No. 2005-056RC Decision dated 22 June 2006. "In the Matter of the Application for the Approval of the Administered Price Determination Methodology for the Philippine Wholesale Electricity Spot Market (WESM)"

⁶ Section 7.2.4 of WESM Price Determination Methodology Manual. Effective Date 13 February 2024.

Table 1 Market Design Comparison for Market Intervention/Suspension

Dispatch Interval	5-minute interval		
Market Intervention or Suspension			
Additional Compensation			
Administered Price	Historical Data previous 4 weeks with similar intervals	Estimation of Direct Costs	Based on most recent applicable prices

4.1. Australia

Similar with the Philippines, as depicted above, Australia's National Electricity Rules (NER) allows the Australian Energy Market Operator (AEMO) to intervene their market in three (3) specific events as follows:

- Issuance of Directions or Instructions whenever the AEMO is satisfied that it is necessary to maintain or re-establish the power system to a secure, satisfactory, or reliable operating state, or for reasons of public safety;
- Implementation of Administered Price Cap where the Australian Rules includes provision incorporating that if the Cumulative Price exceeds the Cumulative Price Threshold, then the AEMO steps in and (under Administered Pricing) caps the dispatch price, as well as the Trading Price to \$300/MWh for the region; and
- Declaration of suspension on their market when the power system in the region has collapsed to a black system where there is an absence of voltage on the transmission system affecting a significant number of customers. Also, it may be suspended by a direction from a participating jurisdiction to suspend the market following the declaration by that jurisdiction of a state of emergency. In addition, if the AEMO determines that it has become impossible to operate the spot market in accordance with the provisions of the NER.

In cases when the market has been suspended by the AEMO, it may order the resumption of the market if it deems that the incident that caused the suspension is very unlikely to be present. On the other hand, if the market has been intervened due to direction from participating jurisdiction, it may only be lifted once the same body has directed to do so.

Relevant to the disruptive market events, is the application of their difference compensation frameworks wherein the AEMO and AEMC is responsible for the following:

- Directions compensation framework for participants to recover the costs associated with complying with a direction. Initially, participants receive the 90th percentile spot price for energy over the preceding 12 months wherein the participants may lodge claims for additional compensation for direct costs and loss of revenue;

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- Administered pricing compensation framework to maintain the incentive, during price limit events (i.e. administered price caps or administered price floors), for relevant participants to supply (or consume) energy or relevant services in the market where the participants may be compensated for direct and opportunity costs; and
- Market suspension compensation framework to maintain the incentive, during market suspension periods, for relevant participants to supply energy or relevant services in the market. Initially, participants receive a payment determined by a formula that estimates direct costs wherein the participants may lodge claims for additional compensation for direct costs.

The table below provides for the comparison on the interventions done in the Australian market and its counterpart in the WESM:

Australia	WESM Counterpart
Directions	Redispatch Instructions
Price cap	Secondary Price Cap
Market Suspension	Market Suspension

4.2. Ontario

For the Ontario Electricity Market, Section 4.5 of the Market Manual for Market Suspension and Resumption provides for the instances that merit for the said declaration:

- market operations cannot be continued in a normal manner due to a failure in the software, hardware or communication systems that support market operations;
- a major blackout;
- the IESO-controlled grid breaks up into two or more electrical islands;
- an emergency situation requiring the IESO to evacuate its principal control centre and move to a backup control centre, under conditions and subject to the requirements of Chapter 5; or
- a declaration of an emergency by the Premier of Ontario or a direction from the Minister to the IESO or to a market participant to implement an emergency preparedness plan

Ontario's declaration of intervention and/or suspension is still somewhat very similar with the current implementation in the WESM. However, when it comes to the previously adopted settlement, Ontario's current mechanism seems to be more intuitive as it uses the most recent market results in order to be reflective of the current conditions of the market, as well economic situation. The following discussion will provide a detailed information as to the market outcomes that Ontario market considers whenever there are events that actual market outcomes are not available.

Depending on the prevailing situation in Ontario's market, the following market outcomes shall be used for the affected intervals:

- a. Using the last good price by applying the most recent market outcome as the settlement information for intervened intervals

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Interval	1	2	3	4	5	6	7	8	9	10	11	12
Ont Energy MCP	\$28	\$30	\$30	\$38	\$42	\$42	\$42	\$42	\$42	\$42	\$55	\$55
Ont 30-minute OR MCP	\$3	\$3	\$3	\$3	\$3	\$3	\$3	\$3	\$3	\$3	\$3.2	\$3.2
NY Energy MCP	\$38	\$40	\$40	\$48	\$52	\$52	\$52	\$52	\$52	\$52	\$65	\$65
NY 30-minute OR MCP	\$3	\$3	\$3	\$3	\$3	\$3	\$3	\$3	\$3	\$3	\$3.2	\$3.2

- b. Using the next good price by applying the next recent market outcome as settlement information for intervened intervals

Interval	1	2	3	4	5	6	7	8	9	10	11	12
Ont Energy MCP	\$28	\$30	\$30	\$38	\$42	\$55	\$55	\$55	\$55	\$55	\$55	\$55
Ont 30-minute OR MCP	\$3	\$3	\$3	\$3	\$3	\$3.2	\$3.2	\$3.2	\$3.2	\$3.2	\$3.2	\$3.2
NY Energy MCP	\$38	\$40	\$40	\$48	\$52	\$65	\$65	\$65	\$65	\$65	\$65	\$65
NY 30-minute OR MCP	\$3	\$3	\$3	\$3	\$3	\$3.2	\$3.2	\$3.2	\$3.2	\$3.2	\$3.2	\$3.2

- c. Using both the last and next good prices by applying either the most recent or next recent market outcome as settlement information for intervened intervals

Interval	1	2	3	4	5	6	7	8	9	10	11	12
Ont Energy MCP	\$28	\$30	\$30	\$38	\$42	\$42	\$42	\$42	\$55	\$55	\$55	\$55
Ont 30-minute OR MCP	\$3	\$3	\$3	\$3	\$3	\$3	\$3	\$3	\$3.2	\$3.2	\$3.2	\$3.2
NY Energy MCP	\$38	\$40	\$40	\$48	\$52	\$52	\$52	\$52	\$65	\$65	\$65	\$65
NY 30-minute OR MCP	\$3	\$3	\$3	\$3	\$3	\$3	\$3	\$3	\$3.3	\$3.3	\$3.3	\$3.3

- d. Using the similar previous four (4) recent business days when the intervention is greater than 48 intervals

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Hour 4	June 14	June 15	June 16	June 17	4-Day Average
HOEP	\$32	\$36	\$44	\$40	\$38
Hourly Average of Ontario 30-minute OR prices	\$3.20	\$3	\$3	\$3.20	\$3.10

These pricing methodologies are applied by the Ontario market considering the following:

- Based on IESO's judgment of which price would best meet the guiding principle, that is, which price would best reflect the price that would otherwise have been produced by the market.
- If there are market outputs, IESO will use, to the extent practical, the prices calculated by the software as the administrative prices.
- IESO only has two (2) business days after the dispatch day to decide the need for administrative prices and schedules and to implement them. Beyond this window, the published prices and schedules become the prices and schedules used for settlement.

By simply analyzing these methodologies, it could already be deduced that it would tend to reflect, if not exactly, the applicable economics of the electricity market during intervals when the market is intervened. In the next sections of this study, it will be exhibited how the current pricing methodology applied during market intervention, highly deviate from the prevailing market prices which causes a series of economic impact, not only on the investors in the generation sector, but also to the end-users who take on the adjustments necessary to settle what is due to the generators.

Furthermore, and similar with the implementation in the Philippines, Ontario still allows for claims of additional compensation even if their imposed settlement prices are already close to actual market outcomes. Among the allowed items for additional compensation are the following:

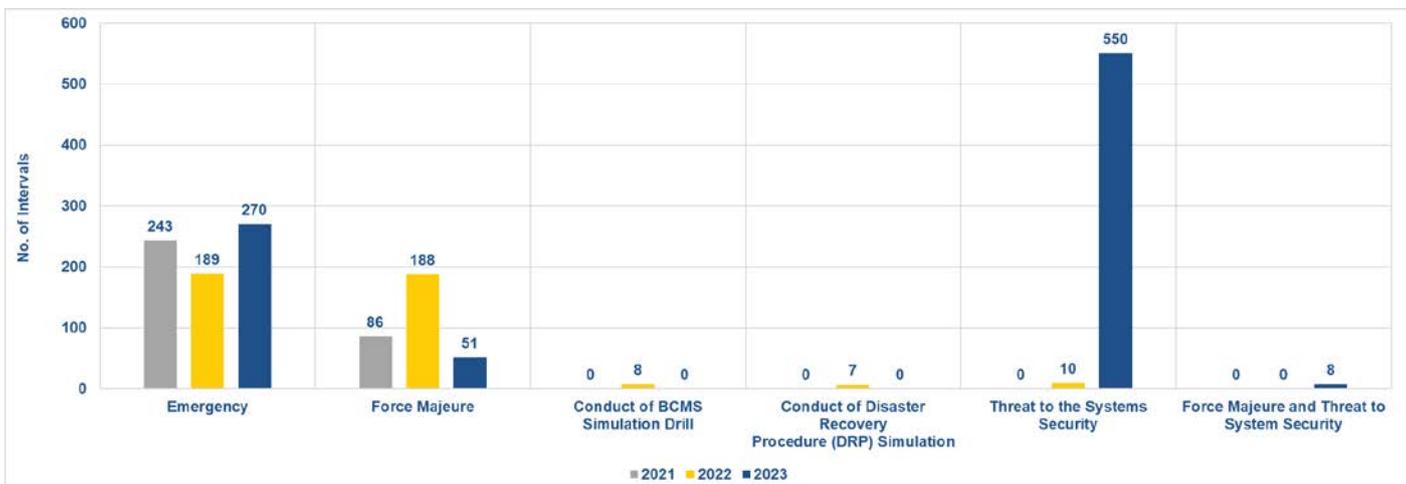
- Fuel Costs
- Incremental Maintenance Costs
- Operating Costs
- Other Variable Costs

5.0 DATA AND OBSERVATIONS

This section aims to go through the available empirical data of the WESM relevant to the impositions of the Market Intervention and Suspension. To reiterate, the data used for this study will focus on the events that were declared from the commercial operations of the Enhanced WESM Design Operations (EWDO) from 26 June 2021 to 25 December 2023.

5.1. MI/MS Historical Data

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The table above provides for the number of intervals affected by a market intervention categorized in accordance with the basis for the declaration. It is very noticeable that majority of the declarations refer to Emergency, Force Majeure, and Threat to Systems Security – most of which were declared by the System Operator. One of the main causes of the threat to system security is the often overloading of transmission lines which require certain enhancements and upgrades to expand its limitations and accommodate more generation and properly deliver for the demand. Meanwhile, Market Operator's declarations are often categorized under Force Majeure.

A prolonged market suspension was likewise declared by the Energy Regulatory Commission in December of 2022 that lasted until February 2023, mainly caused by the Typhoon Odette affecting the Visayas region.

5.2. Market Prices

In terms of the effects of interventions/suspensions to the economics of the WESM, this study shall go through the longest declarations noted for the covered period in order to determine the substantial effects on the market mechanisms.

The table below presents the data on the price differences between the supposed WESM market prices if the declaration has not been done by any of the operators. The longest declaration was noted in April 2023 that caused the blackout in the Visayas regions due to the multiple tripping of generators due to unstable system frequency. Based on records, the longest market intervention affected 434 intervals, while the highest price difference, when compared to the supposed market outcomes reached as high as PHP21,161.76/MWh – this is a 130.34% decrease when compared to the available data from the WESM.

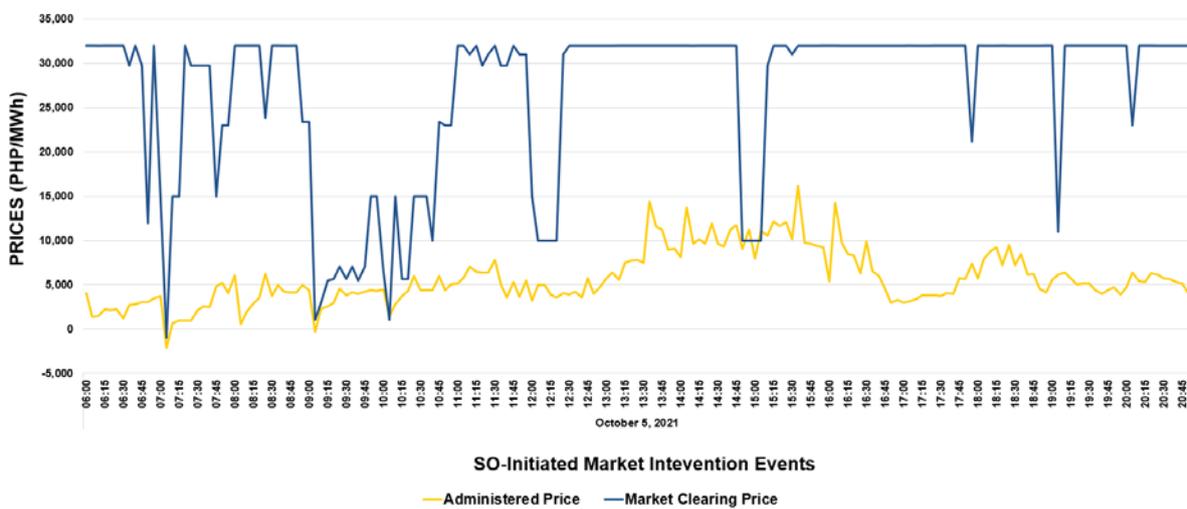
MI Events	No. of Intervals	Percentage Difference (%)	Difference of Average Prices (PHP/MWh)
October 5, 2021	179	130.34	21,161.76
July 6, 2022	169	110.12	19,950.87
February 20, 2023	134	87.97	14,956.27
April 27, 2023	109	84.32	15,459.16
April 28-30, 2023	434	103.21	15,169.37

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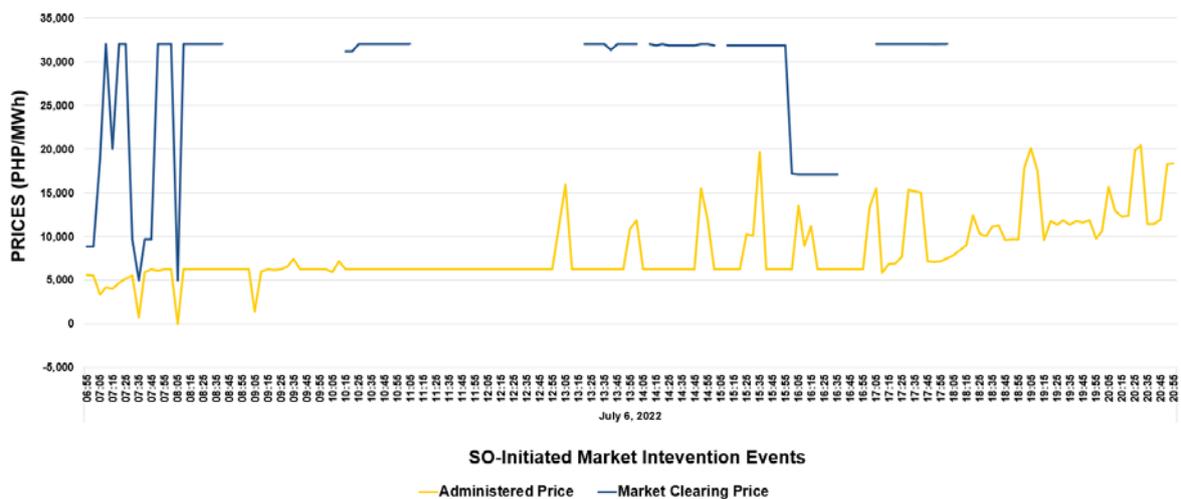
The graphs below further illustrate the difference between the market clearing price determined by the WESM based on the offers and submissions from the generators as opposed to the administered prices imposed based on historical information, as discussed in Section 3.3 of this study.

The incomplete data for market clearing prices connotes unavailability of the market outputs as these declarations were done by the Market Operator which do not allow them to produce market outcomes.

05 October 2021

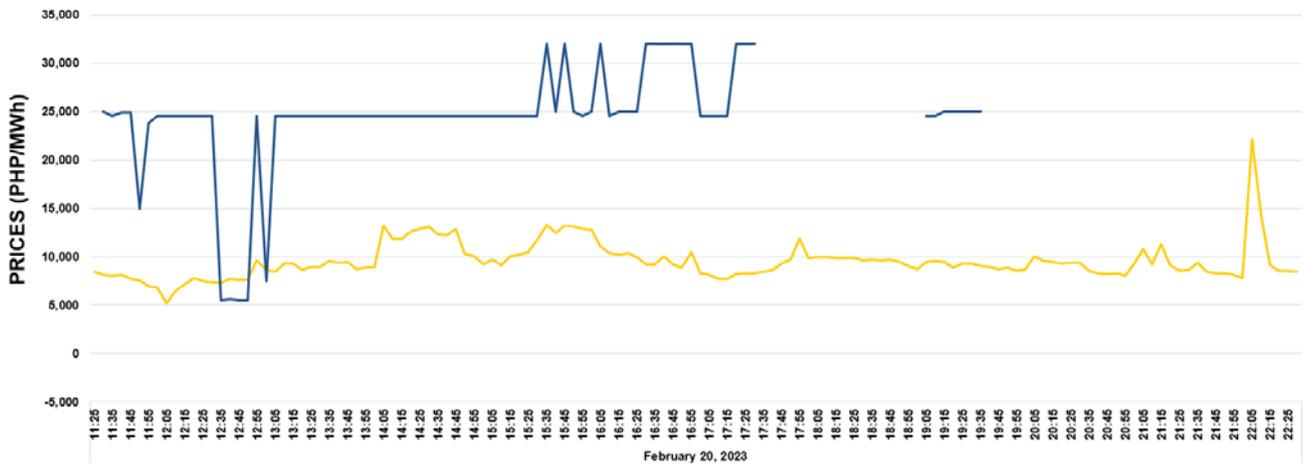


06 July 2022



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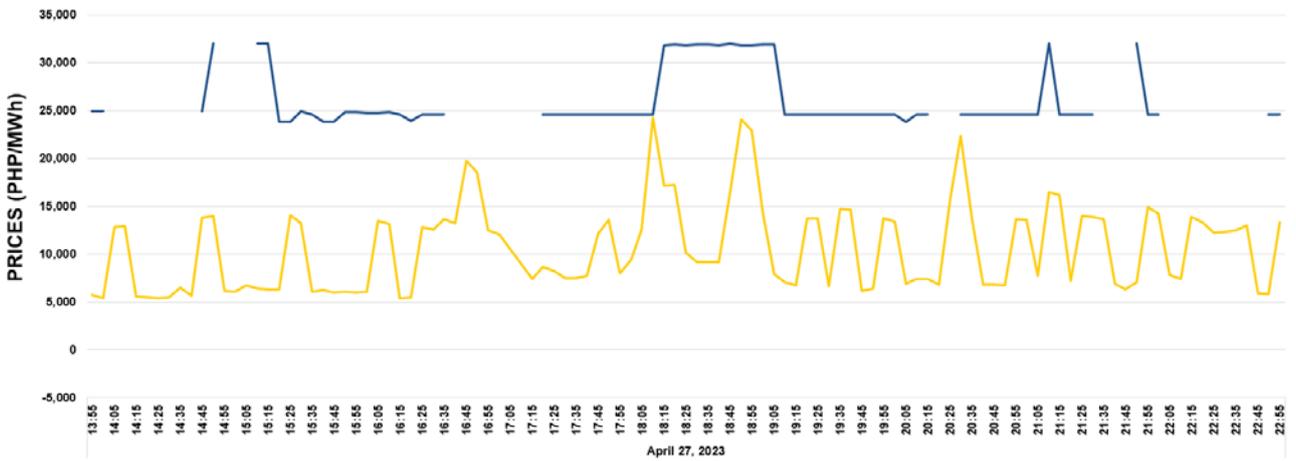
20 February 2023



SO-Initiated Market Intervention Events

— Administered Price — Market Clearing Price

27 April 2023

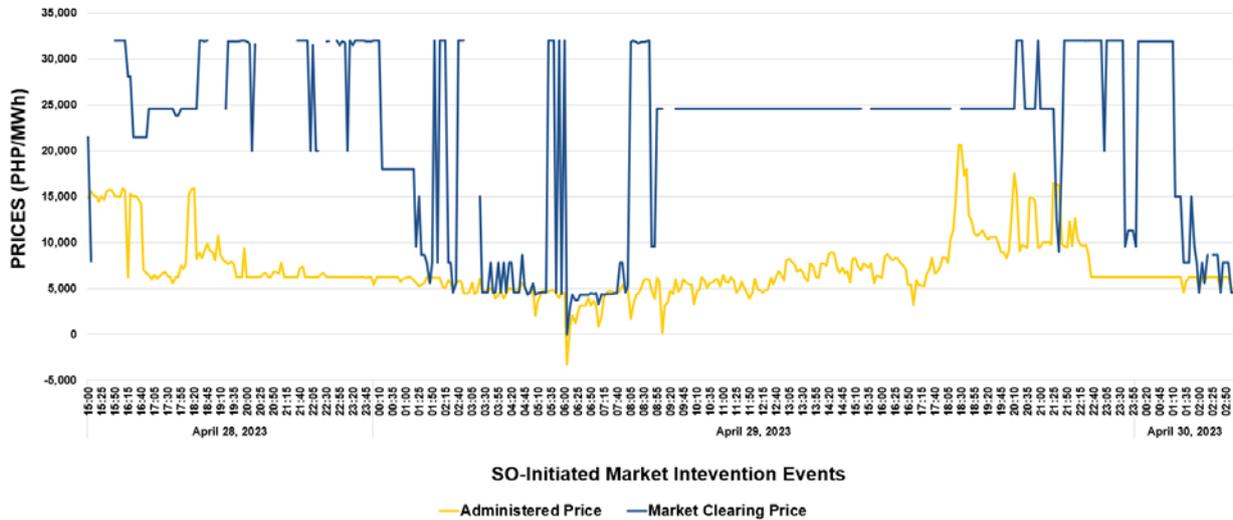


SO-Initiated Market Intervention Events

— Administered Price — Market Clearing Price

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28-30 April 2023



Going on into the economic effects of the prolonged Market Suspension that has been declared for the duration covered in this study. The same was declared by the Energy Regulatory Commission, based on the WESM Rules allowing the Honorable Commission to act on the matter in cases of natural calamity and when there is a declaration of a national security by the President of the Philippines.

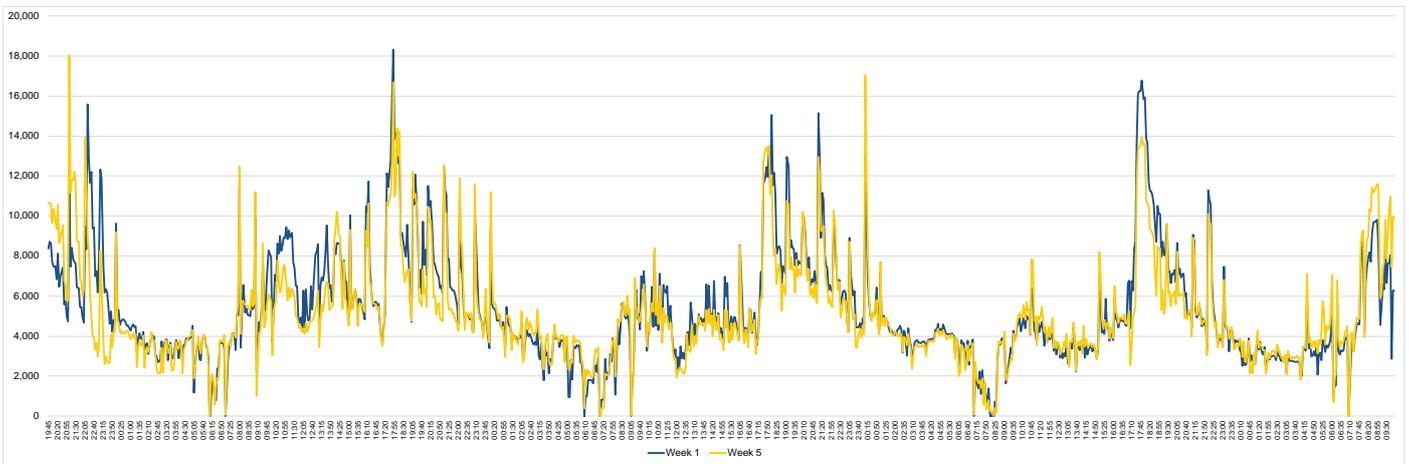
Back in December of 2022, Typhoon Odette struck the Visayas region and left devastating effects which prolonged the suspension of the market for up to almost 3 months equivalent of intervals.

While it has already been established in the preceding section that the market clearing prices tend to be extremely different from each other, another effect may be observed during a prolonged declaration. To recall, administered prices are based on the previous 4 weeks and by logic, if the declaration exceeds more than 4 weeks then, the administered prices may tend to stagnate as it will repeatedly use the historical data in the system.

To prove this hypothesis, this study took into consideration, and reviewed the resulting administered prices for the prolonged Market Suspension. As can be seen in the graph below, the 1st and 5th weeks of market suspension resulted in an almost equal market prices for the similar trading intervals.

The minimal differences that may be observed were caused by the utilization of the administered prices as part of the historical prices applied to the proceeding intervals.

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To conclude this portion of the study, prolonging the intervention on market prices directly affects not just the generators and investors in the energy sector but also the paying consumers since costs that were not properly accounted in the settlement of the WESM are allowed to be recovered from the paying consumers, so long as it has enough basis to prove the merits of the request. This process is called the additional compensation.

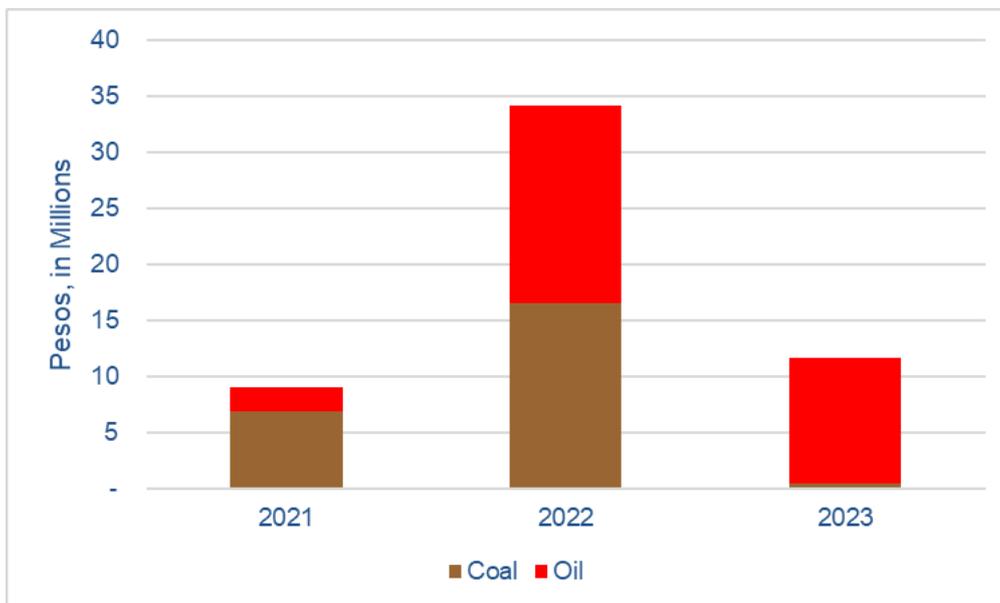
5.3. Additional Compensation

Similar with other jurisdictions, the Philippines has likewise adopted a mechanism to allow participants to recover costs which may not be covered by certain pricing mechanisms which are not normal – one of which is the administered prices.

In accordance with Section 8.3.2 of the Price Determination Methodology (PDM) manual, the ERC has allowed that 1) fuel costs; 2) variable operating costs; and 3) maintenance costs to be among the line items which may be filed for additional compensation. This list, however, does not preclude the WESM participants to file for other items that may be recovered from the WESM.

For the covered period in this study, the average annual additional compensation approved was noted at PhP18 Million, with 2022 having the highest noted amount at almost PhP35 Million, as shown in the Figure below. This translates to an average additional PHP8.4/kWh as computed by the Market Operator. The reported types of power plants that had approved additional compensation filings were Oil-based and Coal plants.

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In terms of the economic effects of these additional compensation filings, it should be noted that the Honorable Commission, in the exercise of its mandate to, among other things, protect the captive customers from high electricity costs, has Ordered the deferred collection of additional compensation for up to 24 months. In the implementation of this deferment, some financial concerns, especially on the paying consumers, may be noted. For instances, if a residential or small business owner decides to relocate or cease operations, and the additional compensation rates have already been approved and calculated, the cost will then be defrayed by remaining customers on that franchise area and worst, will be collected to paying consumers who may have just moved into the franchise area over which the additional compensation is being collected.

5.4. Other Costs Incurred during Market Intervention or Suspension

In all instances of MI or MS, the Market and System Operators are requested by the Market Surveillance Committee (MSC) to provide for recommendations in order to avoid the recurrence of the same. These recommendations vary from upgrading market systems used by the Market Operator to operate the WESM up to the restoration of transmission systems in cases of devastation or destruction caused by, among others, natural calamities.

Since the expenditures of these operators are all collected from Market Participants and to some extent, the captive customers, the fees where these costs may be tucked in will be discussed as follows:

- i. Market Fees
 - Collected from Market Participants based on the generated capacities delivered to the system
 - Covers the cost of Market Operator in its day-to-day operations, maintenance of its systems, and enhancing Market Systems to avoid recurrence of the event
- ii. Transmission Tariff

- Collected from all transmission users
- Covers the costs of System Operator in its day-to-day operations, maintenance of the transmission system, and restoration the Transmission and System Operator Systems

6.0 SUMMARY AND RECOMMENDATIONS

Market Intervention/Suspension are both warranted by the Rules and Manuals, originally, for specific cases such as Emergency, Threat to System Security, and/or National Emergency. As the operations of the WESM progresses, it now involves cases when Market System of the MO is unavailable due to business continuity plan and cases of force majeure.

Since the commencement of the 5-minute interval, 1,610 intervals or 56 events already occurred in the WESM, mostly due to threat to system security and emergency.

Meanwhile, Administered Prices were imposed on these intervals which had various effects on market outcomes (80 to 130% difference from actual market outcomes). Meanwhile, it was likewise highlighted that in cases of prolonged MI/MS, specifically those which exceed over a month of declaration would already result in price stagnation in the WESM. In these cases, additional compensations are allowed to be filed by the generators which are reviewed by the MO prior to its collections.

For 2021 to 2023, an annual average of PHP18M was approved for recovery, with PHP35M as the highest approved compensation, collectible from all end-users for up to 24 months. Necessary enhancements to MO and SO facilities related to the MI will be recovered to all end-users as market fees or tariffs

As regards the best practices implemented by other jurisdictions during instances of Market Intervention, it has been observed that the Australian and Ontario electricity markets only intervene market outcomes on very specific cases (directions, market suspension, blackouts, etc.).

Therefore, after careful assessment of the events related to MI/MS, the following are the recommendations of the Market Surveillance Committee (MSC) to address the economic impact of MI/MS to the energy industry:

1. Complete all transmission network upgrade and additional projects to avoid MI/MS due to emergency or threat to system security
2. Review the methodology employed during Market Intervention/Suspension
 - Instances considered to trigger an MI/MS
 - Pricing Mechanisms
3. Adoption of Best Practices from Other Jurisdiction
 - Only intervene the market on specific cases
 - Use the most recent available market outcomes on intervals being administered, as currently practices in the Ontario market
4. Avoid collection of additional compensation for long period of time which may affect paying consumers which did not benefit from the generation

5. System Operator Performance Standards shall be established to ensure that responsibilities during MI/MS are properly undertaken.

This Study on the Assessment on the Economic Impact of Market Intervention and Market Suspension is hereby respectfully submitted to the PEM Board, the DOE, and the ERC, for consideration and possible appropriate actions.