



Report on Over-riding Constraints for 2021



26 June 2021 to 25 December 2021

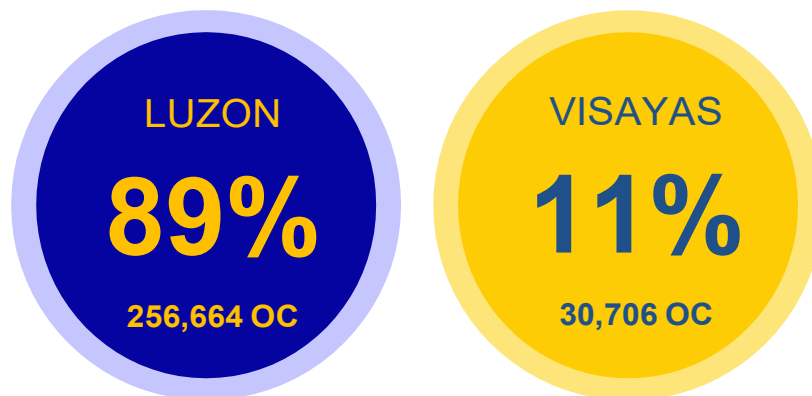
October 2022

This Report is prepared by the
Philippine Electricity Market Corporation –
Market Assessment Group for the
Market Surveillance Committee

OVER-RIDING CONSTRAINTS MONITORING BY CLASS AND REGION

287,370
Total
Events

All of which are
non-security
limits



26 June 2021 marked the start of the **Enhanced WESM Design Operations (EWDO)** which transitioned the market from 60 minutes trading interval to **5 minutes intervals**

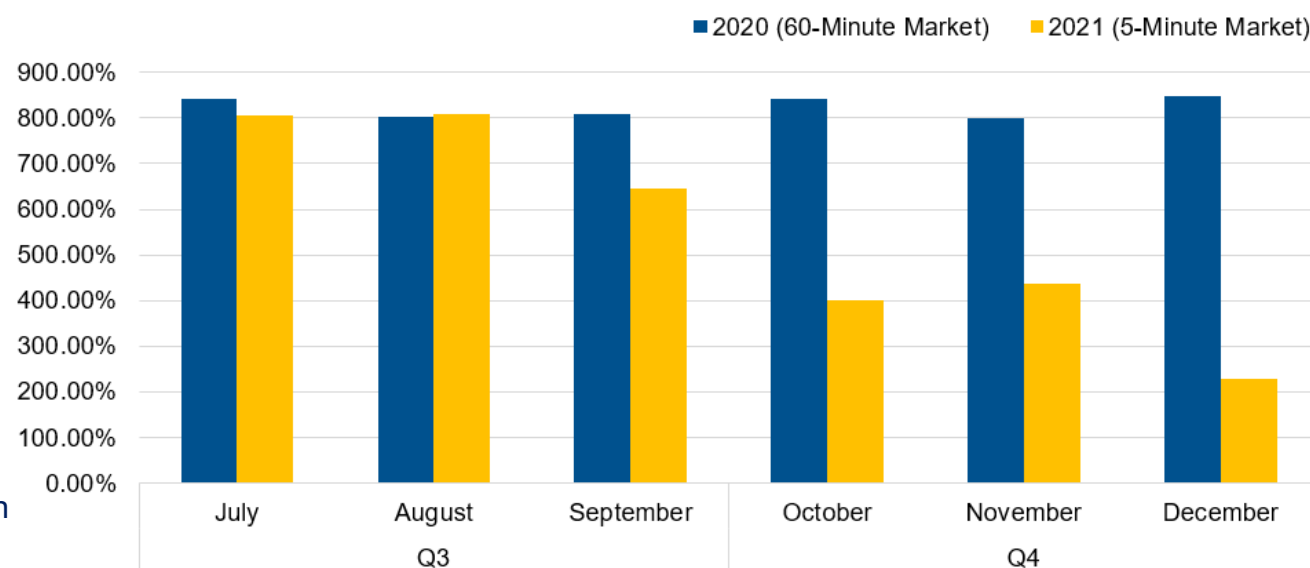
Due to the shortening the trading interval, from 60 minutes to 5 minutes, the first six months of EWDO tallied **287,370 OC** events, majority of which were from plants on Luzon

No security limit impositions were imposed during this period

BY MONTH COMPARISON, 2020 vs 2021

With the switch from the 60-minute market to the 5-minute market, the parameter utilized to compare billing months was the percentage of overriding constraints imposed every interval.

With roughly the same resolution between the 2020 and 2021 EWDO periods, we can see that the decrease in impositions from September to December can be attributed to the implementation of DOE DC-2021-06-0013 in July, which adopts a new general framework governing plant under T&C, and the market suspension in December due to Typhoon Odette.

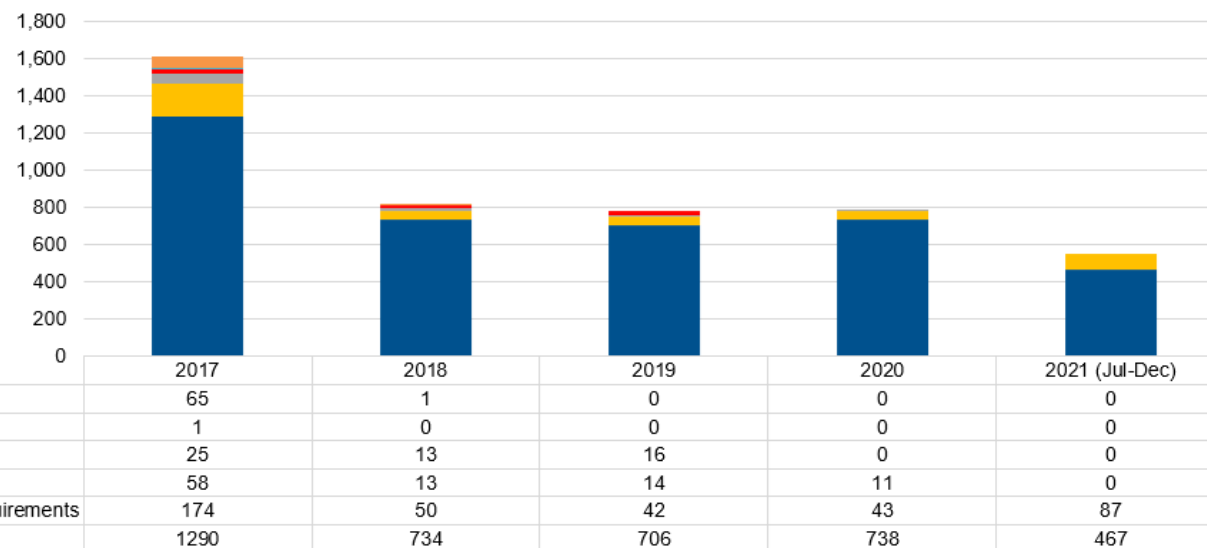


HISTORICAL (2017-2021 EWDO)

BY INCIDENTS

The implementation of DOE DC-2021-06-0013 was the main factor in the decrease of T&C impositions during the EWDO period compared to previous years because of the provision of the department circular not allowing plants that have conducted T&C for more than two (2) months to be imposed with OC

Despite the increase to the trading intervals, the imposition of Must Run Unit and Generating Unit Limitations decreases indicating that no security limit imposition events during EWDO



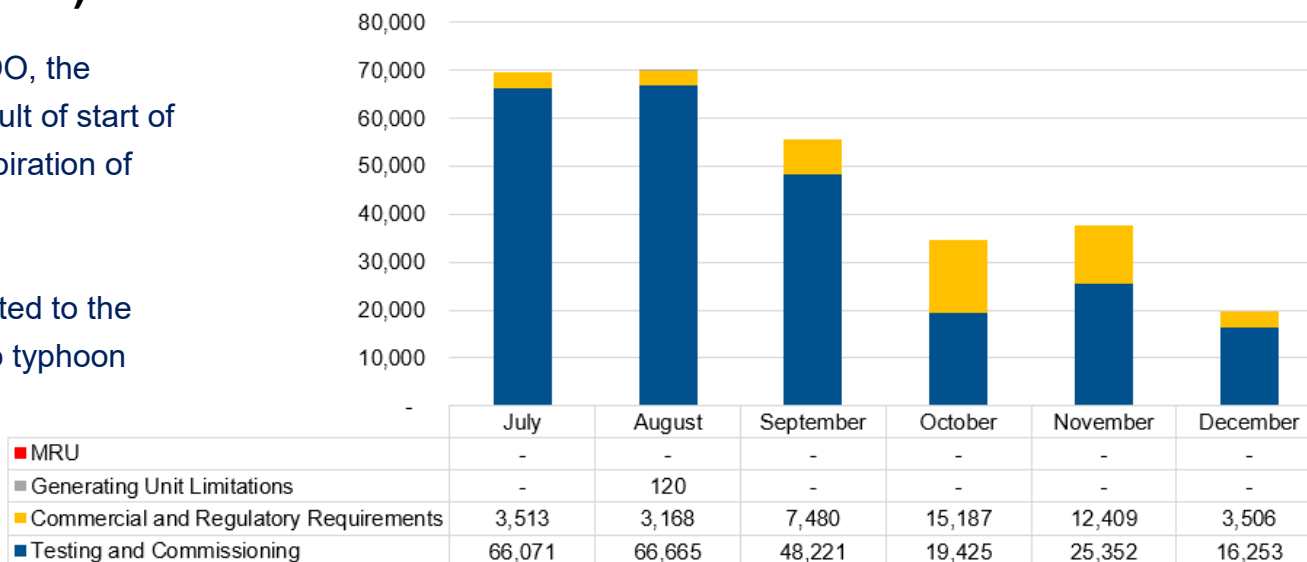
EWDO

(26 July 2021 – 25 December 2021)

Further inspecting the impositions during the start of EWDO, the decrease observed from September to October was a result of start of commercial operations of some plants under T&C and expiration of some plants' T&C period

The decrease of imposition during December were attributed to the outages and market suspension incidents occurred due to typhoon Odette

2021 EWDO

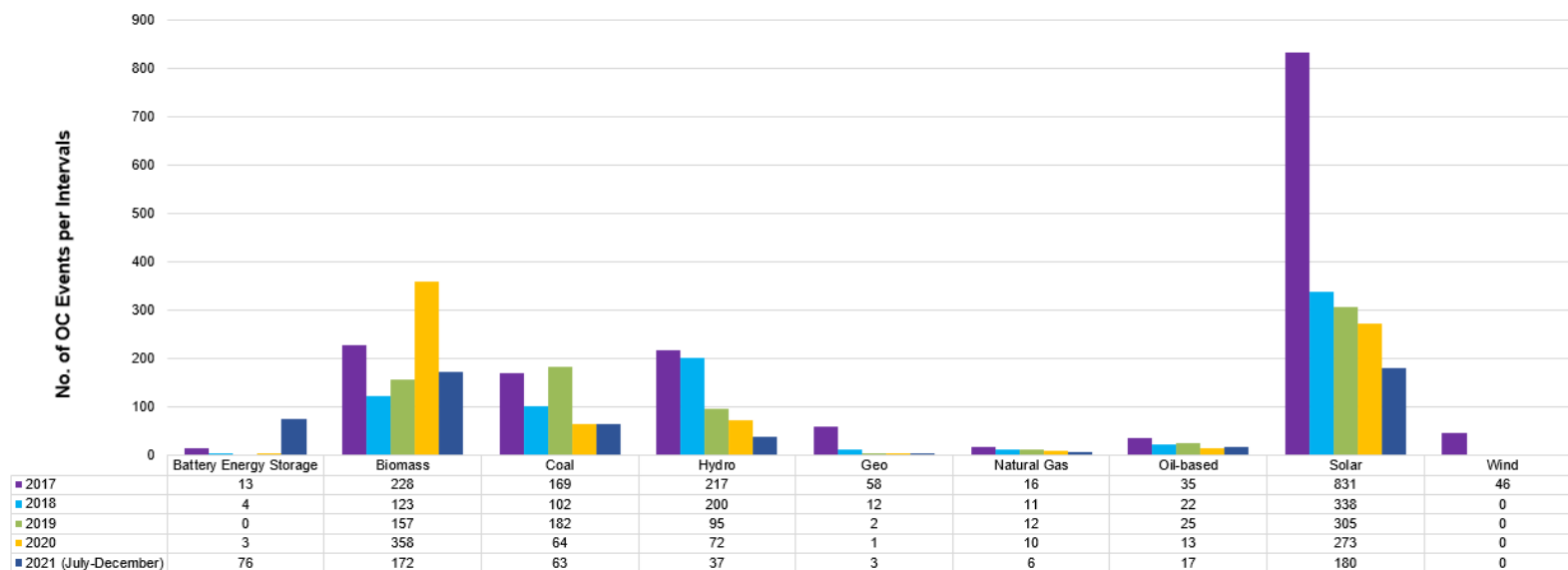


HISTORICAL (2017-2021 EWDO)

Looking to the historical data, a major increase in battery was due to multiple plants starting their T&C period indicating an improvement to the battery energy storage system over the years.

While the decrease of almost all the power plant technology, except battery, may be a result of the implementation of DOE DC-2021-06-0013 and the market suspension that occurred in December 2021

BY PLANT TYPE

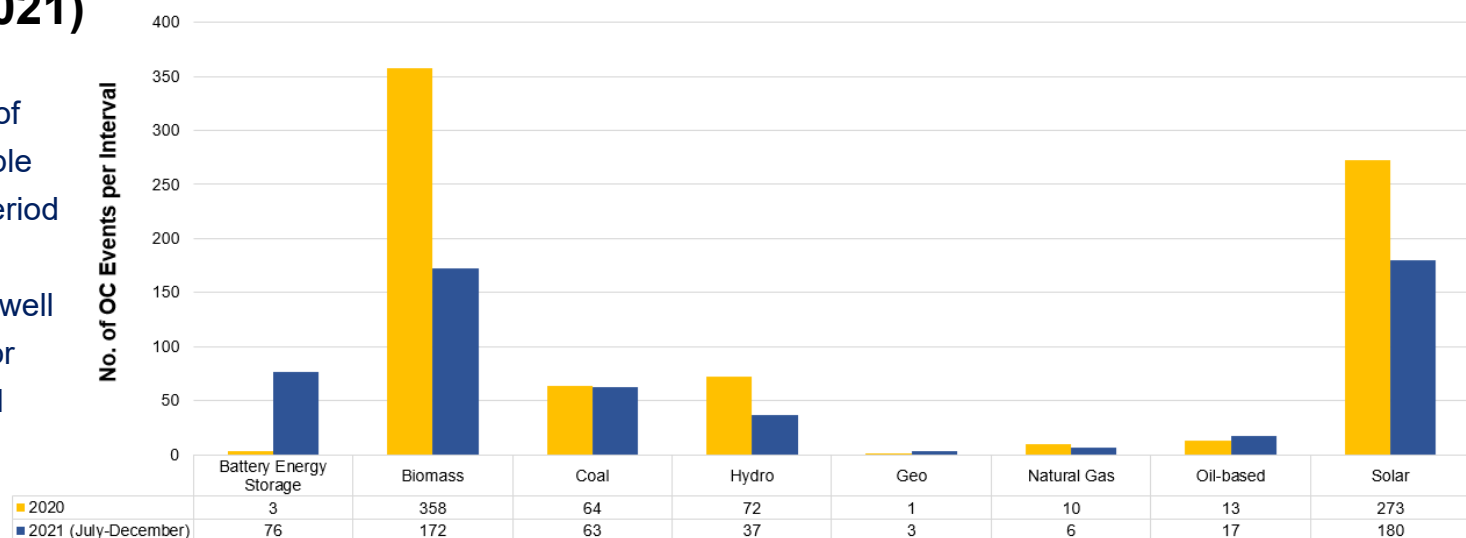


EWDO

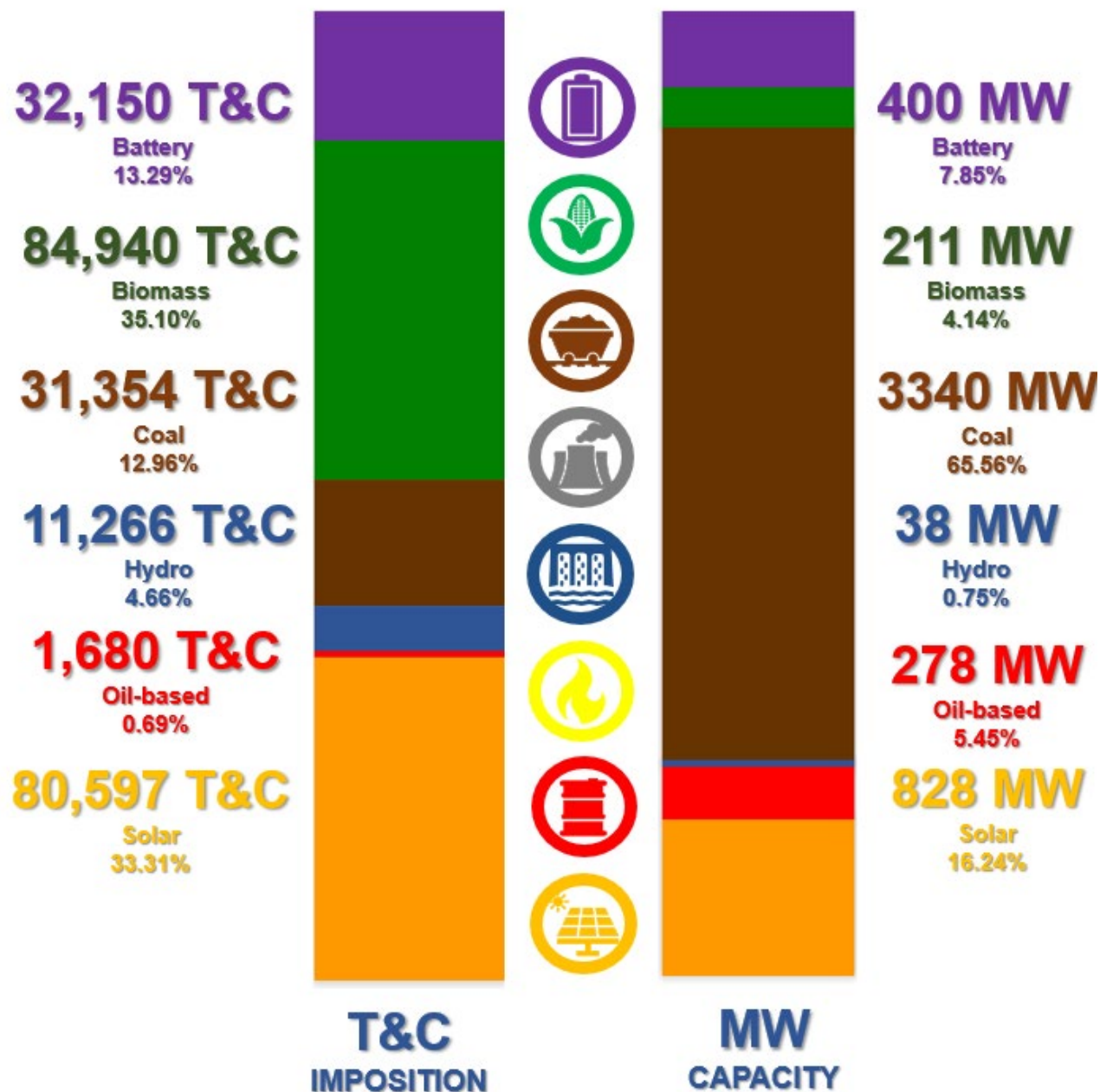
(26 July 2021 – 25 December 2021)

The major increase for battery during the start of EWDO were accounted for imposition on multiple plants who just started conducting their T&C period

The commercial operations of some plants, as well as the expiration of T&C periods, contributed for the large fall in OC impositions on biomass and solar plants.



COMMISSIONING TEST



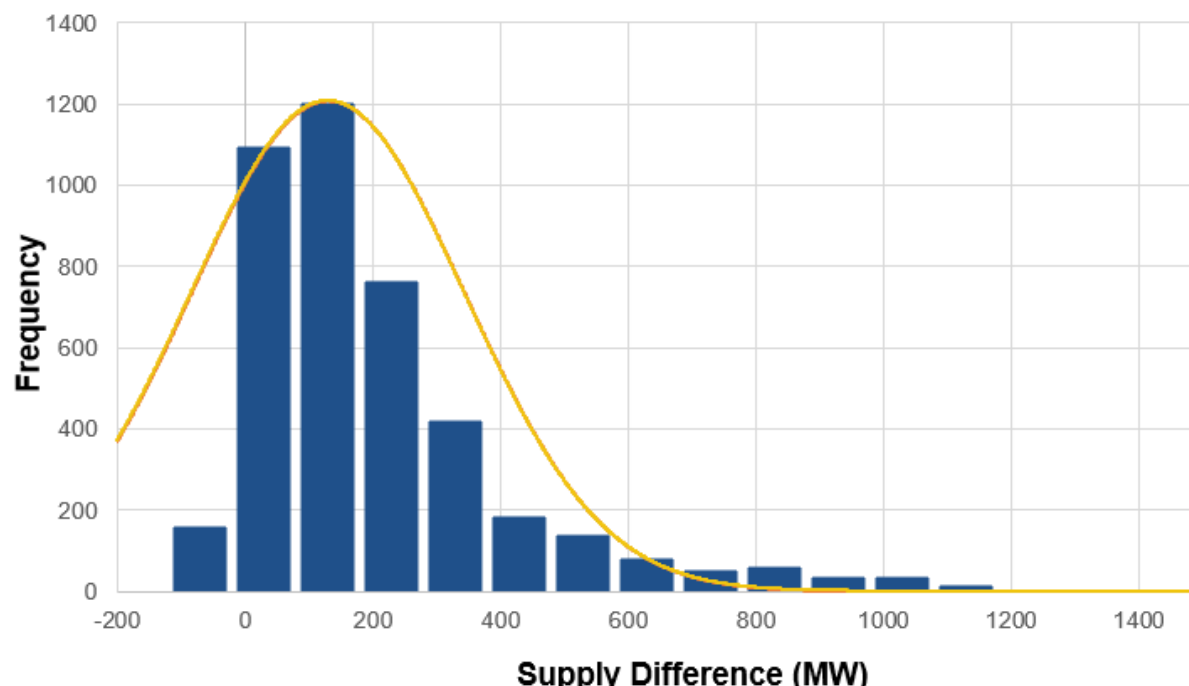
In terms of T&C impositions, biomass and solar plants accounted for 68.41% of the total T&C imposed for the beginning of the EWDO period in 2021. The remaining impositions were shared by battery, coal, hydro, and oil-based facilities.

Continuing the trend from the pre-EWDO 2021, coal has the largest capacity imposed with T&C for the EWDO period due to the start of one coal plant in 2021. Battery has also seen a significant increase in both imposition and MW capacity due to the start of several battery energy storage systems in 2021.

Note: Testing and commissioning of these plants is dependent on the reliability of the tests performed by their contractor, and can result in a forced outage, which can have a significant impact on the market since it can change plant schedule.

MARKET PRICE IMPACT

Supply Difference Frequency Distribution

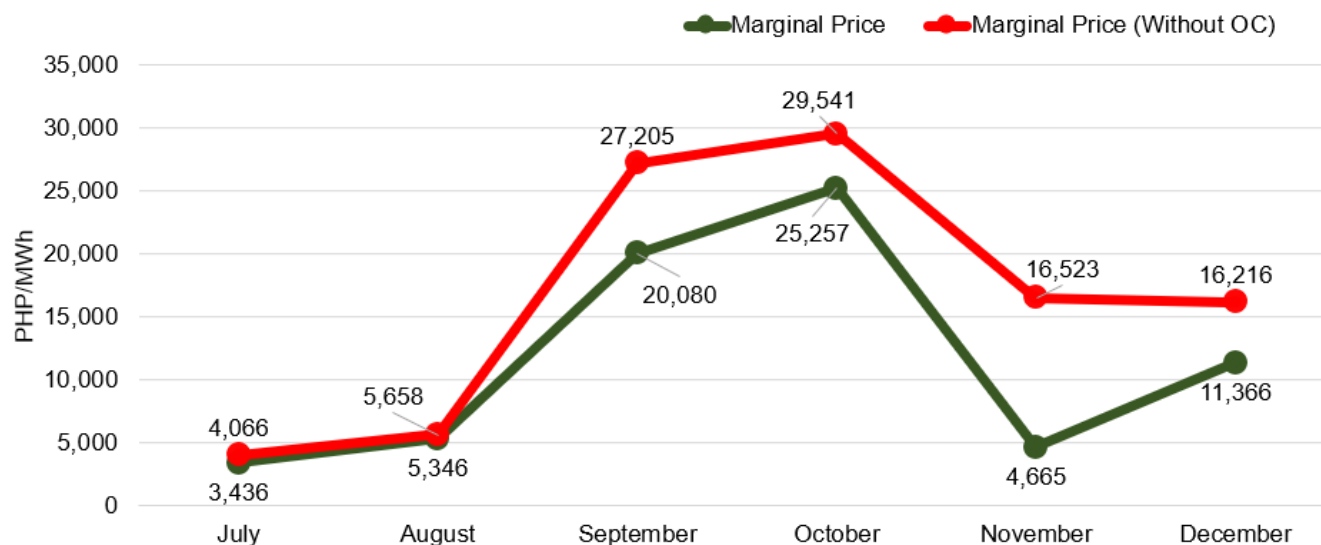


Since the inception of EWDO, there has been a consistent trend in OCs imposed to generators, with an average incremental increase of 119 MW in supply, with a maximum additional supply of 1,442 MW occurring in November 2021 with a capacity of 13,109 MW.

A slight increase in supply on the average 200MW was observed during the start of 4th quarter of the year mainly related to the additional plants that just started conducting T&Cs

Increase in the supply without incurring any additional cost may seem to have a positive impact to the system by increasing the supply margin, but it can affect the true condition of the market by distorting the market price, effectively risking the market's stability long-term

MARKET CLEARING PRICE



MCP AVERAGES MONTHLY

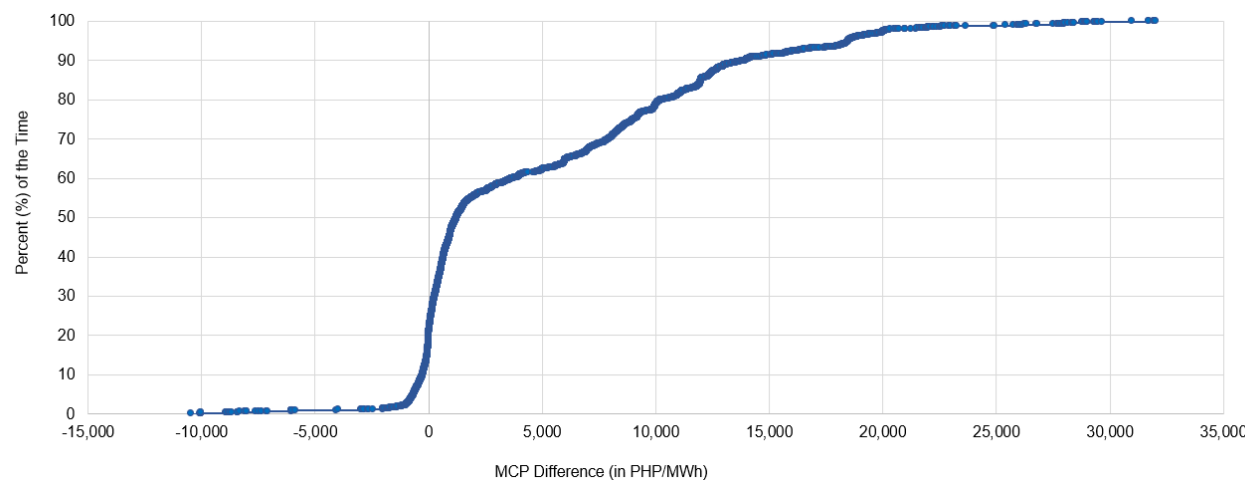
The OCs most evident effect is the increase in supply to the system without adding any more costs, which lowers the market price.

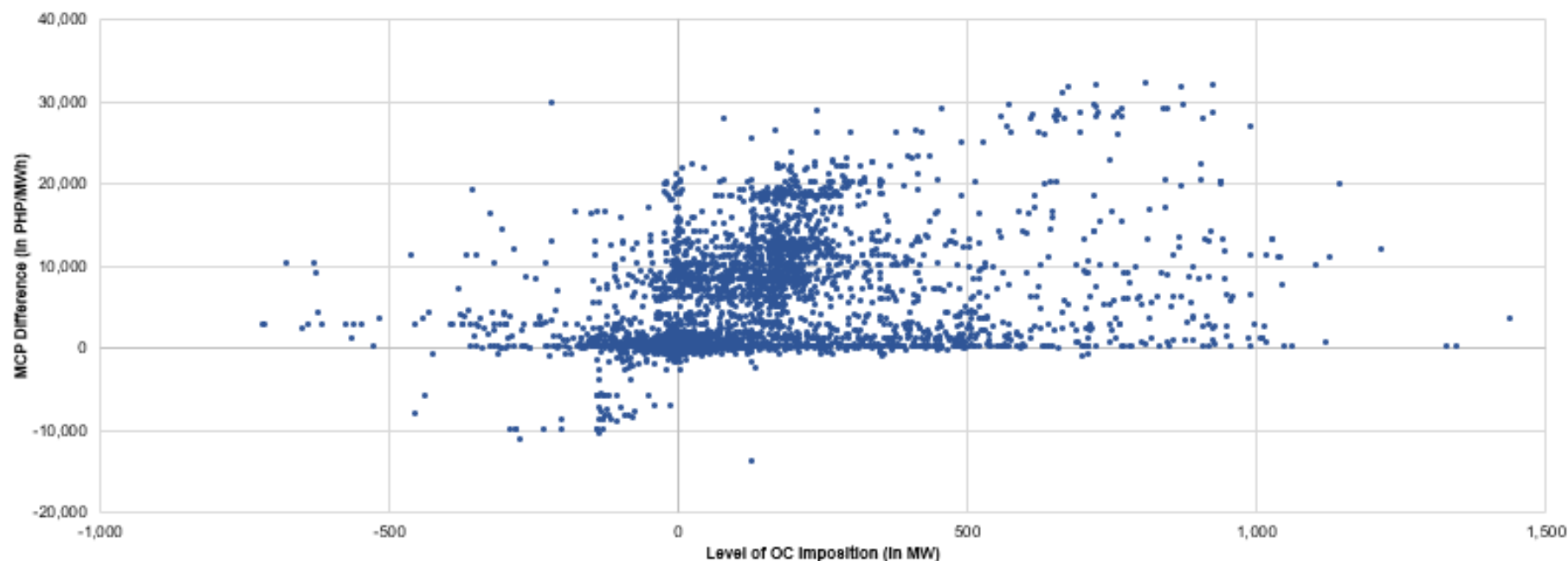
However, if the system relies on the imposition of OCs, it may compromise the market's long-term viability by distorting genuine market pricing.

MCP PRICE DURATION

When the impact of OC on the market price was examined in terms of its percentage distribution, it was discovered that 80% of the time, the MCP difference when OC is imposed is less than PHP 10,000/MWh, implying that market prices were reduced as a result of the effect of OC impositions, adding supply to the system.

Less than 2% of the time, prices have increased by an average of Php 831 per MWh due to impositions of OCs which may have been due to the distortion of merit order table, sometimes allowing plants with higher price to be the price setter





MCP BY SUPPLY DIFFERENCE

It may be inferred that there is a positive relationship between the MCP difference and the degree of imposition, such that when the level of OC rises, the price differential on the market rises as well, creating a market that is not reflective of the actual market circumstances.

There have been instances where a decrease in price was caused by a negative amount of imposition. These circumstances frequently involve generators with high offering prices, whose absence (or decrease in MW as a result of imposition) would prevent the market from enjoying high clearing prices