



Annual Over-riding Constraints Report

26 December 2021 to 25 December 2022

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

17 August 2023

CONTENTS OF THE REPORT



OVER-RIDING CONSTRAINTS MONITORING

BY CLASS AND REGION
BY MONTH COMPARISON
BY INCIDENT
BY PLANT TYPE
COMMISSIONING TEST



IMPACT TO THE MARKET

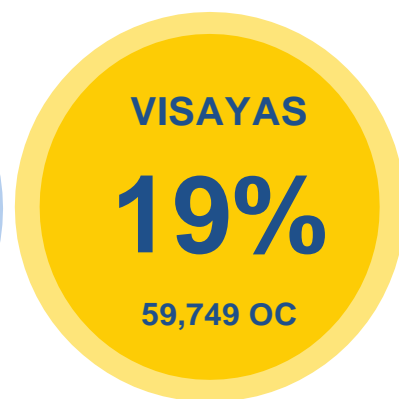
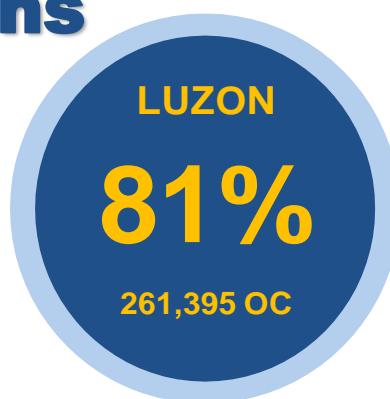
MW SCHEDULE
SUPPLY
SIMULATED CLEARING PRICE

OVER-RIDING CONSTRAINTS MONITORING BY CLASS AND REGION

321,144

Total OC Impositions

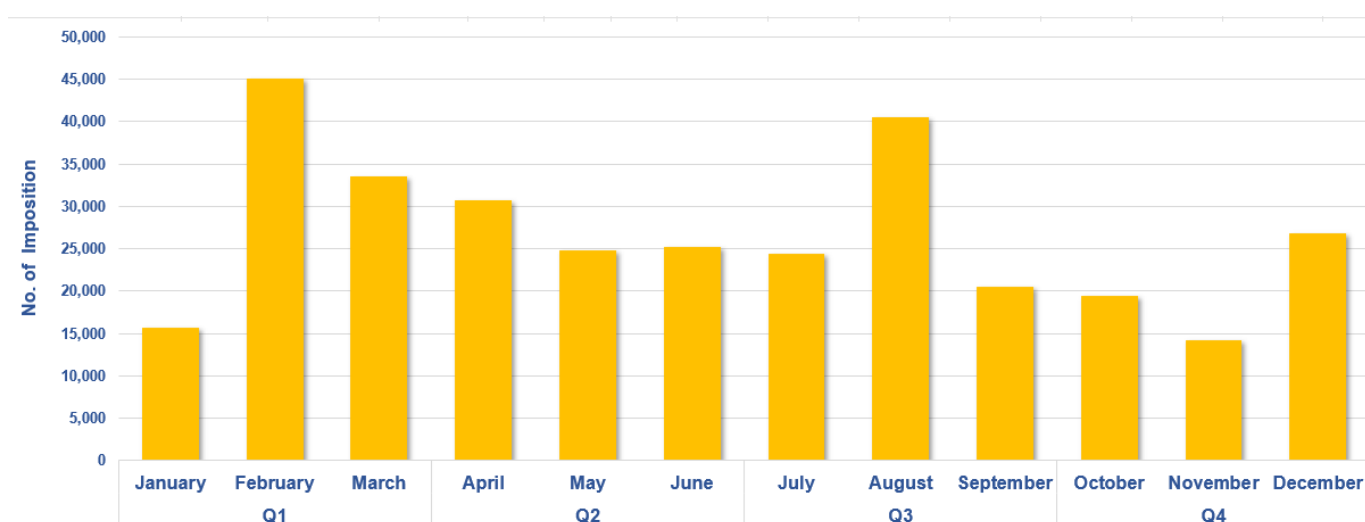
98% of which were
due to **non-security**
limits



The 2022 billing year recorded a total of 321,144 over-riding constraint (OC) impositions, with commissioning tests and commercial and regulatory requirements accounting for about 98% of the total observation.

Most of the events, with a total of 261,395 impositions (or about 81%) were imposed on Luzon plants, while the remaining 19% were recorded on Visayas plants for 59,749 impositions.

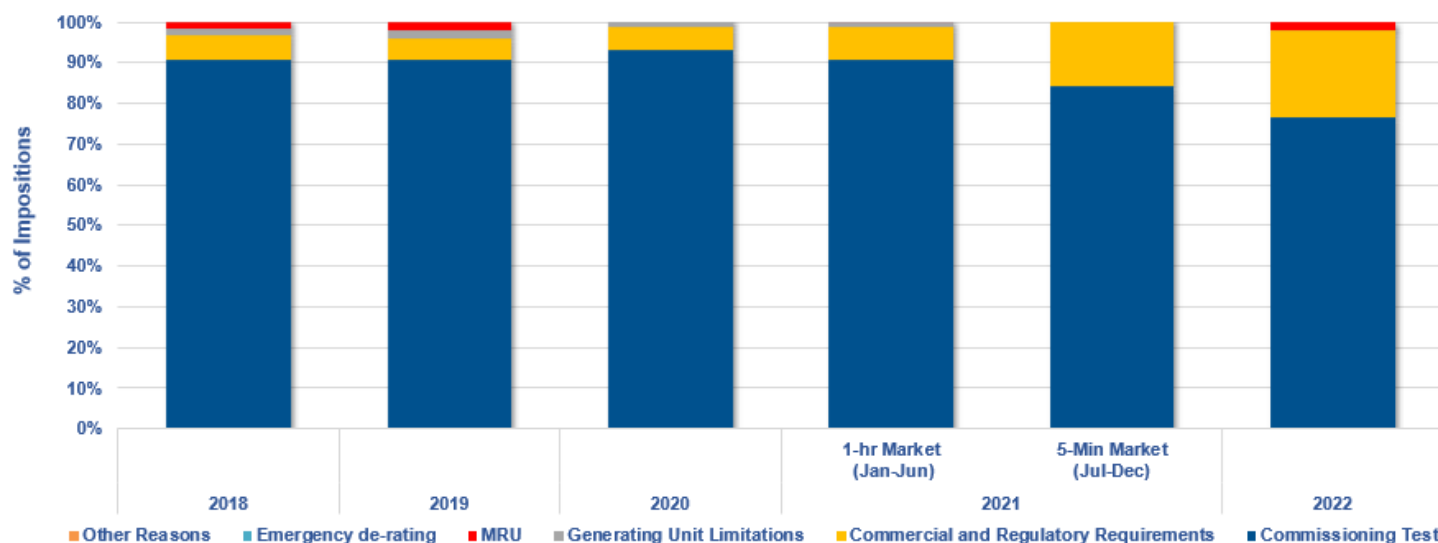
BY MONTH COMPARISON



- OC impositions increased significantly in February 2022 due to increase in commissioning test of various plant types.
- In Q2 2022, it was noted that OC impositions decreased which is attributable to lesser impositions and expiration of commissioning tests from Battery Energy Storage System (BESS).
- August 2022 recorded an increase in impositions due to extensions granted to plants to continue conducting commissioning tests.
- The decrease afterwards was related to the completion of commissioning test from Coal and Solar plants.
- The sudden increase in December was caused by the entry of two (2) BESS plants.

BY INCIDENTS

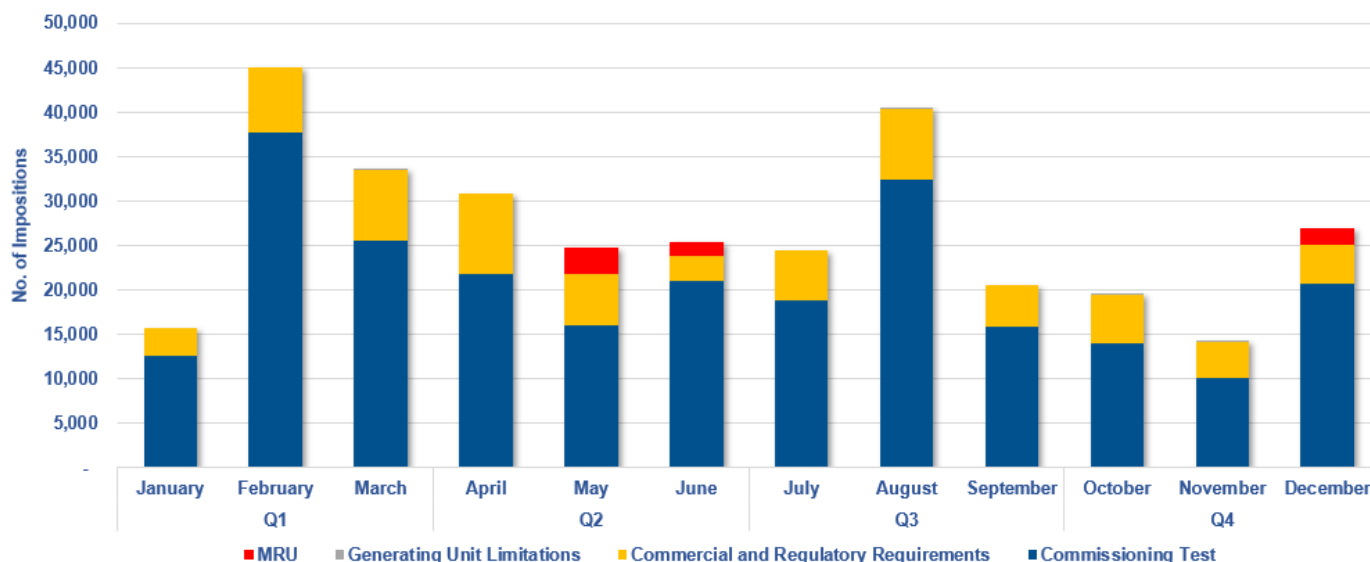
Historical (2018-2022)



Looking at the historical information regarding the categorization of OC impositions, keeping with the trend from 2018, it can be noted that majority of impositions during the 2022 billing year were related to the conduct of commissioning tests, followed by commercial and regulatory requirements, and small share of MRU.

For the 2022 billing period, there was an observed increased in the percentage share of impositions related to commercial and regulatory requirements.

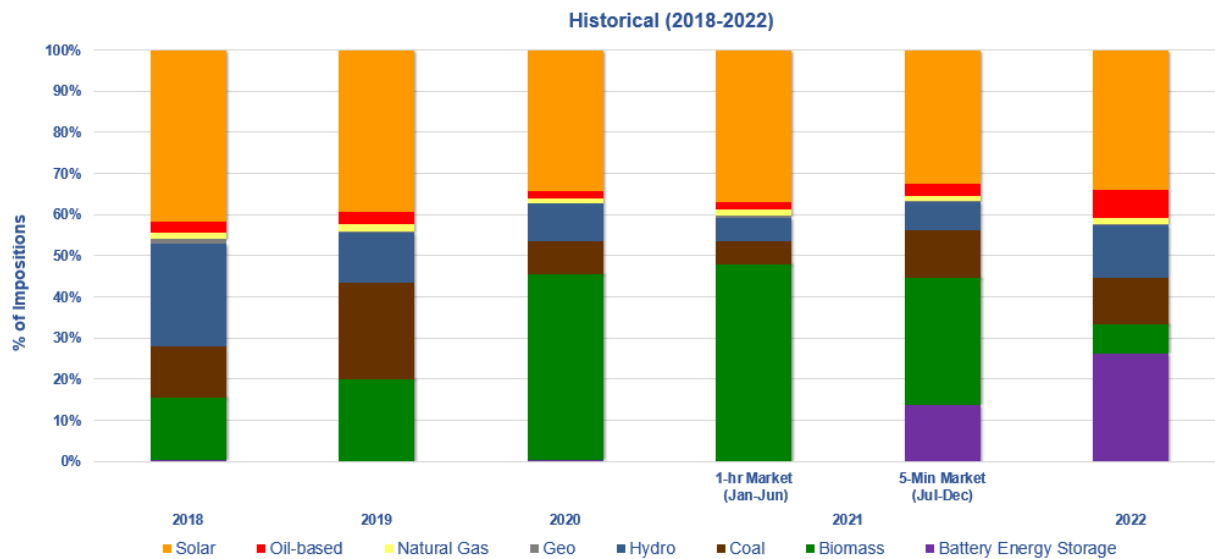
2022



Further breaking down the OC imposition by incidents on a monthly basis, it has been noted that majority of the OC impositions were attributed to the conduct of commissioning tests all throughout the year.

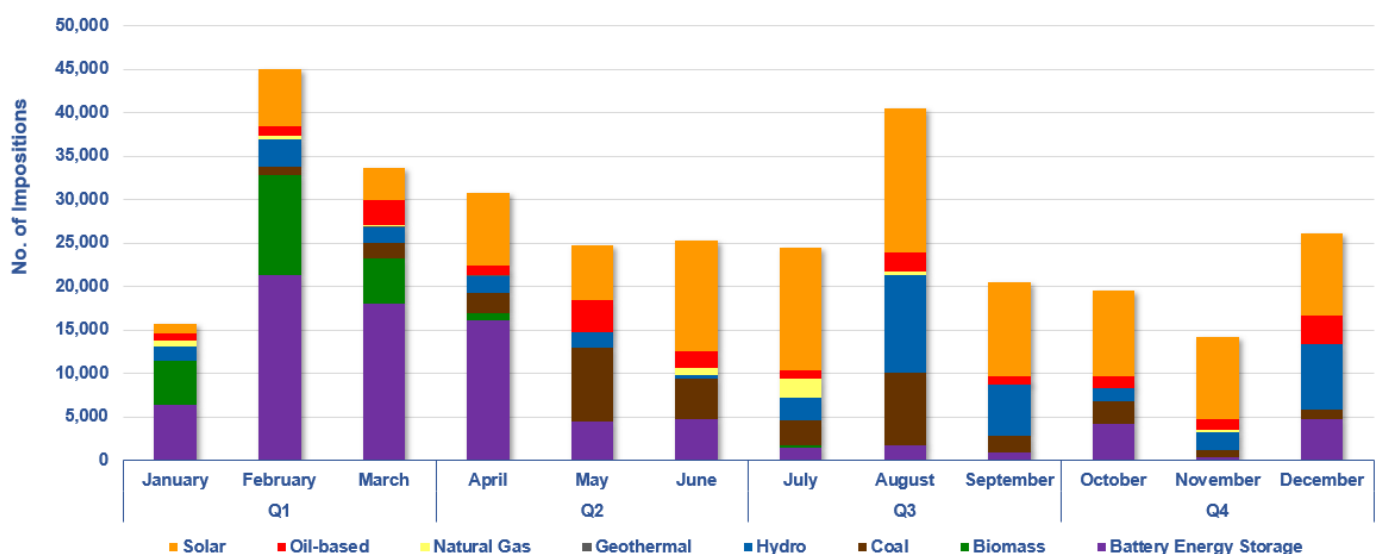
MRU impositions were observed during Q2 and late Q4 of 2022 to address the real power balancing and frequency control in Luzon grid.

BY PLANT TYPE



- Impositions related to commissioning test of BESS increased significantly in 2022 with the entry of additional facilities in the WESM.
- Solar plants remained to be the resource type with most number of impositions for the past years accounting for almost 40% of the total impositions.
- The commissioning tests of several Hydro plants likewise resulted in an observed increase in OC impositions for this period.
- Unlike previous years, the share of OC imposed to Biomass plants has significantly decreased due to the expiration of commissioning test periods of these plants.
- Impositions attributed to Oil-based plants increased to address the real-power balancing and frequency control in the Luzon grid.

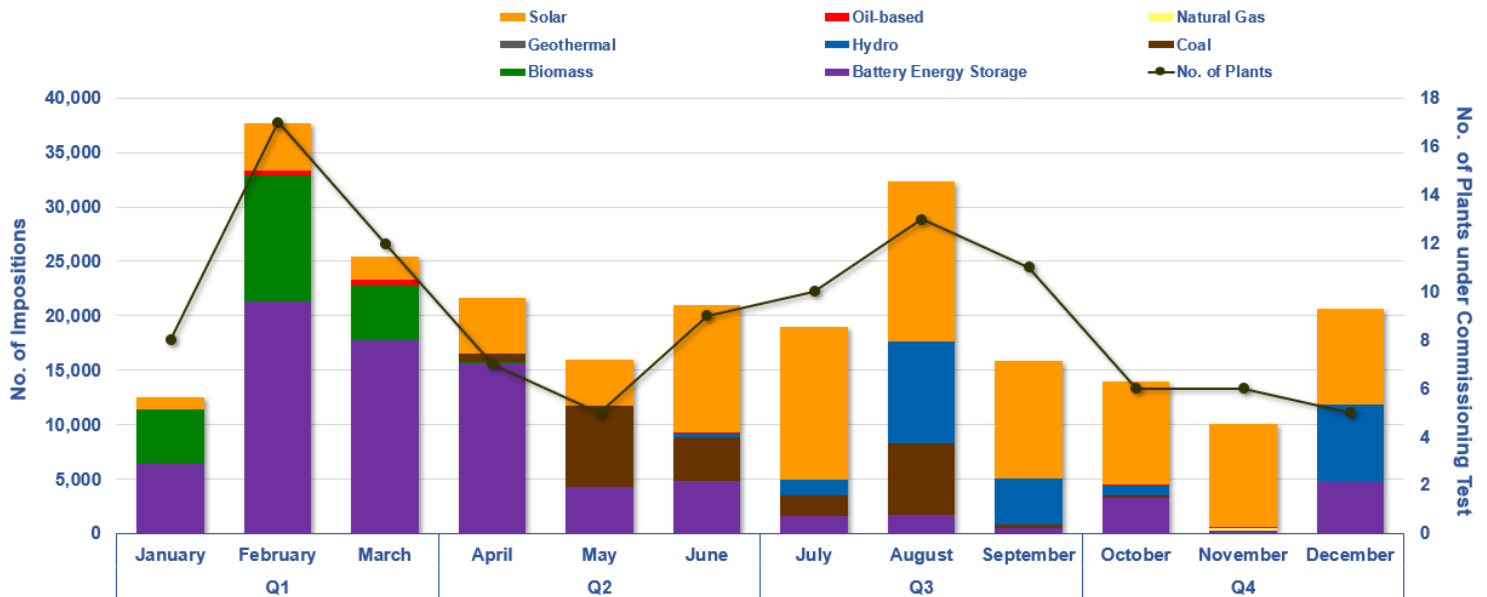
2022



It can be seen that the plants with the most OC impositions switched during the middle of Q2, with Solar and Coal plants accounting for the majority of the OC impositions most of the time during the period.

BESS, Biomass, Hydro and Solar plants experienced increase in the number of impositions in February due to the conduct of commissioning test. Similar observation occurred in August 2022 for Coal, Hydro, and Solar plants.

COMMISSIONING TEST



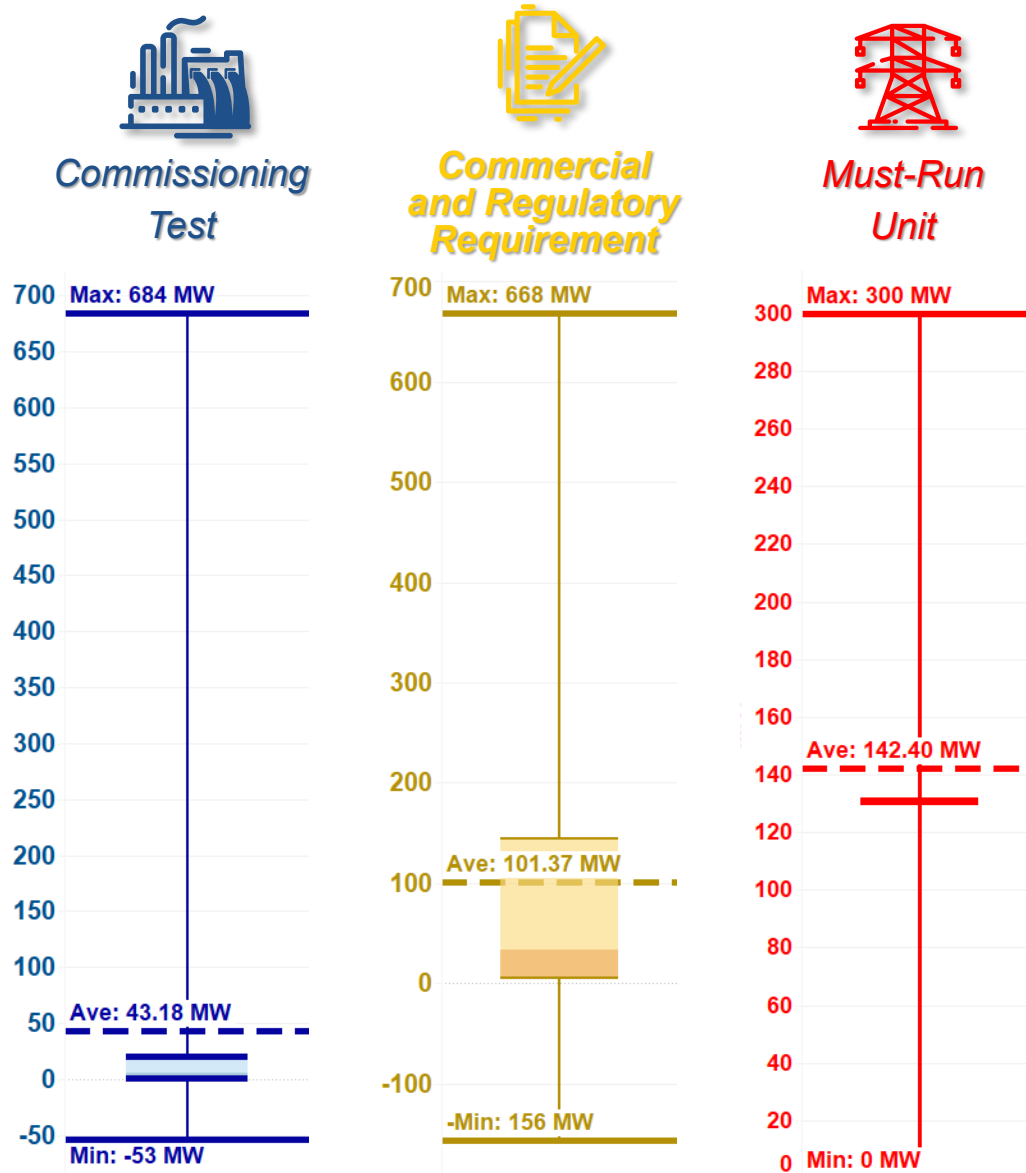
Since commissioning tests account for the majority of impositions for 2022, its trend largely influenced the overall OC impositions. In February, there were seventeen (17) plants that were subjected to commissioning tests, making it the month with the most number of plants under commissioning tests.

The two (2) declining trends observed throughout the year were a result of expiration of Provisional Certificate of Approval to Connect (PCATC) and completion of some plants' commissioning test period due to issuance of Final Certificate of Approval to Connect (FCATC). 44% of the time, plants under commissioning tests were given two (2) months* extension by the NGCP. Meanwhile, 42% of the time, the plants' PCATCs expired, preventing them to inject power from the grid.

Note: Testing and commissioning of these plants is dependent on the design and quality of material installation and construction 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.

**Based on DOE DC-2021-06-0013: Adopting A General Framework Governing the Test and Commissioning of Generation Facilities for Ensuring Readiness to Deliver Energy to the Grid or Distribution Network*

IMPACT ON THE MARKET MW SCHEDULE

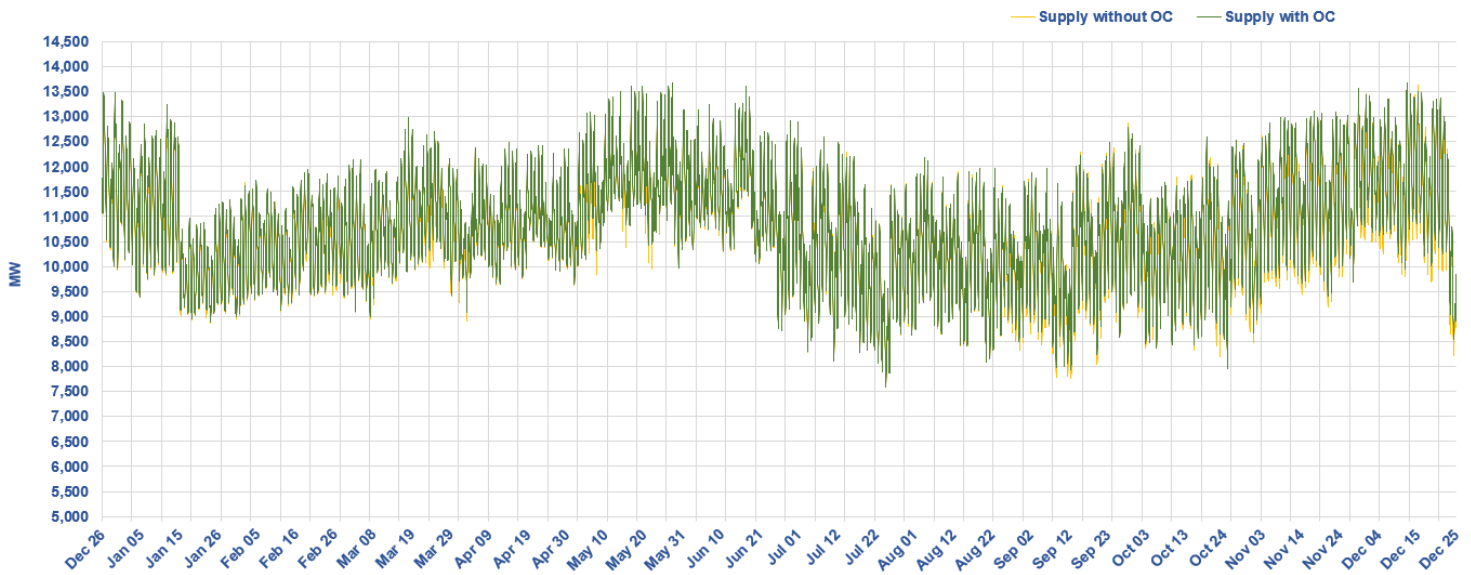


Looking at the MW scheduled of plants with OC impositions, it was observed that commercial and regulatory requirements imposed on plants with large capacities have had greater market impact than plants under commissioning test, with an average MW schedule of 101.37 MW. Meanwhile, commissioning tests were mostly undertaken by renewable energy plants with relatively lower capacities.

It should be noted that OC impositions effectively resulted in the subject plants to be price takers which do not have the ability to contribute to the determination of market prices.

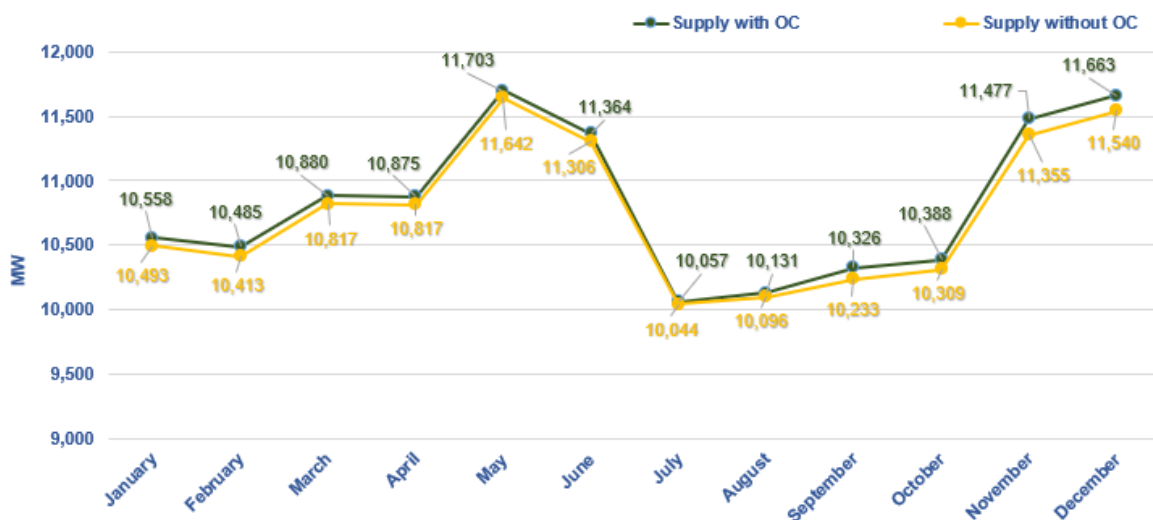
MW Capacity of Plants Imposed with OC	
Minimum	3.3
Average	88.42
Maximum	668

SUPPLY



OCs imposed on generators throughout the billing year posed an incremental increase of **69 MW** in available capacities, reaching a maximum additional supply of **499 MW**. However, there were instances wherein OC impositions may have **decreased the supply by an average of 280 MW**, based on the simulation.

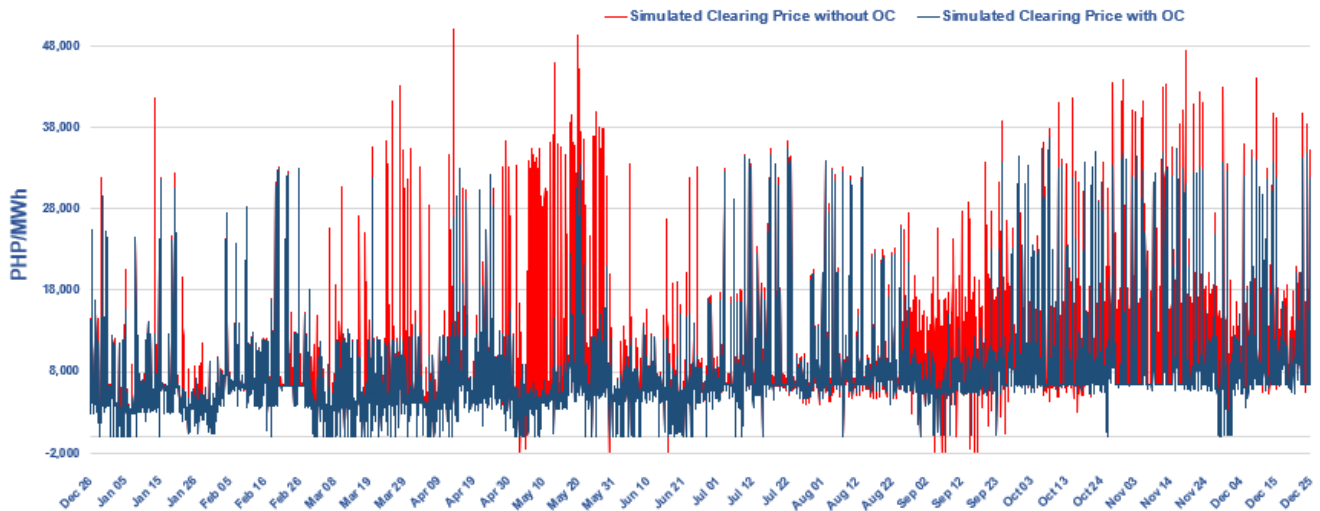
MONTHLY AVERAGE SUPPLY LEVEL



Looking at a month-on-month comparison, the highest recorded increase in the supply relevant to OC impositions was observed during the latter part of 2022.

Generally, the difference in the level of supply, with consideration of OC impositions, varied from month to month, ranging from 14 MW to 123 MW. On a month-on-month comparison, the highest recorded increase in supply relevant to OC impositions was observed during the latter half of 2022, owing to higher imposition of commercial and regulatory requirement tests, as well as MRU imposition during the period.

SIMULATED CLEARING PRICE



Looking into the effect of OC impositions in terms of the simulated clearing price, it can be observed that if the submitted offers are considered back in the unconstrained solution simulation, it may set and increase the simulated clearing price **by an average of PHP1,475/MWh**. The price difference ranged from PHP -8,891/MWh to PHP 32,013.

Though there may be instances that OC impositions caused a decline on the resulting market prices based on the simulation, it may not be reflective of the actual / true cost of generation.

SIMULATED CLEARING PRICE AVERAGES, MONTHLY



Looking at the monthly average simulated clearing prices, the effects of OC impositions were clearly visible. Generally, the prices were consistently lower when offers of plants conducting commercial and regulatory tests are overridden, making them a priority in the dispatch and subsequently as price takers.

The difference varies month to month, ranging from PHP 125/MWh to PHP 3,915/MWh, with the largest effect of OC impositions observed in November 2022.