

PEMC MARKET ASSESSMENT HIGHLIGHTS

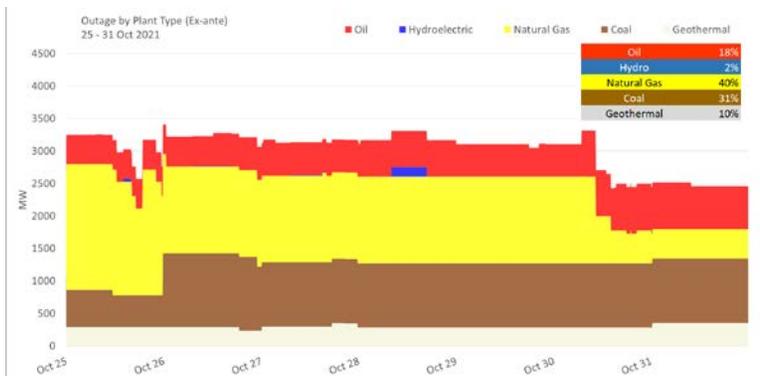
- The average demand and the reserve schedule, recorded at 10,977 MW during the week of 25 - 31 Oct 2021, was lower than the previous week at 11,177 MW but higher than the same week last year at 10,690 MW. Various areas were under the ECQ, MECQ or the GCQ.¹
- The WESM registered capacity stood at 21,405 MW at the end of the week.
- The average supply margin climbed up to 848 MW during the week, higher by about 46% relative to the previous and lower by about 65% in comparison with the same week last year. The supply margin of 384.27 MW observed on 27 October 2021 22:05 was the tightest during the week. The average supply margin during peak intervals was at 803.81 MW and 882.95 MW at off-peak.
- The outage capacity averaged at 3,055 MW, lower than last week's 3,779 MW. About 40% of the 3,055 MW involved Natural Gas plants, while in terms of category, about 58% were Forced Outages.
- The average effective supply during the week was 11,825 MW, higher than the 11,756 MW from the previous and lower than the 13,109 MW of the same week last year. Ramping limitations in generators' offers continued to persist negatively affecting the effective supply.
- Average GWAP was recorded at PHP 4,130/MWh from PHP 7,034/MWh last week. This is higher than the PHP 1,752/MWh during the same week last year.
- No secondary price cap was imposed for this week
- The top 5 participant groups accounted for about 74% of the offered capacity. The Herfindahl-Hirschman Index (HHI) by participant group indicated a moderately concentrated market based on the registered and offered capacities.
- Based on the effective supply, the top 5 pivotal plants during the week were –
 1. MASINLOC CFTPP (about 61.36% of the time)
 2. PAGBILAO CFTPP (about 21.78% of the time)
 3. SUAL CFTPP (about 7.64% of the time)
 4. KALAYAAN PSPP (about 5.06% of the time)
 5. ILIJAN NGPP (about 2.08% of the time)

· The offer pattern analysis showed increase in natural gas plants' offered capacity and decrease in coal plants. Moreover, average offer price demonstrated increase in level for hydro plants in contrast with natural gas plants.

IEMOP MARKET SYSTEMS ADVISORY

- No IT-related issue was advised in IEMOP's market systems from 25 - 31 Oct 2021.

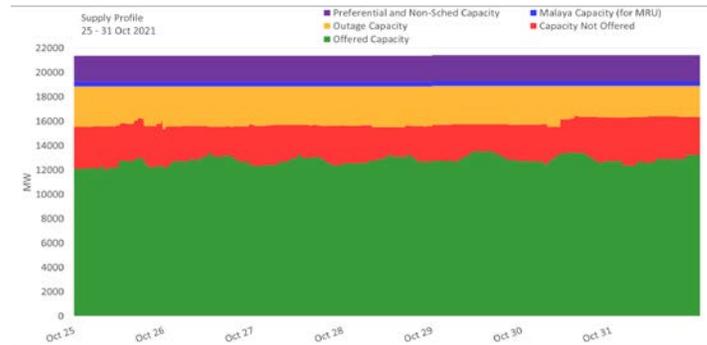
OUTAGE CAPACITY BY PLANT TYPE



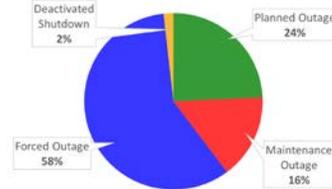
SUMMARY (PRICE, SUPPLY, DEMAND AND RESERVE SCHEDULE)

Particulars	25 - 31 Oct 2021	Prev Week (18 - 24 Oct 2021)	Same Wk, Prev Year (19 - 25 Oct 2020)	Percent Change From		
				Previous Week	Same Wk, Prev Year	
GWAP (PHP/MWh)	max	24,073.58	33,482.87	3,412.96	-28.10%	605.36%
	min.	-8,113.07	-464.87	0.00	-1,645.23%	-
	w. ave.	4,130.20	7,033.87	1,751.83	-41.28%	135.77%
Effective Supply (MW)	max	13,626.56	13,615.54	14,388.62	0.08%	-5.30%
	min.	9,724.94	10,035.56	11,725.30	-3.10%	-17.06%
	ave.	11,824.72	11,756.20	13,109.25	0.58%	-9.80%
System Demand (MW)	max	12,215.52	12,502.03	11,429.17	-2.29%	6.88%
	min.	7,870.65	8,491.72	7,311.84	-7.31%	7.64%
	ave.	10,205.98	10,488.09	9,555.45	-2.69%	6.81%
Demand + Reserve Schedule (MW)	max	12,973.03	13,158.76	12,819.87	-1.41%	1.19%
	min.	8,775.65	9,384.19	8,389.74	-6.48%	4.60%
	ave.	10,976.62	11,177.21	10,689.63	-1.79%	2.68%
Supply Margin (MW)	max	1,304.84	1,095.21	3,846.31	19.14%	-66.08%
	min.	384.27	122.86	1,145.53	212.76%	-66.45%
	ave.	848.09	578.99	2,419.62	46.48%	-64.95%

SUPPLY PROFILE



OUTAGE CAPACITY BY OUTAGE CATEGORY



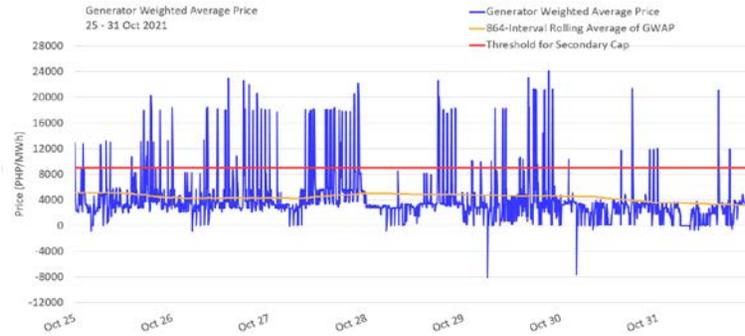
¹ Metro Manila will be placed under a less restrictive Alert Level 3 starting Oct. 16 until the end of the month. The government has also placed the following areas under modified enhanced community quarantine (MECQ), the second-most strict quarantine classification in the old classification, starting Oct. 16 until Oct. 31: Apayao, Kalinga, Batanes, Bulacan, Bataan, Cavite, Rizal, Laguna, Naga City, Zamboanga City, Zamboanga del Norte. Areas placed under general community quarantine (GCQ) with heightened restrictions are: Abra, Baguio City, Ilocos Sur, Pangasinan, Cagayan, Isabela, City of Santiago, Nueva Vizcaya, Quirino, Quezon, Batangas, Bacolod City, Capiz, Lapu-Lapu City, Negros Oriental, Bohol, Zamboanga del Sur, Misamis Oriental, Cagayan de Oro City, Davao del Norte, Davao Occidental, Davao de Oro, Butuan City, Surigao del Sur. The following areas, meanwhile, are placed under GCQ: Ilocos Norte, Dagupan City, Ifugao, Benguet, Tarlac, Lucena City, Occidental Mindoro, Oriental Mindoro, Puerto Princesa, Marinduque, Albay, Camarines Norte, Aklan, Antique, Guimaras, Negros Occidental, Iloilo City, Iloilo Province, Cebu City, Cebu Province, Mandaue City, Siquijor, Tacloban City, Zamboanga Sibugay, Misamis Occidental, Iligan City, Davao City, Davao Oriental, Davao del Sur, General Santos City, Sultan Kudarat, Sarangani, North Cotabato, South Cotabato, Agusan del Norte, Agusan del Sur, Surigao del Norte, Dinagat Islands, Cotabato City, Lanao del Sur



SUPPLY, DEMAND AND PRICE



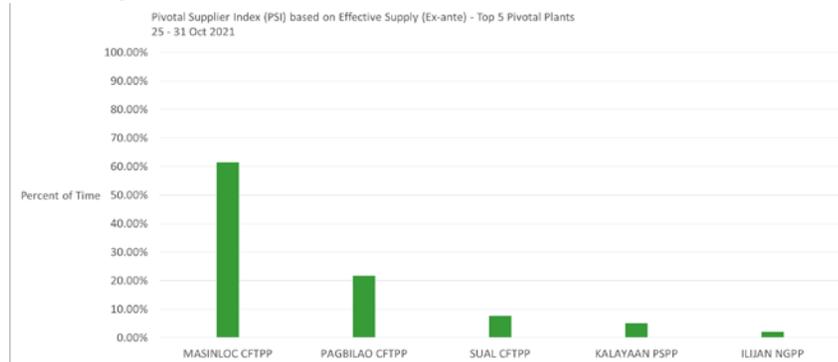
GENERATOR WEIGHTED AVERAGE PRICE



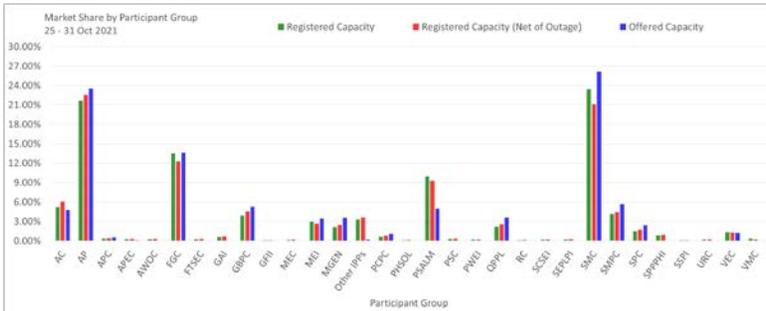
MARKET RSI VS PIVOTAL PLANTS



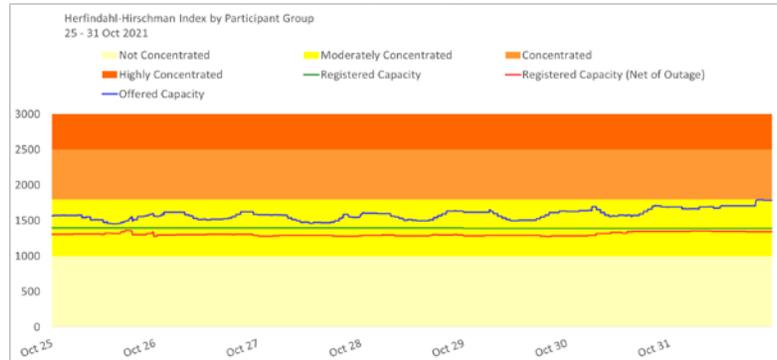
PSI



MARKET SHARE



HERFINDAHL-HIRSCHMAN INDEX

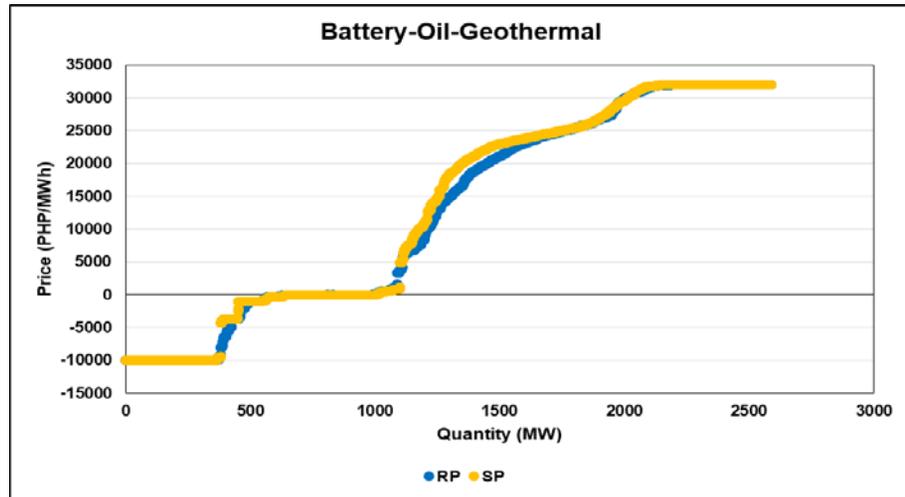
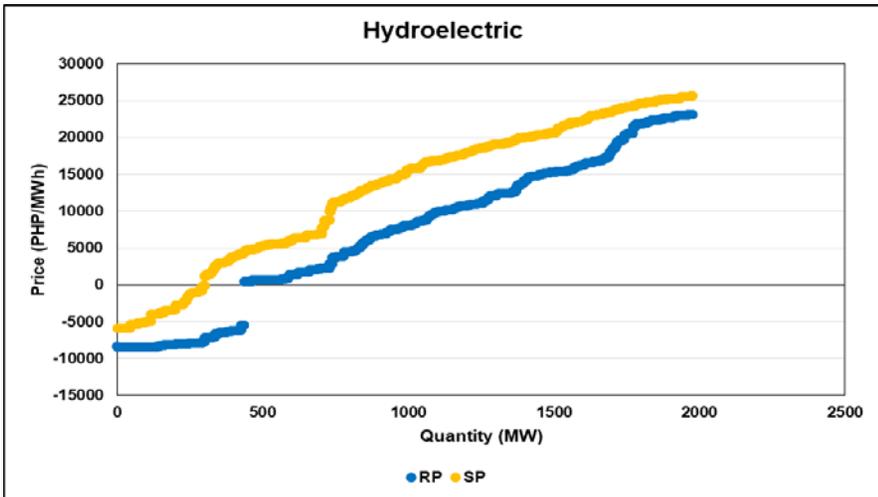
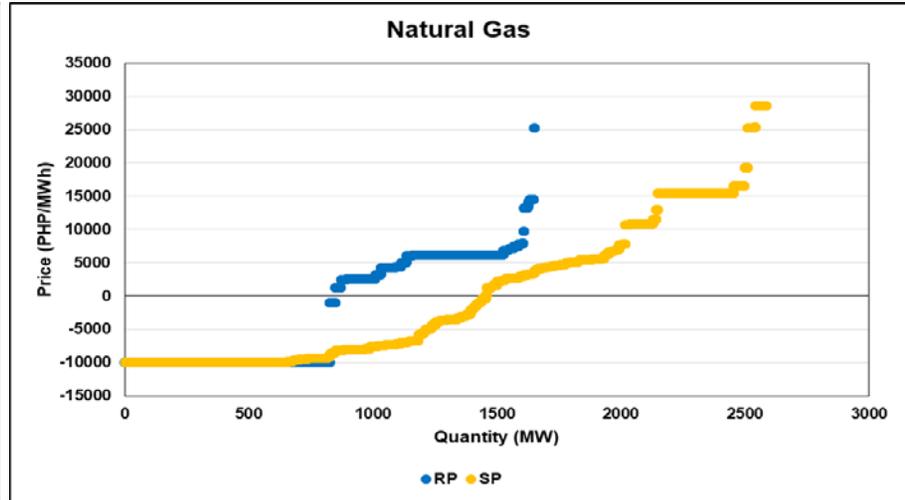
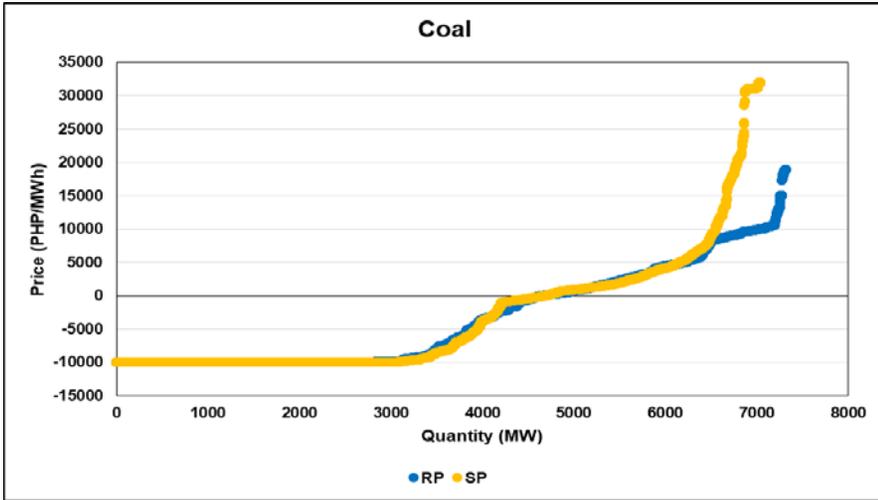


OFFER PATTERN ANALYSIS

Legend

RP: Reference Offer Price – the week of 18-24 Oct 2021 was used as a control for the comparison with the subject price

SP: Subject Offer Price – the week of 25-31 Oct 2021



GLOSSARY OF TERMS

HERFINDAHL-HIRSCHMAN INDEX (HHI) - is a commonly accepted measure of market concentration that takes into account the relative size and distribution of participants in the market. The HHI is a number between 0 and 10,000, which is calculated as the sum of squares of the participant's market share. The HHI approaches zero when the market has very large number of participants with each having a relatively small market share. In contrary, the HHI increases as the number of participants in the market decreases, and the disparity in the market shares among the participants increases. The following are the widely used HHI screening numbers: (1) less than 1,000 - not concentrated; (2) 1,000 to 1,800 - moderately concentrated; (3) greater than 1,800 - concentrated; and (4) greater than 2,500 - highly concentrated.

The HHI is calculated using the (i) registered capacity, (ii) registered capacity net of outage, (iii) offered capacity, (iv) metered quantity, and (v) spot transaction (metered quantity net of bilateral contract declarations).

MARKET RESIDUAL SUPPLY INDEX (Market RSI) - The RSI is a dynamic continuous index measured as ratio of the available generation without a generator to the total generation required to supply the demand. The RSI is measured for each generator. The greater the RSI of a generator, the less will be its potential ability to exercise market power and manipulate prices, as there will be sufficient capacity from the other generators. In contrary, the lower the RSI, the greater the market power of a generator (and its potential benefit of exercising market power), as the market is strongly dependent on its availability to be able to fully supply the demand. In particular, a RSI greater than 100% for a generator means that the remaining generators can cover the demand, and in principle that generator cannot manipulate market price. On the other hand, a RSI less than 100% means that the generator is pivotal in supplying the demand.

The RSI for the whole market (Market RSI) is measured as the lowest RSI among all the generators in the market. A Market RSI less than 100% indicates the presence of pivotal generator/s.

PRICE SETTING FREQUENCY INDEX (PSFI) - A generator trading node is considered as a price setter when its last accepted offer price is between 95% to 100% of its nodal price. A generating plant is considered as price setter if at least one of its trading nodes was price setter in a given trading hour. The price setters are determined from: (i) ex-ante for trading intervals without pricing error during ex-ante, (ii) ex-post with pricing error during ex-ante but without pricing error during ex-post, (iii) market re-run results for trading intervals with pricing error both in ex-ante and ex-post, and (iv) trading intervals where the price substitution methodology (PSM) was applied. For trading intervals affected by PSM, the unconstrained marginal plants are considered price setters. Further, in instances of regional price separation, price setters are determined separately for each region.

MARKET SHARE - The fraction of the total capacity or energy that a company or related group owns or controls in the market.

PIVOTAL SUPPLIER INDEX (PSI) - The pivotal supplier index is a binary variable (1 for pivotal and 0 for not pivotal) for each generator. The index identifies whether a generator is pivotal in supplying the demand. The PSI is calculated as the percentage of time that a generator is pivotal in a period (i.e. monthly).

CAPACITY FACTOR - The index assesses the performance of the generators in the market. A high capacity factor indicates the high utilization of the generators.

CAPACITY PROFILE - The hourly factors affecting supply, which include, among others, the offered capacity, outage capacity and ancillary services schedule.

MAJOR PARTICIPANT GROUP - The grouping of generators by ownership or control.

REGISTERED CAPACITY - The capacity registered by a generator with WESM.

REGISTERED CAPACITY (NET OF OUTAGE) - The capacity registered by a generator with WESM less capacity on outage.

OFFERED CAPACITY - The hourly offer to supply electricity submitted by a generator.

METERED QUANTITY - The hourly quantity of electricity generated by a generator.

SPOT TRANSACTION - The hourly quantity of electricity sold to the market by a generator net of bilateral contract declaration accounted for in the settlement.

ANCILLARY SERVICES SCHEDULES - The hourly quantity scheduled by the System Operator to provide regulating, contingency and dispatchable reserves.

EFFECTIVE SUPPLY - The hourly effective supply is equal to the offered capacity of all scheduled generator resources, nominated loading level of non-scheduled generating units and projected output of preferential dispatch generating units, adjusted for any security limit provided by the System Operator and other constraints considered during MMS simulation such as generator offered ramp rates. Scheduled output of plants on testing and commissioning through the imposition of security limit by SO and scheduled output of Malaya plant when it is called to run as Must Run Unit (MRU) are likewise accounted for in the effective supply.

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