

**PEMC MARKET ASSESSMENT HIGHLIGHTS**

- The average demand and the reserve schedule, recorded at 11,646 MW during the week of 18 - 24 Dec 2023, was lower than the previous week at 12,512 MW and higher than the same week last year at 10,247 MW.
- The average effective supply during the week was 12,197 MW, lower than the 13,032 MW of the previous week and higher than the 11,111 MW during the same week last year. Ramping limitations were considered in the calculation of the effective supply.
  - The capacity on outage averaged at 3,661 MW, higher than last week's 3,015 MW. In terms of capacity on outage by plant type, about 69% of the 3,661 MW involved Coal Plants, while in terms of category, about 57% were Forced Outages.
- As a result, an average supply margin of 551 MW was observed during the week, which is higher by about 6% relative to the previous week and lower by about 36.245% in comparison with the same week last year. The thinnest supply margin based on MMS solution was 32.67 MW on 20 December 2023 21:05. The average supply margin was 523.11 MW at peak intervals and 572.59 MW at off-peak intervals.
- Correspondingly, average GWAP was recorded at PHP 5,548/MWh from PHP 4,508/MWh last week. This is lower than the PHP5,633/MWh during the same week last year.
  - No secondary price cap was imposed for this week
- The top 5 participant groups accounted for about 81% of the offered capacity. The Herfindahl-Hirschman Index (HHI) by participant group indicated mostly concentrated and moderately concentrated market based on the offered and registered capacities respectively.
- The top 5 pivotal plants during the week were –
  1. GNP DINGININ CFTPP (about 100.% of the time)
  2. ILJAN NGPPP (about 95.34% of the time)
  3. STA RITA NGPPP (about 94.% of the time)
  4. MASINLOC CFTPP (about 88.89% of the time)
  5. SMC LIMAY CFTPP (about 75.89% of the time)
- Based on the MMS Solution, the top 5 congested equipment during the week were –
  1. 138kV Samboan-Amlan Line1 (about 21.2% of the time)
  2. 230kV Bauang-Latrinidad Line1 (about 1.5% of the time)
  3. 230kV Bauang-Latrinidad Line2 (about 1.4% of the time)
  4. San Juan\_Transformer 1 (about 0.5% of the time)
  5. 230 kV Tabango\_Daan Bantayan (about 0.45% of the time)

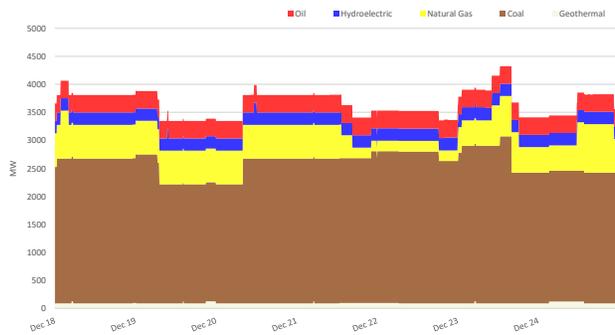
**OPA\_ANALYSIS**

- The capacity offered by coal plants was lower than that of the previous week due to outages.
- On December 23, hydro plants offered a capacity of around 180 MW at a price range of Php 25,000/MWh to Php 30,000/MWh.
- Natural gas plants offered lower capacity starting December 22 due to the planned outage of San Lorenzo 1 and the lowest capacity offer on December 23 due to the forced outage of San Lorenzo 2
- The lowest nomination for solar plants was recorded on December 18, while the highest was on December 23.
- The lowest nomination for wind plants was recorded on December 20, and the highest was on December 23.

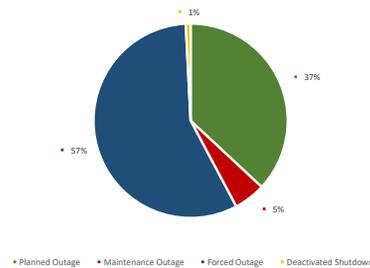
**IEMOP MARKET SYSTEMS ADVISORY**

- No IT-related issue was advised in IEMOP's market systems from 18 - 24 Dec 2023.

**CAPACITY ON OUTAGE BY PLANT TYPE**



**CAPACITY ON OUTAGE BY OUTAGE CATEGORY**



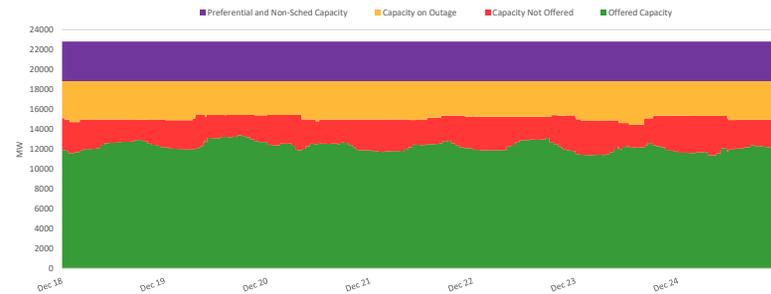
**RTD CONGESTION**



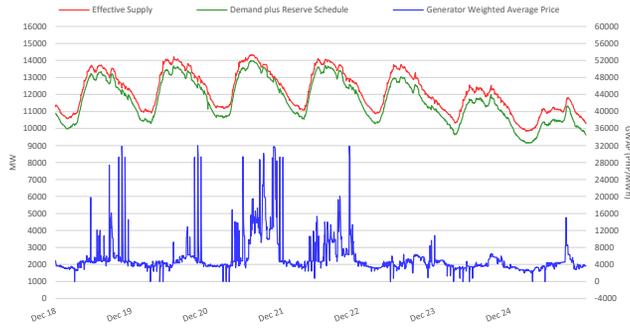
**SUMMARY (PRICE, SUPPLY, DEMAND AND RESERVE SCHEDULE)**

Particulars	18 - 24 Dec 2023	Previous Week (11 - 17 Dec 2023)	Same Week, Previous Year (19 - 25 Dec 2022)	Percent Change From		
				Previous Week	Same Week, Prev Year	
GWAP (PHP/MWh)	max	31,987.255	39,159.378	18,358.480	-18.32%	74.24%
	min	-0.986	-0.998	-9,824.738	1.20%	99.99%
	ave	5,547.709	4,507.664	5,633.396	23.07%	-1.52%
Effective Supply (MW)	max	14,344.290	15,349.281	13,506.860	-6.55%	6.20%
	min	9,841.637	10,717.194	8,512.900	-8.17%	15.61%
	ave	12,197.148	13,031.735	11,110.917	-6.40%	9.78%
System Demand (MW)	max	13,079.170	13,763.480	11,732.960	-4.97%	11.47%
	min	8,125.810	9,010.080	6,653.310	-9.81%	22.13%
	ave	10,699.096	11,407.457	9,317.628	-6.21%	14.83%
Demand + Reserve Schedule (MW)	max	13,992.190	14,874.250	12,677.790	-5.93%	10.37%
	min	9,139.260	10,054.370	7,373.310	-9.10%	23.95%
	ave	11,646.639	12,512.422	10,247.002	-6.92%	13.66%
Supply Margin (MW)	max	885.481	795.580	1,365.184	11.30%	-35.14%
	min	32.665	-128.407	334.766	125.44%	-90.24%
	ave	550.509	519.313	863.916	6.01%	-36.28%

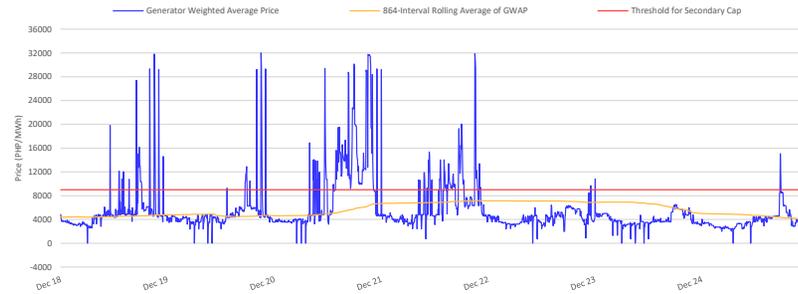
**CAPACITY PROFILE**



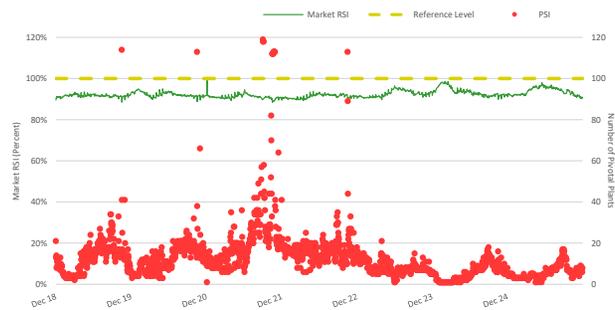
**SUPPLY, DEMAND AND PRICE**



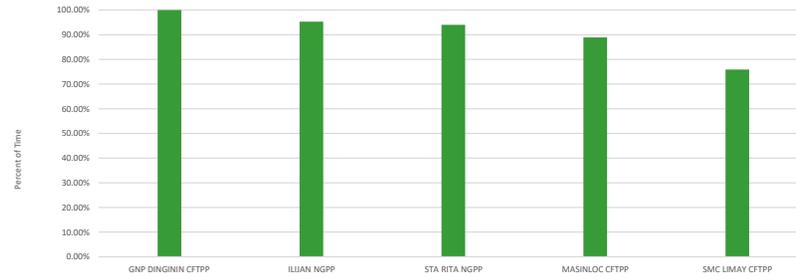
**GENERATOR WEIGHTED AVERAGE PRICE**



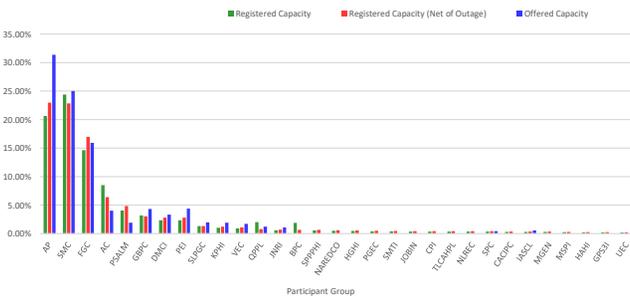
**MARKET RSI VS PIVOTAL PLANTS**



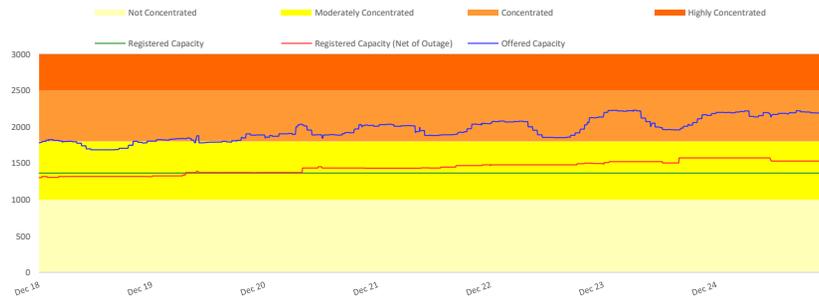
**PSI**



**MARKET SHARE**

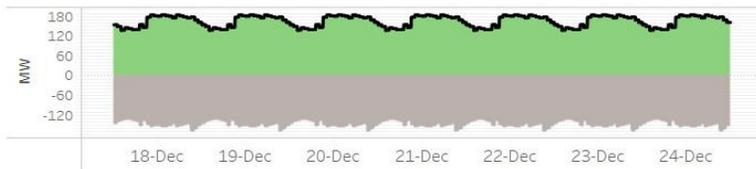


**HERFINDAHL-HIRSCHMAN INDEX**

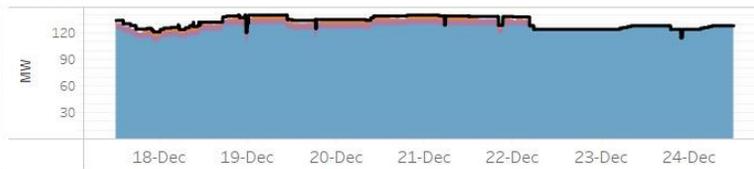


**OFFER PATTERN ANALYSIS**

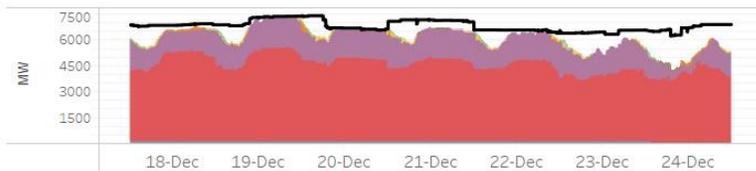
**BATTERY**



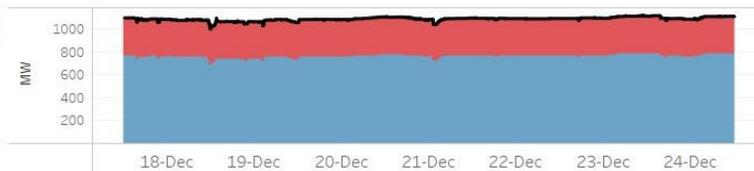
**BIOFUEL**



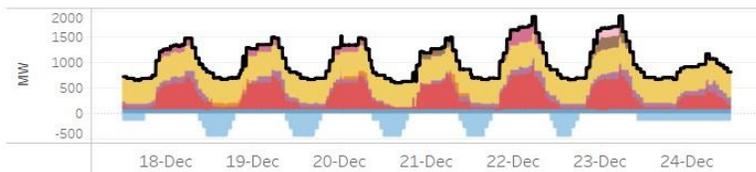
**COAL**



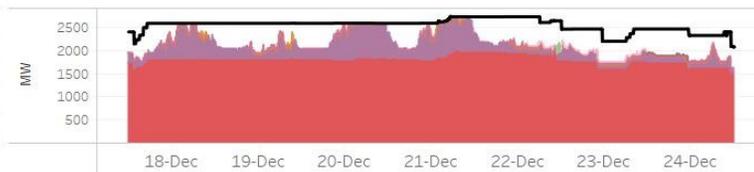
**GEOHERMAL**



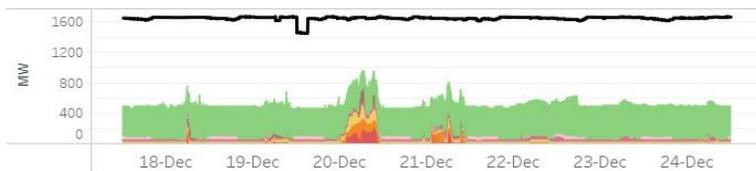
**HYDRO**



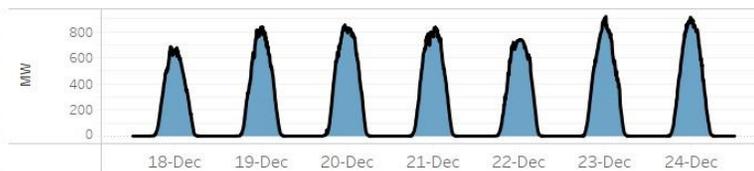
**NATURAL GAS**



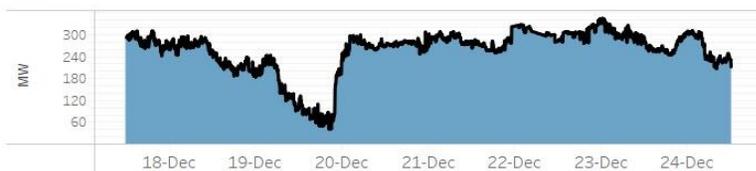
**OIL-BASED**



**SOLAR**



**WIND**



Notes:  
 1. In Php (X, Y], it includes offer price greater than Php X but less than or equal to Php Y.  
 2. Reflected capacity includes offered capacity of all scheduled generators, nominated loading level of nonscheduled generators and projected output of preferential dispatch generators adjusted based on submitted ramp rate limitations.

**GLOSSARY OF TERMS**

**EFFECTIVE SUPPLY** - The 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.

**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.

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

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

**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).

**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.

**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 offer to supply electricity submitted by a generator.

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