

### PEMC MARKET ASSESSMENT HIGHLIGHTS

The average demand and the reserve schedule, recorded at 11,619 MW during the week of 28 Nov to 04 Dec 2022, was lower than the previous week at 11,726 MW and lower than the same week last year at 11,629 MW.

The average effective supply during the week was 11,915 MW, lower than the 12,120 MW of the previous week and lower than the 12,250 MW during the same week last year. Ramping limitations were considered in the calculation of the effective supply.  
The capacity on outage averaged at 5,038 MW, higher than last week's 4,246 MW. About 57% of the 5,038 MW involved Coal plants, while in terms of category, about 66% were Forced Outages.

As a result, an average supply margin of 296 MW was observed during the week, which is lower by about 25% relative to the previous week and lower by about 52% in comparison with the same week last year. The supply deficit reached 183.19 MW on 29 November 2022 at 21:05. The average supply margin was 145.9 MW at peak intervals and 387.49 MW at off-peak intervals.

Correspondingly, average GWAP was recorded at PHP 9,213/MWh from PHP 9,062/MWh last week. This is higher than the PHP5,981/MWh during the same week last year.

Administered Prices were used in the SO - initiated market intervention on 01 December 2022 from 10:25H to 10:50H.

The secondary price cap was imposed during 1,560 intervals out of the 2,016 intervals of the week (about 77% of the time).

The top 5 participant groups accounted for about 81% of the offered capacity. The Herfindahl-Hirschman Index (HHI) by participant group indicated partially 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 (100.% of the time)
2. STA RITA NGPP (about 98.76% of the time)
3. SMC LIMAY CFTPP (about 90.48% of the time)
4. PAGBILAO CFTPP (about 87.95% of the time)
5. SAN LORENZO NGPP (about 81.2% of the time)

Based on the MMS Solution, the top 5 congested equipment during the week were –

1. 138kV Maasin-Ubay Line 1 (about 37.8% of the time)
2. Zapote\_Transformer 4 (about 0.79% of the time)
3. Makban-A\_Transformer 2 (about 0.69% of the time)
4. 138kV Samboan-Amlan Line1 (about 0.64% of the time)
5. GAMU\_Transformer 2 (about 0.3% of the time)

Coal plants recorded lower offered capacity due to increased capacity on outage during the week. Hydro plants generally noted an increase in its offer prices during the week while oil-based plants observed lower offer prices in some portions of its offer curve.

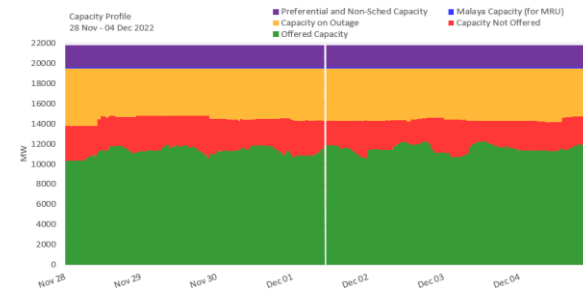
### ITEMOP MARKET SYSTEMS ADVISORY

The System Operator initiated Market Intervention for 01 December 2022 (10:25-10:50) due to significantly erratic real-time data.

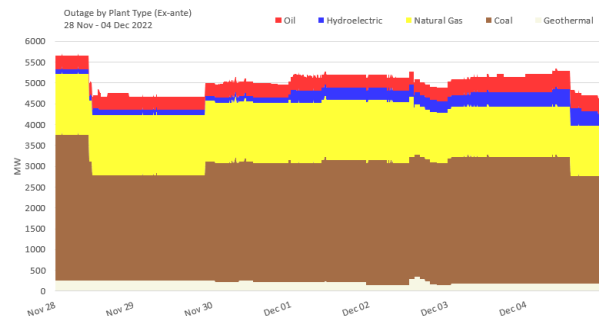
### SUMMARY (PRICE, SUPPLY, DEMAND AND RESERVE SCHEDULE)

Particulars		28 Nov -04 Dec 2022	Previous Week (21 - 27 Nov 2022 )	Same Week, Previous Year (22 - 28 Nov 2021)	Percent Change From	
					Previous Week	Same Week, Prev Year
GWAP (PHP/MWh)	max	39,539.32	33,827.11	30,883.20	16.89%	28.03%
	min.	0.00	0.00	-982.68	-	100.00%
	ave.	9,212.78	9,062.26	5,981.27	1.66%	54.03%
Effective Supply (MW)	max	13,780.09	14,076.19	14,063.78	-2.10%	-2.02%
	min.	9,673.96	9,869.83	10,359.83	-1.98%	-6.62%
	ave.	11,914.92	12,120.25	12,250.17	-1.69%	-2.74%
System Demand (MW)	max	13,014.55	13,022.33	12,728.93	-0.06%	2.24%
	min.	8,420.61	8,179.48	8,486.52	2.95%	-0.78%
	ave.	10,782.40	10,823.32	10,522.36	-0.38%	2.47%
Demand + Reserve Schedule (MW)	max	13,602.59	13,894.36	13,827.16	-2.10%	-1.62%
	min.	9,238.11	8,995.70	9,596.02	2.69%	-3.73%
	ave.	11,618.58	11,726.45	11,629.33	-0.92%	-0.09%
Supply Margin (MW)	max	931.37	977.39	1,101.86	-4.71%	-15.47%
	min.	-183.19	-199.62	37.60	8.23%	-587.23%
	ave.	296.34	393.80	620.84	-24.75%	-52.27%

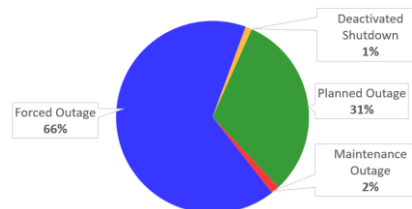
### CAPACITY PROFILE



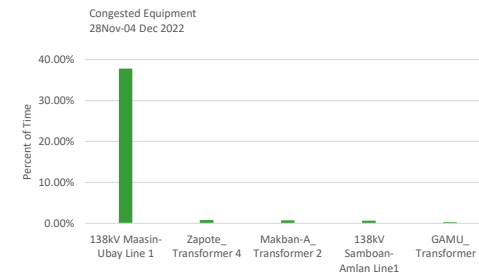
### CAPACITY ON OUTAGE BY PLANT TYPE



### CAPACITY ON OUTAGE BY OUTAGE CATEGORY



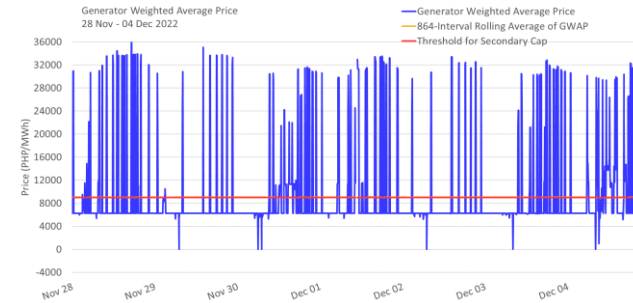
### RTD CONGESTION



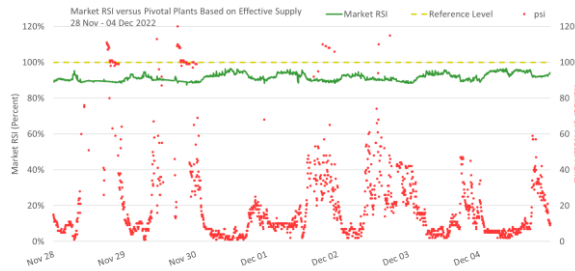
### SUPPLY, DEMAND AND PRICE



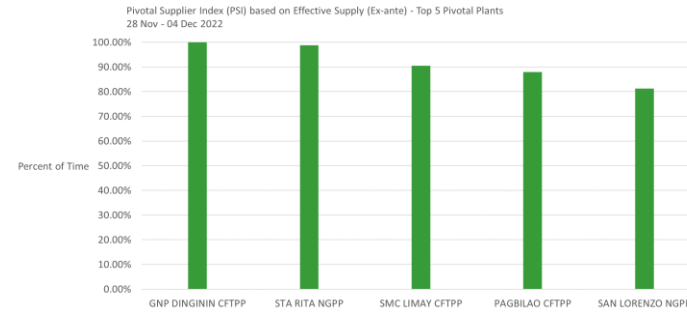
### GENERATOR WEIGHTED AVERAGE PRICE



### MARKET RSI VS PIVOTAL PLANTS



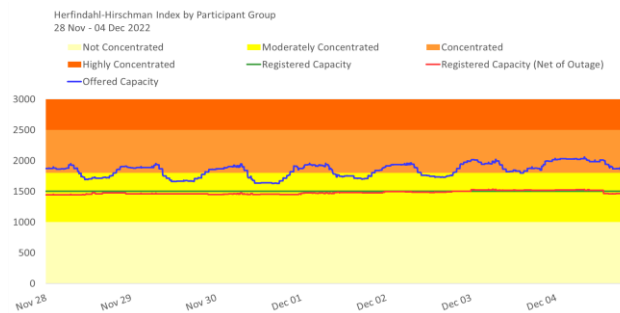
### PSI



### MARKET SHARE



### HERFINDAHL-HIRSCHMAN INDEX

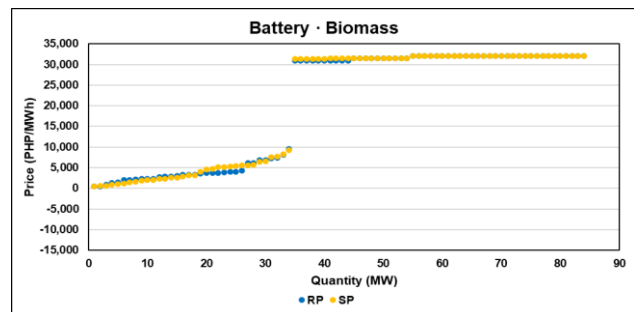
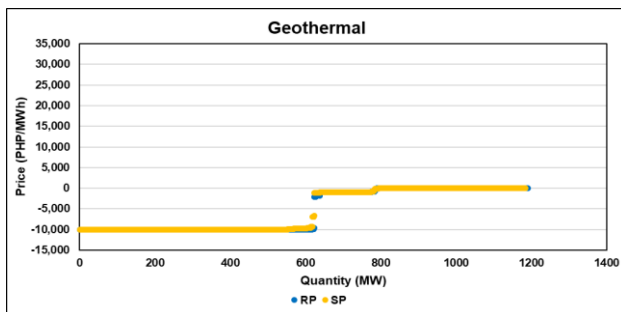
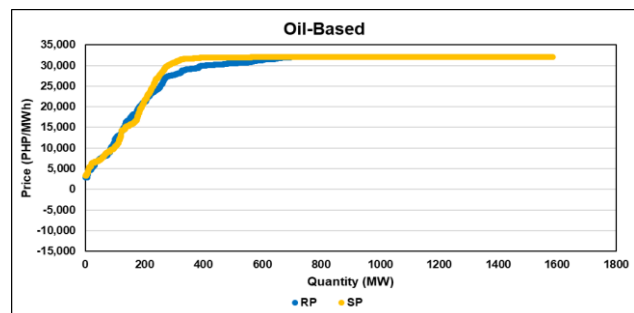
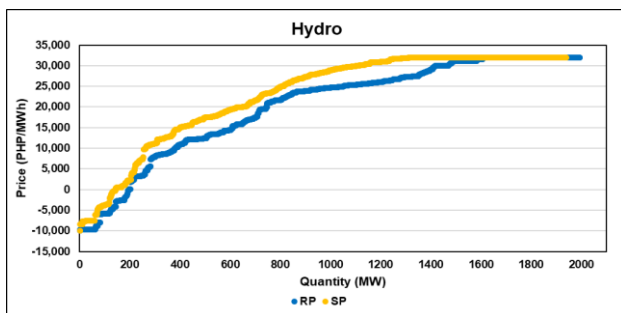
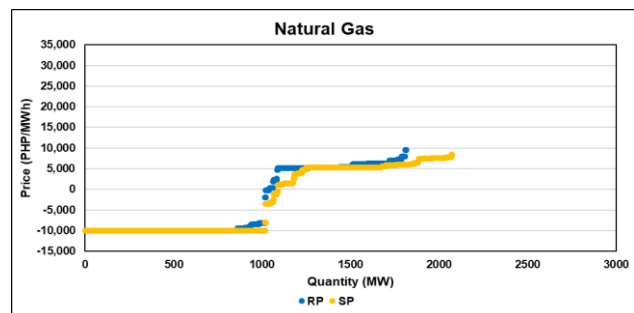
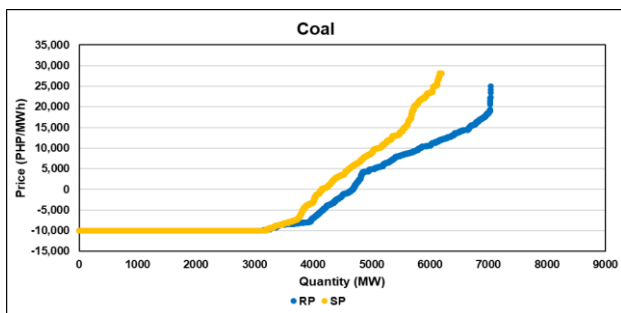


## OFFER PATTERN ANALYSIS

### Legend

RP: Reference Offer Price – the week of 21-27 Nov 2022 was used as a control for the comparison with the subject price

SP: Subject Offer Price – the week of 28 Nov-04 Dec 2022



**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.

**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

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

**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.

**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 offer to supply electricity submitted by a generator.

DISCLAIMER: The information contained in this document is based on the available electricity spot market data. The same information is subject to change as updated figures come in. As such, the PEMC does not make any representation or warranty as to the completeness of this information. The PEMC likewise accepts no responsibility or liability whatsoever for any loss or cost incurred by a reader arising from, or in relation to, any conclusion or assumption derived from the information found herein.