

## PEMC MARKET ASSESSMENT HIGHLIGHTS

The week in review covers the holidays from 6 to 9 April related to the observance of the Holy Week. The average demand and the reserve schedule, recorded at 10,718 MW during the week of 03 - 09 Apr 2023, was lower than the previous week at 12,274 and lower than the same week last year at 11,388 MW.

The average effective supply during the week was 11,621 MW, lower than the 12,789 MW of the previous week and lower than the 12,129 MW during the same week last year. Ramping limitations were considered in the calculation of the effective supply.  
The capacity on outage averaged at 2,424 MW, lower than last week's 2,651 MW. About 33% of the 2,424 MW involved Coal plants, while in terms of category, about 66% were Forced Outages.

As a result, an average supply margin of 903 MW was observed during the week, which is higher by about 75% relative to the previous week and higher by about 22% in comparison with the same week last year. The thinnest supply margin was 163.65 MW on 03 April 2023 10:20. The average supply margin was 809.12 MW at peak intervals and 936.34 MW at off-peak intervals.

Correspondingly, average GWAP was recorded at PHP 5,222/MWh from PHP 8,715/MWh last week. This is higher than the PHP4,028/MWh during the same week last year.

No secondary price cap was imposed for this week

The top 5 participant groups accounted for about 82% 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 (about 79.12% of the time)
2. SUAL CFTPP (about 54.02% of the time)
3. STA RITA NGPP (about 38.74% of the time)
4. MASINLOC CFTPP (about 8.58% of the time)
5. SMC LIMAY CFTPP (about 4.71% of the time)

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

1. 138kV Maasin\_Ubay (about 22.52% of the time)
2. 230kV Mexico-Hermosa Line1 (about 17.6% of the time)
3. 230kV Mexico-Hermosa Line2 (about 16.7% of the time)
4. San Jose 230kV Transformer 2 (about 2.3% of the time)
5. 138kV Samboan-Amlan Line1 (about 2.2% of the time)

Hydro plants recorded lower offer prices. Meanwhile, Natural Gas plants recorded slightly higher offered prices.

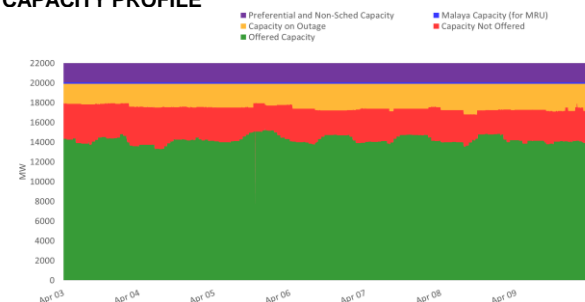
## ITEMOP MARKET SYSTEMS ADVISORY

No IT-related issue was advised in ITEMOP's market systems from 03 - 09 Apr 2023.

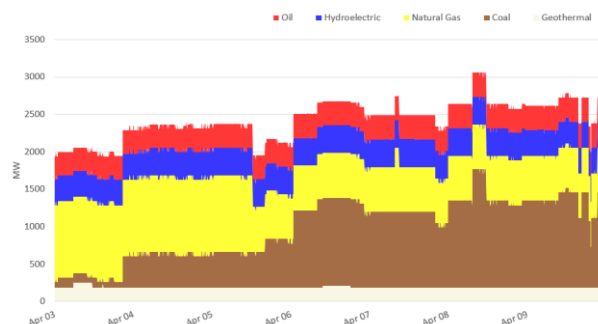
## SUMMARY (PRICE, SUPPLY, DEMAND AND RESERVE SCHEDULE)

| Particulars                    |     | 03 - 09 Apr 2023 | Previous Week (27 Mar - 02 Apr 2023) | Same Week, Previous Year (04 - 10 Apr 2022) | Percent Change From |                      |
|--------------------------------|-----|------------------|--------------------------------------|---|---------------------|----------------------|
|                                |     |                  |                                      |   | Previous Week       | Same Week, Prev Year |
| GWAP (PHP/MWh)                 | max | 30,709.32        | 36,611.96                            | 11,953.50                                   | -16.12%             | 156.91%              |
|                                | min | -10,087.76       | -1.02                                | -1,047.16                                   | -992K%              | -863.35%             |
|                                | ave | 5,222.41         | 8,715.06                             | 4,028.22                                    | -40.08%             | 29.65%               |
| Effective Supply (MW)          | max | 15,091.22        | 14,774.37                            | 14,369.36                                   | 2.14%               | 5.02%                |
|                                | min | 8,871.30         | 10,775.87                            | 9,837.84                                    | -17.67%             | -9.82%               |
|                                | ave | 11,620.83        | 12,788.85                            | 12,128.77                                   | -9.13%              | -4.19%               |
| System Demand (MW)             | max | 13,813.84        | 13,829.64                            | 12,806.79                                   | -0.11%              | 7.86%                |
|                                | min | 7,261.51         | 9,402.81                             | 8,226.56                                    | -22.77%             | -11.73%              |
|                                | ave | 10,051.41        | 11,660.77                            | 10,468.75                                   | -13.80%             | -3.99%               |
| Demand + Reserve Schedule (MW) | max | 14,570.24        | 14,603.59                            | 13,648.08                                   | -0.23%              | 6.76%                |
|                                | min | 7,802.51         | 9,985.81                             | 8,960.16                                    | -21.86%             | -12.92%              |
|                                | ave | 10,717.81        | 12,273.69                            | 11,387.62                                   | -12.68%             | -5.88%               |
| Supply Margin (MW)             | max | 1,525.24         | 1,218.47                             | 1,156.85                                    | 25.18%              | 31.84%               |
|                                | min | 163.65           | -406.36                              | 387.47                                      | 140.27%             | -57.76%              |
|                                | ave | 903.02           | 515.16                               | 741.15                                      | 75.29%              | 21.84%               |

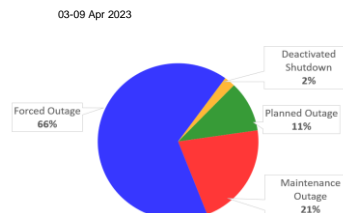
## CAPACITY PROFILE



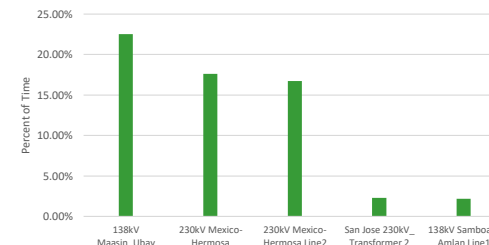
## CAPACITY ON OUTAGE BY PLANT TYPE



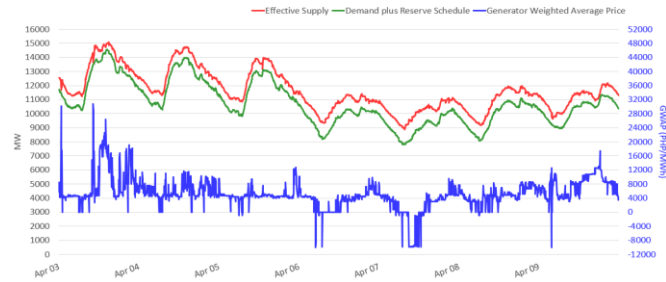
## CAPACITY ON OUTAGE BY OUTAGE CATEGORY



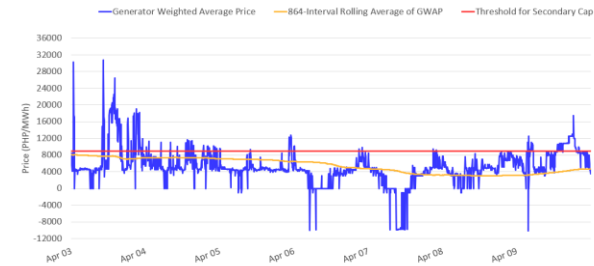
## RTD CONGESTION



### SUPPLY, DEMAND AND PRICE



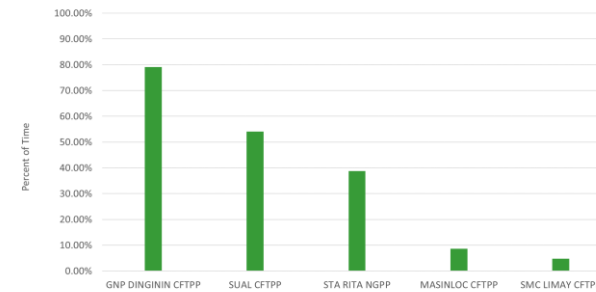
### GENERATOR WEIGHTED AVERAGE PRICE



### MARKET RSI VS PIVOTAL PLANTS



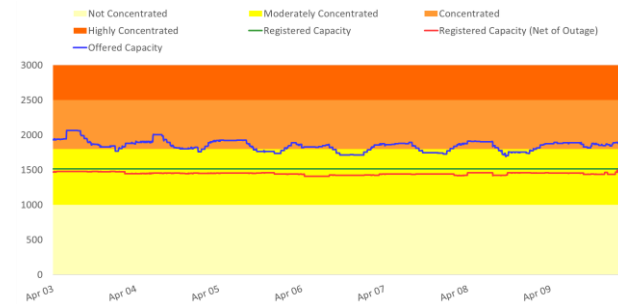
### PSI



### MARKET SHARE



### HERFINDAHL-HIRSCHMAN INDEX

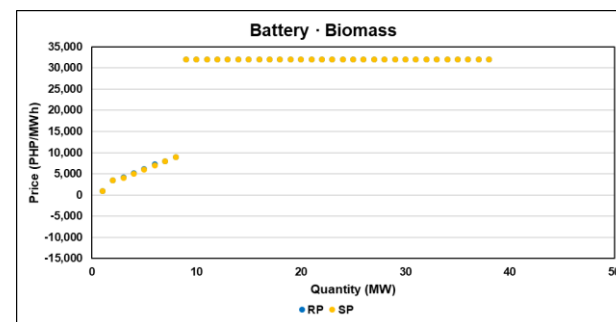
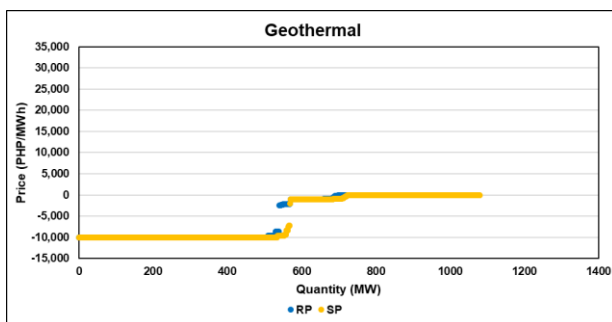
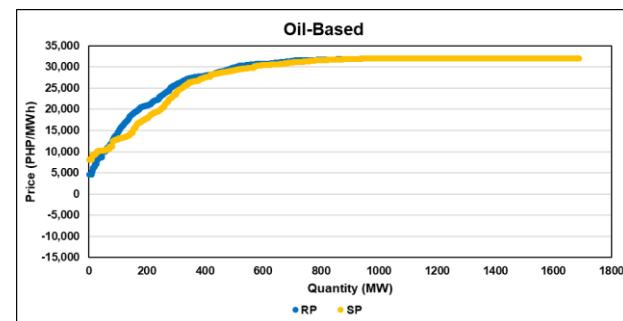
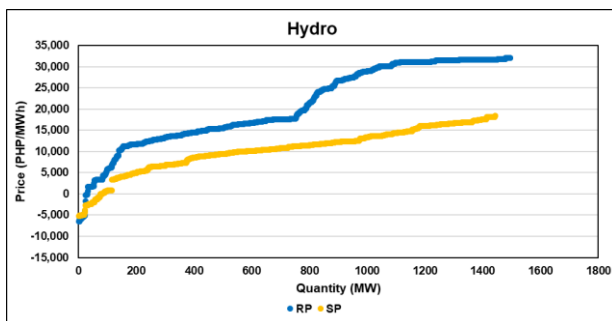
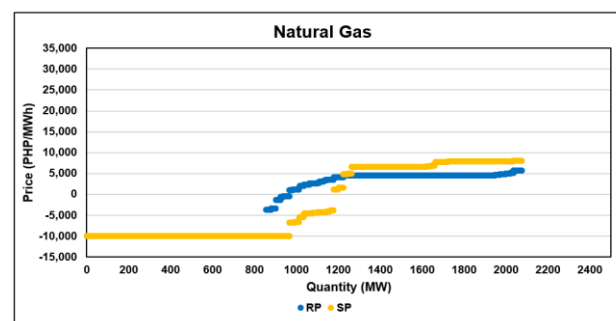
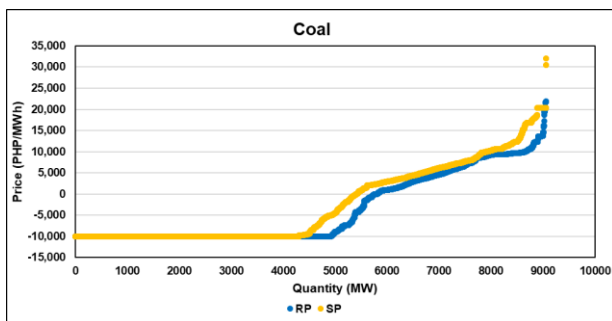


## OFFER PATTERN ANALYSIS

### Legend

RP: Reference Offer Price – the week of 27 Mar-02 Apr 2023 was used as a control for the comparison with the subject price

SP: Subject Offer Price – the week of 03-09 Apr 2023



**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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