Market Surveillance Committee Monthly Market Assessment

26 April to 25 May 2022

December 2022

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

MONTHLY MARKET ASSESSMENT REPORT

(26 April – 25 May 2022)

Philippine Electricity Market Corporation

MMAR-2022-05

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Monthly Market Assessment Report – May 2022

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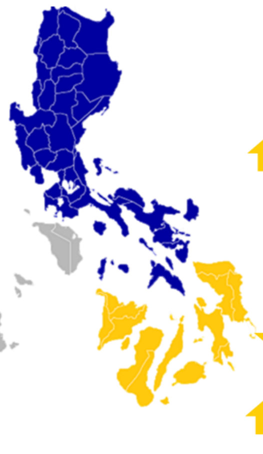
ASSESSMENT OF THE MARKET

SUMMARY OF PRICING CONDITIONS

LUZON *from Apr*

- Normal: 6,615 intervals (77%) — ↓ 7%
- PSM: 1,769 interval (20%) — ↑ 20%
- PEN: 128 intervals (1%) — ↓ 7%
- SPC: 109 intervals (1%) — ↓ 6%
- AP: 19 interval (0.2%) — ↑ 0.2%



VISAYAS *from Apr*

- Normal: 6,671 intervals (77%) — ↓ 5%
- PSM: 1,707 interval (20%) — ↑ 20%
- PEN: 128 intervals (1%) — ↓ 9%
- SPC: 115 intervals (1%) — ↓ 7%
- AP: 19 interval (0.2%) — ↑ 0.03%

- The cumulative 3-day average computation of the generator-weighted average prices (GWAP) breached the PHP9,000/MWh threshold and resulted in the imposition of secondary price cap for 109 intervals from 683 intervals last month, both in Luzon and Visayas brought about by episodes of depleted supply margin from 29 to 30 April 2022 leading to relatively high prices in the market. Regional imposition of secondary price cap was also observed in Visayas region for 6 intervals when the interconnection of the main grids was unavailable.
- Intervals with pricing error notices were mainly due to inappropriate input data which affected prices and schedules across 128 intervals both for Luzon and Visayas.
- Significant increase in intervals imposed with price substitution methodology (PSM) during the month in review.
- Market Intervention (MI) was implemented in Luzon and Visayas for 19 intervals on 06 May 2022 from 1215H to 1340H and 08 May 2022 at 2315H, due to failure in publication of market results, hence the declaration.

NOTABLE HIGHLIGHTS

1. Increase in the level of system demand with the onset of dry season.
   - Peak demand recorded at 14,358 MW on 12 May 2022, 1440H, surpassing the all-time highest peak demand of 13,676 MW which was recorded on 28 May 2021, 1500H.
2. Improvement in the average effective supply with the resumption of power plants that were previously on outage.
   - Capacity on outage were significantly lower this month to ensure adequate supply level during the election period, in compliance with the Department Circular No. Department Circular No. 2018-05-0014.
3. Notwithstanding the increase in the level of system demand, improvements in the level of effective supply due to relatively lower level of capacities on outage, market prices were generally observed to have declined, on average, by 0.9 percent.
   - Average market price of PHP6,205/MWh from PHP6,261/MWh last month
4. Observed congestion in transmission lines and transformer equipment resulted from the nature and current design of the transmission system, as well as N-1 contingency impositions by the System Operator (SO). Some notable congestions were as follows:
   - Mexico-Hermosa lines 1 and 2 were congested for 857 intervals and 1,796 intervals respectively. 290 intervals and 173 intervals respectively were a result of N-1 contingency imposition by SO, and
   - Samboan-Amlan line 2 and Maasin-Ubay line 1 were also congested 19 and 18 percent of the time or equivalent to 1,620 and 1,542 intervals, respectively – the former being still affected by the unavailability of Samboan-Amlan line 1.

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MARKET OUTCOME

SUPPLY MARGIN

695 MW

(625 MW in April)

EFFECTIVE SUPPLY

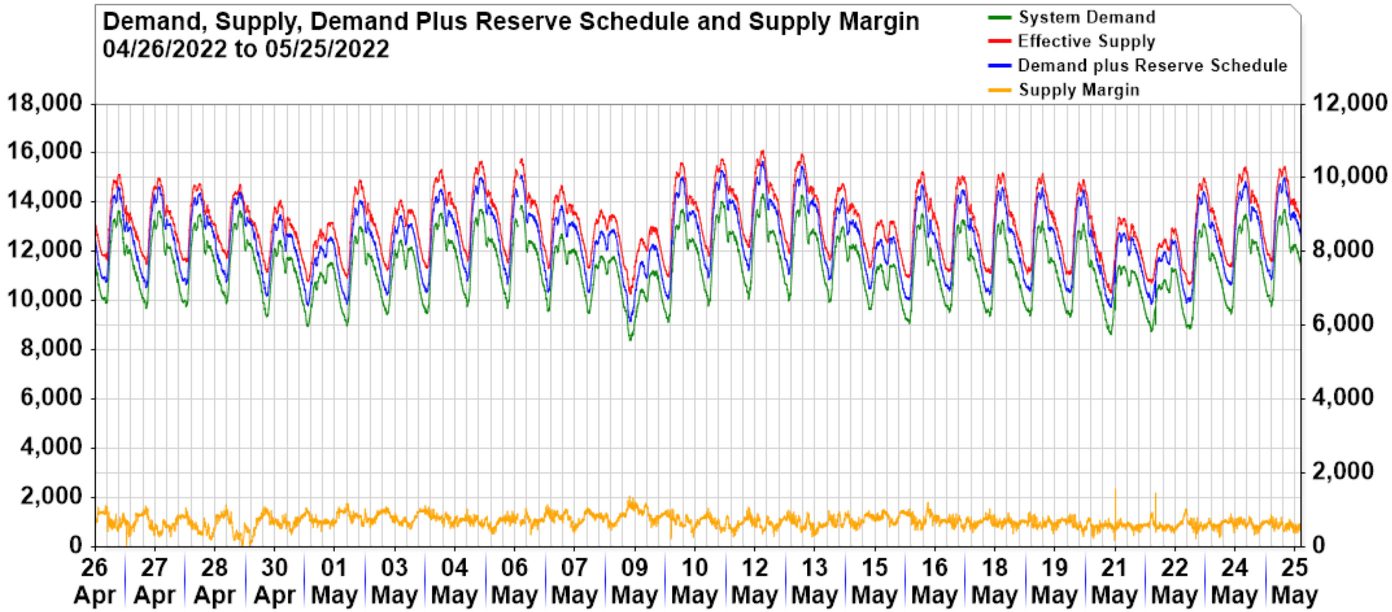
13,208 MW

(12,101 MW in April)

DEMAND PLUS RESERVE SCHEDULE

12,512 MW

(11,476 MW in April)



- The average effective supply in May 2022 billing month increased to 13,208 MW from last month's 12,101 MW. The increase in the effective supply was mainly attributable with the resumption in operation of the 647MW Sual Coal and the 120.5MW Leyte Geothermal power plant which was on outage on the latter part of the April 2022 period.
- On the other hand, system demand, including reserve requirements, likewise posted an increase by an average of 9 percent or an average capacity level of 12,512 MW as compared to last month's 11,476 MW due to, among others, the natural increase in demand during the dry season.
- Considering the factors above, the level of supply margin still experienced an increase by 11.3% or was recorded at an average of 695 MW from 625 MW for the April 2022 billing.

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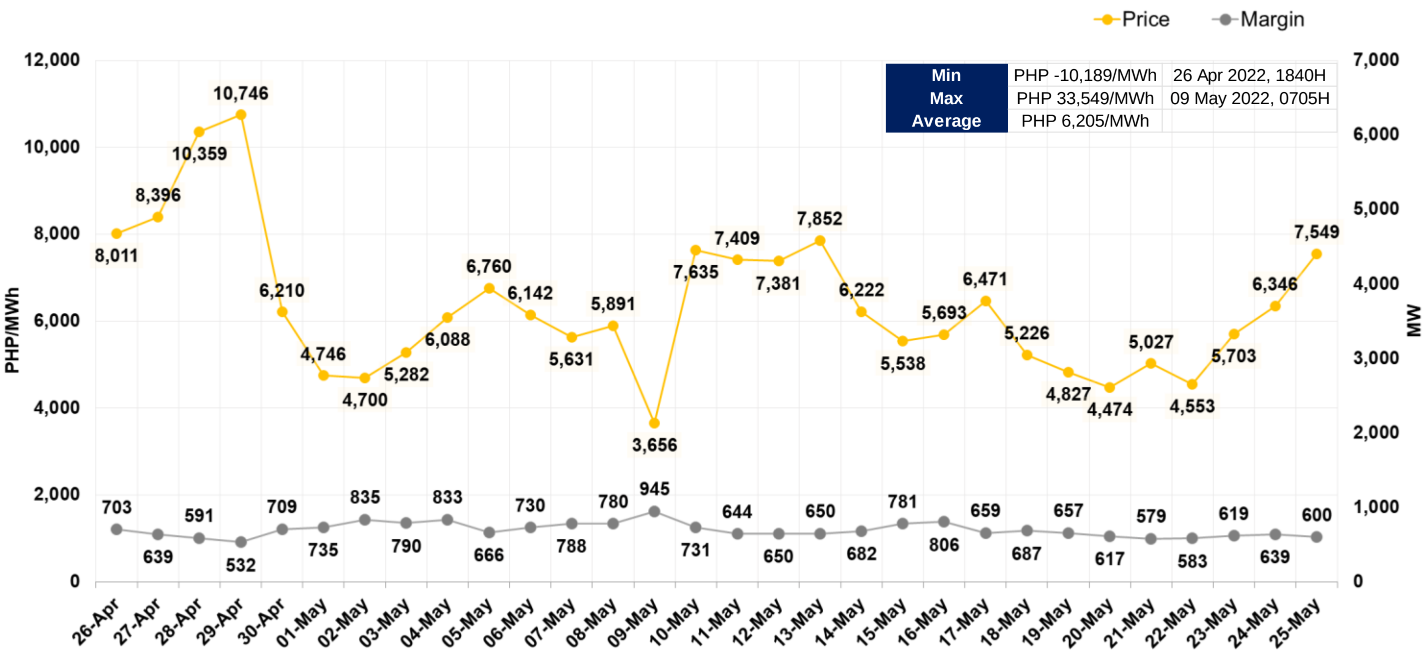
MARKET OUTCOME

Zone	Average LWAP (PHP/MWh)
NLUZON	6,080.59
MMANILA	6,163.10
SLUZON	6,087.26
LEYTE	6,353.77
CEBU	6,172.73
NEGROS	7,079.43
BOHOL	8,010.95
PANAY	7,395.05

Given the dynamics in the supply and demand, where the supply was ample enough to keep up with the demand and to subsequently improve the resulting supply margin, the market price outcome decreased, on average, by 0.9 percent or was noted at an average of PHP6,205/MWh from PHP6,261/MWh last month. Year-on-year comparison of monthly average prices posted a 22.8% decrease from an average of PHP8,035/MWh last year noting that outages this year is significantly lesser than in May 2021.

The 15 June 2021 incident involving the underwater drilling operations of DPWH that damaged one of the submarine cables of NGCP connecting the Cebu-Negros islands has kept congestion events persistent in the area which, in turn, continuously affected the power rates disparity in the Visayas region.



PRICE

6,205
PHP/MWh
(PHP6,261/MWh in April)

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MARKET OUTCOME

RAMP LIMITED CAPACITY

2,189

MW

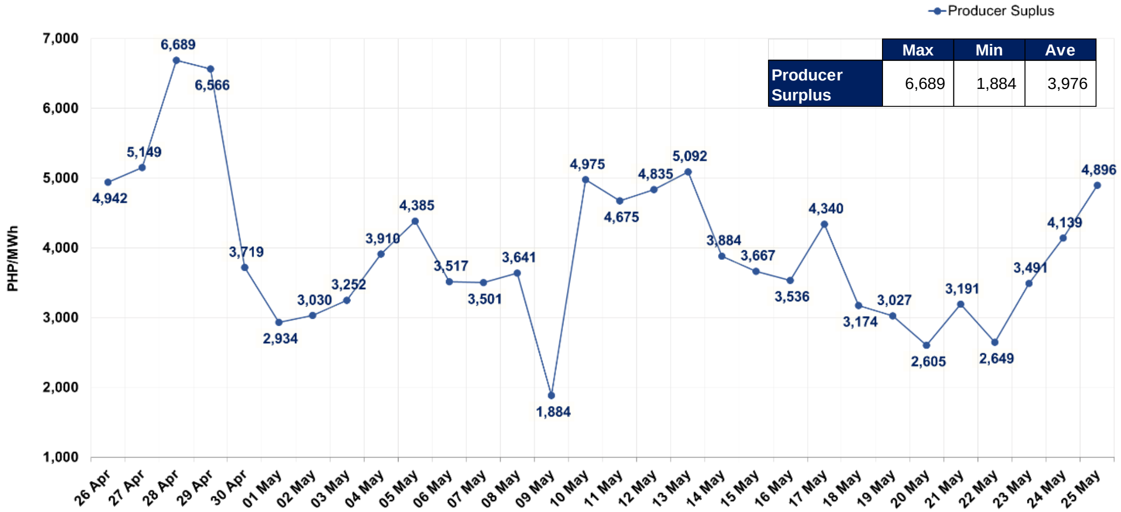
(1,889MW in April)

PRODUCER SURPLUS

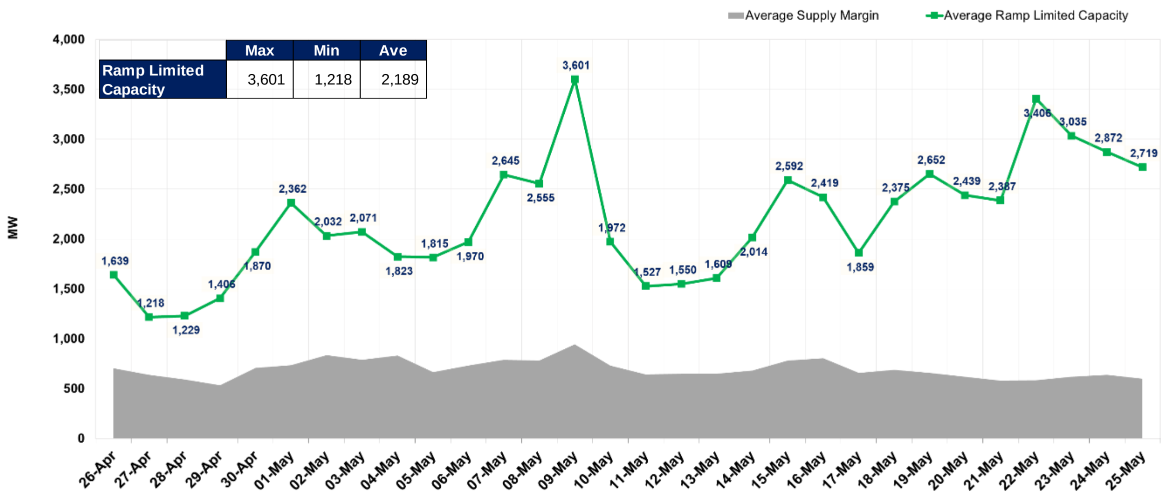
3,976

PHP/MWh

(PHP7,837/MW in April)



	Max	Min	Ave
Producer Surplus	6,689	1,884	3,976



	Max	Min	Ave
Ramp Limited Capacity	3,601	1,218	2,189

For the month of May, **ramp-limited capacity** rose by an average of 16 percent from an average of 1,889 MW last month to 2,189MW this month.

Daily producer/generator surplus, averaged at PHP3,976/MWh this month from PHP7,837/MWh across all generators last month. This is an average of 2 percent increase as compared to April 2022.

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CAPACITY PROFILE

COAL
9,720 MW
(45%)

NATURAL GAS
3,286 MW
(15%)

OIL-BASED
2,338 MW
(11%)

HYDRO
2,539 MW
(12%)

GEOTHERMAL
1,754 MW
(8%)

SOLAR
1,202 MW
(5%)

BIOMASS
395 MW
(2%)

WIND
428 MW
(2%)

BATTERY
230 MW
(1%)

68%
Capacity Offered/ Nominated
14,903 MW
(13,825 MW in April)

17%
Capacity Not Offered/ Not Nominated
3,667 MW
(3,936 MW in April)

9%
Capacity on Outage
1,932 MW
(2,923 in April)

6%
Capacity of Plants on Commissioning
1,206 MW
(532 MW in April)

1%
Malaya Capacity (for MRU)
131 MW
(370 MW in April)

Note: *Capacities not offered are further subject to validation and assessment of the PEMC-Enforcement and Compliance Office (ECO)*

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

- The WESM registered capacity experienced net increase of 86.6 MW from a total of 21,803.3 MW to 21,889.9 MW.
  - Energy Logics Philippines Inc.'s 100 MW Solar power plant was registered in the market.
  - Unit 4 of SPC Power Corporation's Oil-based power plant increased its registered capacity by 8MW.
  - CIP II Power Corporation and Hawaiian-Philippine Company's Biomass power plants both decreased their registered capacities by a total of 20MW.

- The number of generators on testing and commissioning (T&C) increased and constituted 5.5 percent of the total registered capacity. Provisional Certificate of Approval to Connect (PCATC) of 4 plants have been extended while 21 plants were still on T&C with expired PCATCs
- Meanwhile, 3 plants have just started their respective T&C periods.

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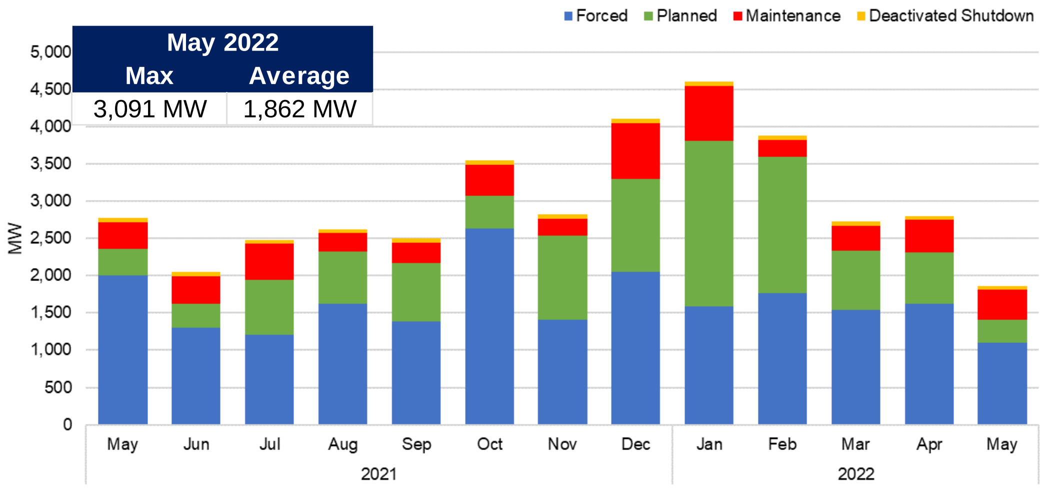
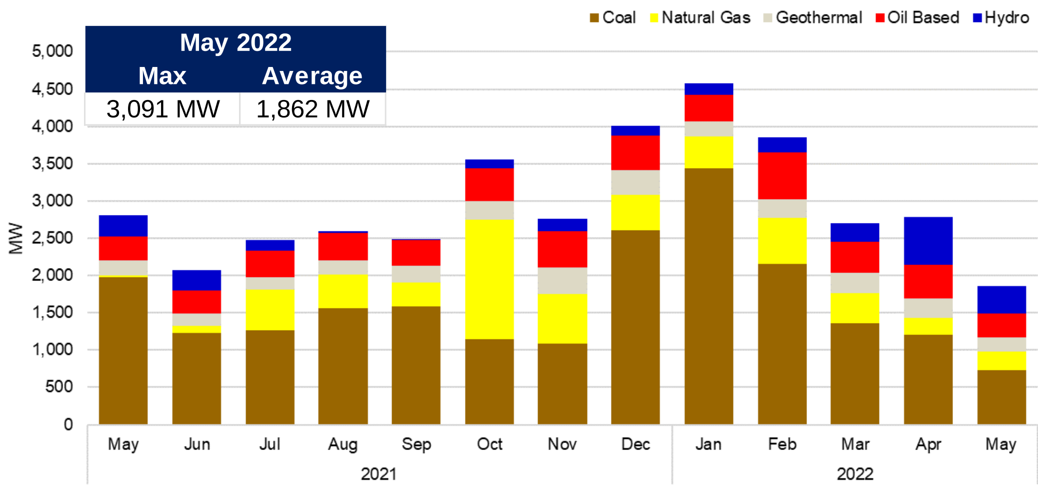
CAPACITY PROFILE

CAPACITY ON OUTAGE BY CATEGORY



CAPACITY ON OUTAGE BY PLANT TYPE



Average capacity on outage was generally observed to have decreased for the May billing. The main reason for this decrease was the holding of the National Elections where generator participants were enjoined to become available following the suspension of power plant maintenance to ensure adequate level of supply.

Subsequently, lines and substations were also available and fully operational during the election period.

In terms of plant type, the availability of the generators resulted in the reduction of the capacities on outage to just 1,199 MW on May 7 between intervals 2035H to 2345H and on May 8 between the intervals 0005H to 0225H. Generally, most of the plants went online during the subject period except with Natural gas which posted an increase in outage capacity as the units of San Gabriel were derated by 210MW and eventually went on outage starting May 21, 2022. As the month ended, the outage level was maintained at about an average of 1,500 MW. The comprehensive information on plant outages in all categories is shown in Annex A, for convenience and reference.

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MARKET TRANSACTIONS

BCQ

86.3%

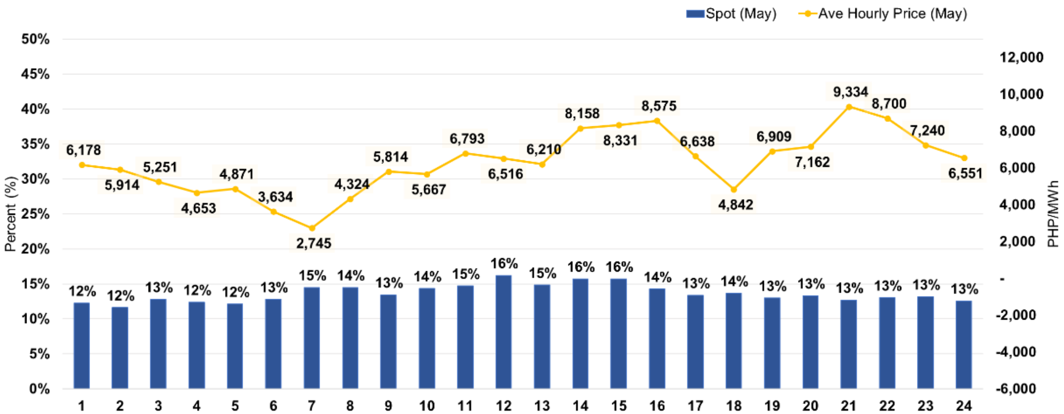
(87.2% in April)

SPOT

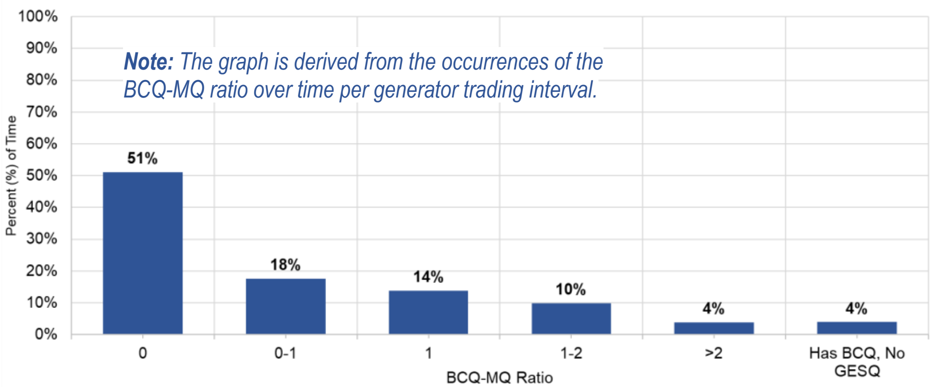
13.7%

(12.8% in April)

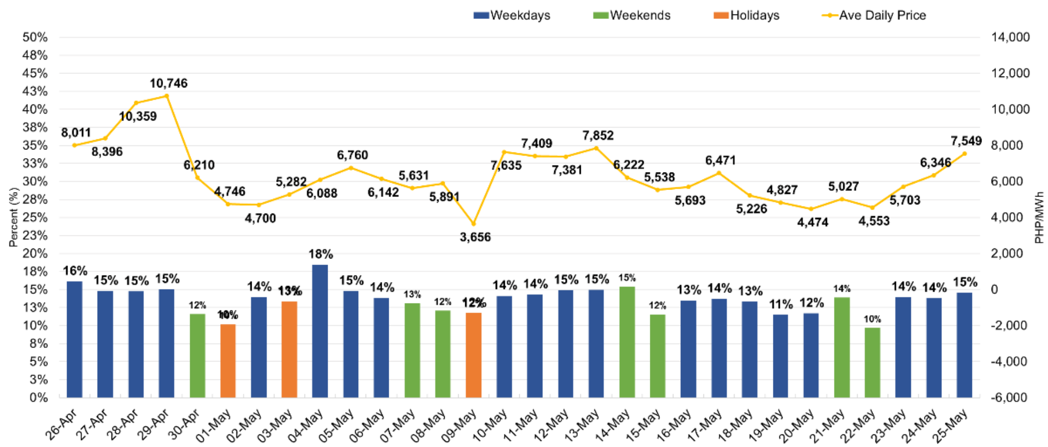
HOURLY SPOT



Total spot quantities of generator participants in May stood at an average of 12.9 percent during off-peak hours and 14.4 percent during peak hours. Prices during the period is relatively lower compared to last month due to wider supply margin.



DAILY SPOT



Spot exposures during weekdays averaged at 14.2 percent while it was 12.3 percent during weekends.

- The resulting BCQ to MQ ratio of 0 demonstrates that the entire generations were fully sold in the market 51 percent of the time.
- Roughly 14 percent of the time had a BCQ to MQ ratio of 1 which means that metered quantities were entirely allocated to serve bilateral contract obligations.
- Generators with no MQ and fully bought energy in the market to serve their bilateral contract obligations were accounted at 4 percent of the time.
- The remaining 31 percent accounted for BCQs consuming a fraction of their MQ (18 percent), declared BCQs up to twice their MQ (10 percent), and declared BCQs more than twice their MQ (4 percent).

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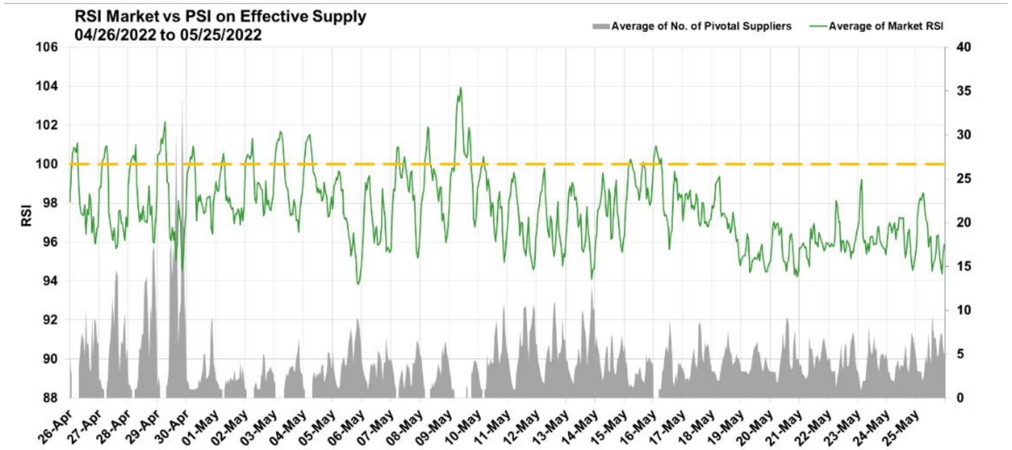
STRUCTURAL COMPETITION INDICES

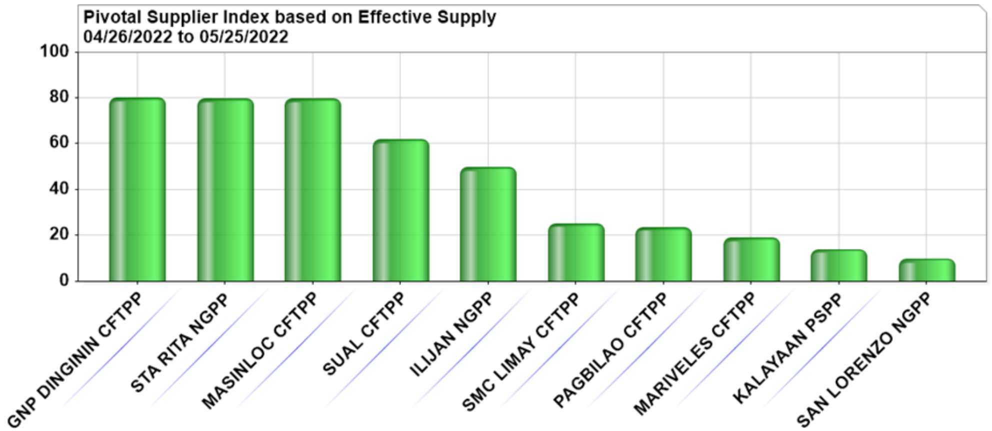
MARKET RSI



The market Residual Supply Index (RSI) was below the 100-percent mark for about 87 percent of the time this month from about 97 percent last month.

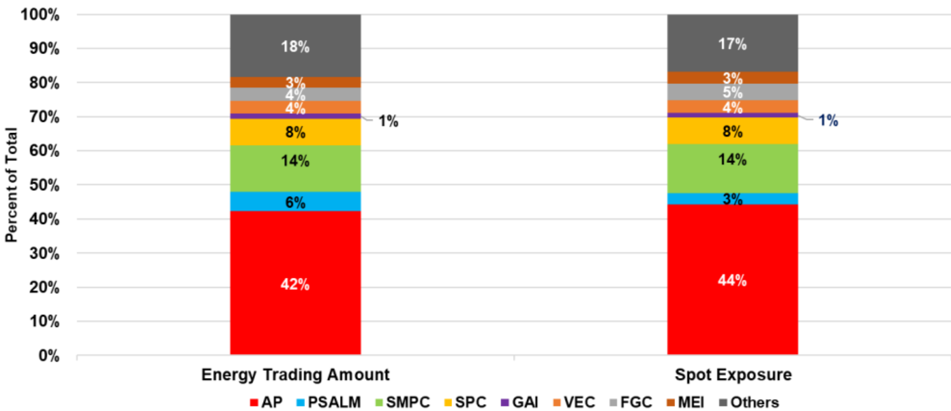
During the May 2022 billing month, the market resulted in RSIs ranging from 92.3 to 105.9 percent and averaging at 97.6 percent. The average market prices for intervals with RSI below 100 percent was PHP6,771/MWh while those with RSIs above 100 was PHP3,360/MWh.

PIVOTAL PLANTS



- A total of 107 power plants were pivotal during the period from 132 last month with 68 percent or 73 plants coming from the Luzon region and 34 plants from the Visayas region.
- The noted increase in effective supply due to low outage level translated to a low RSI and low number of pivotal suppliers per 5-min dispatch interval.

ENERGY TRADING AMOUNT AND SPOT EXPOSURE



- The top 3 highest ETA shares comprised 64% of the total shares in the market.

DEFINITIONS, REFERENCES, AND INTERPRETATION

- **Pricing Error Notice (PEN)**
  - a pricing algorithm in the market and are categorized according to cause, as either Network congestion pricing errors or non-congestion pricing errors. Pricing error notice shall be issued only for the market run where the pricing error is determined by the Market Operator to have occurred.

- **Secondary Price Cap (SPC)**
  - a preventive mitigating measure instituted by the ERC to avoid excessive high market prices through its imposition on succeeding intervals, upon breach of PHP9,000/MWh Rolling Average of the generator-weighted average price (GWAP) for a running period of 3 days or 864 5-minute intervals. In this case, market prices are capped at PHP6,245/MWh.

- **Administered Price (AP)**
  - administered price determination methodology which shall be implemented by the Market Operator to impose administered prices on dispatch intervals under market suspension or market intervention.
  - administered price shall be established by the Market Operator in accordance with guiding principles as set forth by the WESM rules.

- **Generator/Producer Surplus**
  - represents the difference between the price a generator receives and their willingness to sell for each quantity.
  - daily average price of the producer/generator surplus is derived from the daily weighted average price of all the generator trading participants during peak and off-peak hours. Increase and decrease in the daily weighted average price depend on the generator schedule per dispatch interval

- **Price Substitution Methodology (PSM)**
  - a pricing algorithm that shall be implemented in all the regions where the WESM is in operation. In cases where a region/s has no interconnection with other regions, or has no exchange of power with other regions, this region/s shall be separately assessed for the application of the price substitution methodology.
  - The price substitution methodology shall apply to a *dispatch interval* when the trigger factor exceeds the threshold, which shall be set at 0.2, subject to annual review.
  - The dispatch schedules arrived at in the original (constrained) market solution for the relevant dispatch interval will stand and will be the basis for dispatch by the System Operator irrespective of the results of the unconstrained solution. Redispatch of generation units will be implemented by the System Operator in accordance with relevant provisions of the WESM Rules and Market Manuals, the Philippine Grid Code and other relevant rules, regulations, issuances, guidelines, and procedures.

- **Ramp Limited Capacity**
  - generator restricted capacities due to the plants' intrinsic ramp rates.
  - Ramp rate is essentially the speed at which a generator can increase (ramp up) or decrease (ramp down) generation. Generating units have different characteristics, making some more suited to supplying certain needed functions.

- **Energy Trading Amount**
  - The energy trading amount for a trading participant and settlement interval shall be determined using the final energy dispatch prices for that node, the gross energy settlement quantities, and bilateral contract quantities for that node in the dispatch intervals within the same settlement interval.

Annex A. List of Major Plant Outages

Plant Type	Plant/ Unit Name	Capacity (MW)	Date Out	Date In	Duration (Days)	Outage Type	Remarks
GEO	Tiwi 2	60	05/24/2022 14:47			Forced Outage	Emergency shutdown for correction of fault indication at AVR
NATG	San Gabriel	420	05/20/2022 23:31	05/23/2022 23:59	3	Maintenance Outage	Maintenance outage.
HYD	Masiway	12	05/17/2022 9:47			Planned Outage	Annual preventive maintenance
HYD	Ambuklao 3	35	05/17/2022 0:01	05/23/2022 15:59	7	Planned Outage	Planned Outage on May 17-23. 2022.
HYD	Ambuklao 2	35	05/17/2022 0:01			Planned Outage	Planned Outage on May 17-27. 2022.
HYD	Ambuklao 1	35	05/17/2022 0:01			Planned Outage	Planned Outage on May 17-27. 2022.
COAL	SLPGC 2	150	05/13/2022 1:06	05/22/2022 11:10	9	Forced Outage	Emergency shutdown due to abnormal furnace operating parameters.
NATG	San Lorenzo 1	265	05/10/2022 17:32			Forced Outage	Tripped w 166MW load due to possible defective float switch on deluxe pump
COAL	GNP Dinginin 2	668	05/08/2022 15:22	05/12/2022 10:24	4	Maintenance Outage	On commissioning Test
COAL	APEC 1	52	05/08/2022 2:33	05/22/2022 13:57	14	Forced Outage	Tripped with 3MW load.
NATG	Ilijan B1	190	05/02/2022 20:08			Forced Outage	Malampaya Natural Gas Supply Restriction
OIL	Malaya 2	130	04/29/2022 19:40	05/02/2022 6:01	2	Planned Outage	MRU
COAL	Sual 2	647	04/27/2022 23:49	05/05/2022 0:25	7	Maintenance Outage	Maintenance outage to facilitate repair on generator slot upper bar
GEO	Tiwi 1	60	11/30/2021 18:32			Forced Outage	Steam supply diverted to Unit 2.
NATG	Sta. Rita 4	264	04/21/2022 7:50	04/30/2022 1:14	9	Forced Outage	Tripped with 161MW load.
OIL	SLPGC 4	25	02/10/2022 18:07			Forced Outage	Emergency shutdown due to low bearing lube oil pressure.
OIL	SLPGC 3	25	01/22/2022 21:39			Forced Outage	Declared unavailable due to turbine lube oil sump metal chips detected
HYD	San Roque 1	145	03/14/2022 0:01			Planned Outage	Plammed outage from 14 March--09 September 2022.
HYD	Pantabangan 1	60	04/25/2022 0:01	04/30/2022 20:25	6	Maintenance Outage	Annual Preventive Maintenance until 01 May 2022.
OIL	MGTPP	85	09/29/2021 16:52			Forced Outage	Tripped from 14MW due to turbine bearing shaft vibration
OIL	Malaya 2	130	03/23/2022 21:52	04/28/2022 6:16	35	Planned Outage	on commisssioning test.
OIL	Malaya 1	300	05/03/2019 18:21			Forced Outage	Declared unavailable due to motorization of unit generator caused by the non-opening of phase B of PCB 8-05CB08MAL
GEO	Makban 6	55	04/11/2013 22:44			Deactivated Shutdown	Conducted gas compressor test
HYD	Magat 2	97	03/25/2022 7:02	05/06/2022 20:25	43	Planned Outage	Annual preventive maintenance outage.
HYD	Magat 1	97	03/25/2022 7:02	05/04/2022 18:05	40	Planned Outage	Annual preventive maintenance outage.
HYD	Kalayaan 2	180	04/26/2022 0:01	04/28/2022 19:21	3	Planned Outage	Planned outage as per GOP.
NATG	Ilijan B2	190	04/04/2022 14:39	04/30/2022 13:24	26	Forced Outage	Unplanned outage to facilitate troubleshooting of ST2 fluctuating generator parameters.
COAL	GNP Dinginin 1	668	04/21/2022 19:51	04/26/2022 0:07	4	Forced Outage	Tripped from 618MW load.
COAL	Calaca 2	300	11/18/2021 7:49			Forced Outage	Tripped due to generator stator ground fault
COAL	BT2020 2	25	10/07/2021 7:15	05/04/2022 20:41	210	Forced Outage	Affected by the tripping of BT2020COGEN.
HYD	Angat M 4	50	02/14/2022 0:01			Planned Outage	Planned Outage
HYD	Angat M 3	50	11/02/2021 8:15			Forced Outage	Draw-out of Main Unit 3 generator breaker.
COAL	THVI 2	169	05/25/2022 6:37			Forced Outage	TRIPPED. POSSIBLE BOILER TUBE LEAK
GEO	Leyte 1	41	05/18/2022 13:28			Forced Outage	Emergency cut-out to effect repair of steam leak.
GEO	Upper Mahiao 1	32	05/10/2022 14:09	05/24/2022 10:17	14	Forced Outage	Gas Dispersal Problem
BIOF	FFHC	9	05/08/2022 10:45	05/12/2022 0:06	4	Maintenance Outage	Offline due to weekly maintenance.
BIOF	SCBE	7.4	05/06/2022 6:45			Forced Outage	Offline due to internal problem
BIOF	FFHC	9	05/01/2022 10:56	05/04/2022 7:43	3	Maintenance Outage	Offline due weekly maintenance.
OIL	CENPRI 5	6.7	04/29/2022 20:57	05/11/2022 17:03	12	Forced Outage	Offline to conduct inspection of cylinder 11 and 18 and correction of gas leakage at right bank exhaust pipe.
OIL	PDPP3 G	13	04/28/2022 17:35	05/02/2022 18:29	4	Forced Outage	HEGT cyl B1
GEO	Upper Mahiao 3	32	07/22/2020 17:01			Maintenance Outage	Trip with Loss of Excitation. Economic Shutdown
OIL	TPVI 6	6.8	04/20/2022 11:26	04/27/2022 11:22	7	Forced Outage	EMERGENCY CUT-OUT DUE TO TRIGGERED CYLINDER HEAD SAFETY VALVE B1
COAL	TPC-Sangi 3	40.36	11/27/2021 0:07			Maintenance Outage	BOILER REHAB
COAL	TPC-Sangi 2	20.38	11/27/2021 0:07			Maintenance Outage	BOILER REHAB
COAL	THVI 2	169	04/05/2022 18:17	05/25/2022 6:36	50	Forced Outage	Auto-tripped due to induced draft fan vibration high
COAL	PALM 1	135	03/27/2022 0:12	04/28/2022 15:08	33	Forced Outage	Offline due to Low Boiler Excess Oxygen caused by Pre-Heater Leak.
GEO	Malitbog 1	72	01/26/2022 9:58	04/30/2022 17:41	94	Forced Outage	Under assessment
BIOF	FFHC	9	04/24/2022 8:47	04/27/2022 7:42	3	Maintenance Outage	Weekend shutdown repair schedule.

Notes:
1. *List of Major Plant Outages includes all generating units with capacities above 10MW located in Luzon and above 5MW for plants located in Visayas.*
2. *Outages with duration of 1 day and below were not included in the list of Major Plant Outages*
3. *Daily outages with drastic effects to the market are monitored through separate indices*