Market Surveillance Committee
Monthly Market Assessment

26 March to 25 April 2022

November 2022

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

CONTENTS OF THE REPORT

MONTHLY MARKET ASSESSMENT REPORT

(26 March – 25 April 2022)

Philippine Electricity Market Corporation

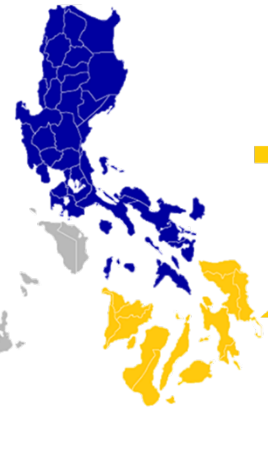
MMAR-2022-04

ASSESSMENT OF THE MARKET

SUMMARY OF PRICING CONDITIONS

LUZON *from Mar*

		from Mar
Normal	7,460 intervals (84%)	↓ 8%
PSM	0 interval (0%)	0%
PEN	781 intervals (9%)	↑ 6%
SPC	683 intervals (8%)	↑ 2%
AP	4 interval (0%)	↑ 0.03%



VISAYAS *from Mar*

		from Mar
Normal	7,297 intervals (81%)	↓ 0%
PSM	0 interval (0%)	0%
PEN	909 intervals (10%)	↑ 7%
SPC	705 intervals (8%)	↑ 2%
AP	17 interval (0.2%)	↑ 0.2%

- The cumulative 3-day average computation of generator-weighted average prices (GWAP) breached the PHP9,000/MWh threshold and resulted in the imposition of secondary price cap for 683 intervals from 362 intervals last month, both in Luzon and Visayas which were mainly brought about by episodes of depleted supply margin from 26 March to 02 April 2022 leading to relatively high prices in the market. Regional imposition of secondary price cap was also observed in Luzon for 16 intervals and 7 intervals for Visayas region due to unavailability of the grids' interconnection.
- Intervals with pricing error notices were mainly due to inappropriate input data which affected prices and schedules across 781 intervals both for Luzon and Visayas.
- No intervals were imposed with price substitution methodology (PSM) during the month in review.
- Market Intervention (MI) was implemented in the Luzon and Visayas for 4 intervals on 20 April 2022 due to failure in publication affecting the market results, hence the declaration. Subsequently, SO initiated Market Intervention affecting 13 intervals in Visayas due to Manual Load Dropping.

NOTABLE HIGHLIGHTS

1. Isolation of Bohol from Visayas grid on 11 April 2022 due to the onslaught of typhoon Agaton
   - Bohol was reconnected to the grid after the partial restoration of the Ormoc-Maasin line on 18 April 2022 at 1014H
2. Decline in the average effective supply even with the decreased capacity on outage.
   - Drop in effective supply was mainly attributable to the increased ramp limited capacity and derated capacity from Natural gas power plants.
3. The intervals imposed with SPC increased to 683 intervals from 362 intervals in March 2022 due to episodes of depleted supply margin.
4. Market prices were generally observed to have declined by 10.1 percent. Despite the drop in effective supply, it became ample enough to meet the demand requirement and subsequently led to lower market prices.
   - Notable decrease of PHP6,261/MWh from PHP6,966/MWh last month
   - Year-on-year comparison of monthly average prices posted a 53.8 percent increase from an average of PHP4,071/MWh last year noting that the year in comparison was still highly affected by quarantine protocols.
5. Observance of congestion in transmission lines and transformer equipment
   - Samboan-Amlan line 2 was congested 22 percent of the time or for 1,976 intervals.
   - Maasin-Ubay line 1 was also congested 5 percent of the time or equivalent to 456 intervals.

MONTHLY MARKET ASSESSMENT REPORT

(26 March – 25 April 2022)

Philippine Electricity Market Corporation

MMAR-2022-04

MARKET OUTCOME

SUPPLY MARGIN

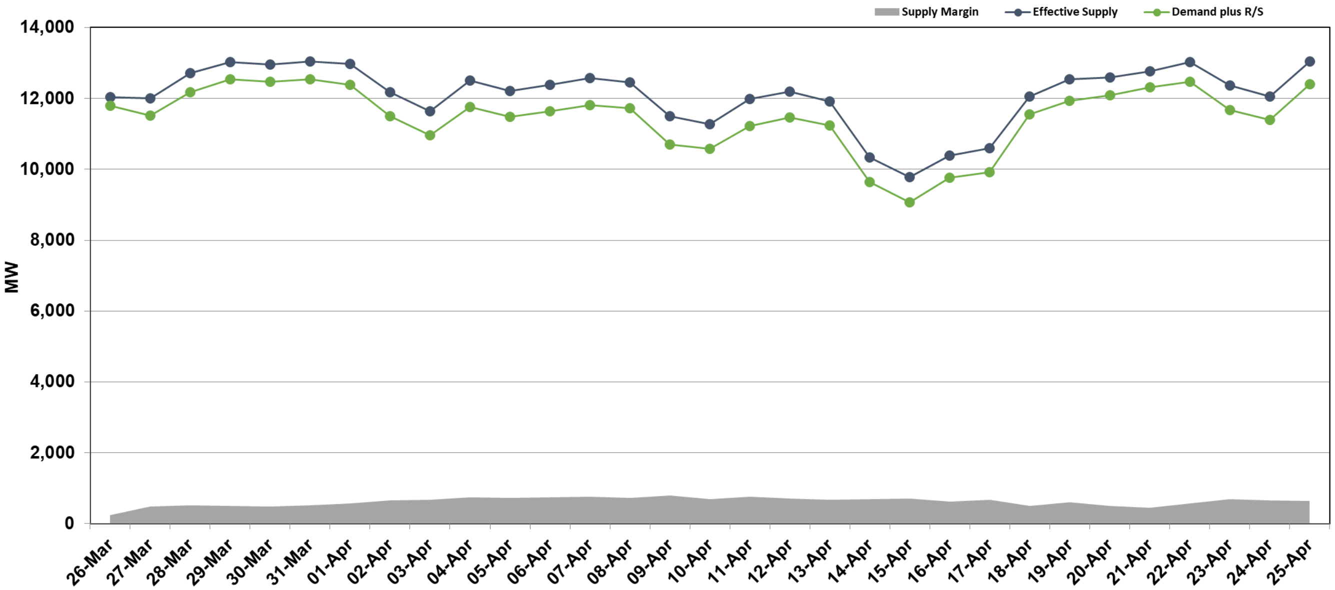
625
MW
(499 MW in March)

EFFECTIVE SUPPLY

12,101
MW
(12,189 MW in March)

DEMAND PLUS RESERVE SCHEDULE

11,476
MW
(11,690 MW in March)



- Electricity demand with consideration of reserve schedules decreased by an average of 1.8 percent or from an average of 11,690 MW last month to 11,476 this month.
- Effective supply slid, brought about by transmission line outages due to the devastation of typhoon Agaton. Ramp limited capacities and derated capacities from Natural gas power plants likewise contributed to the resulting effective supply levels.
- Average Supply Margin was generally observed to have improved and increased by 58 percent or an average of 625 MW from 499 MW last March billing.

MONTHLY MARKET ASSESSMENT REPORT

(26 March – 25 April 2022)

Philippine Electricity Market Corporation

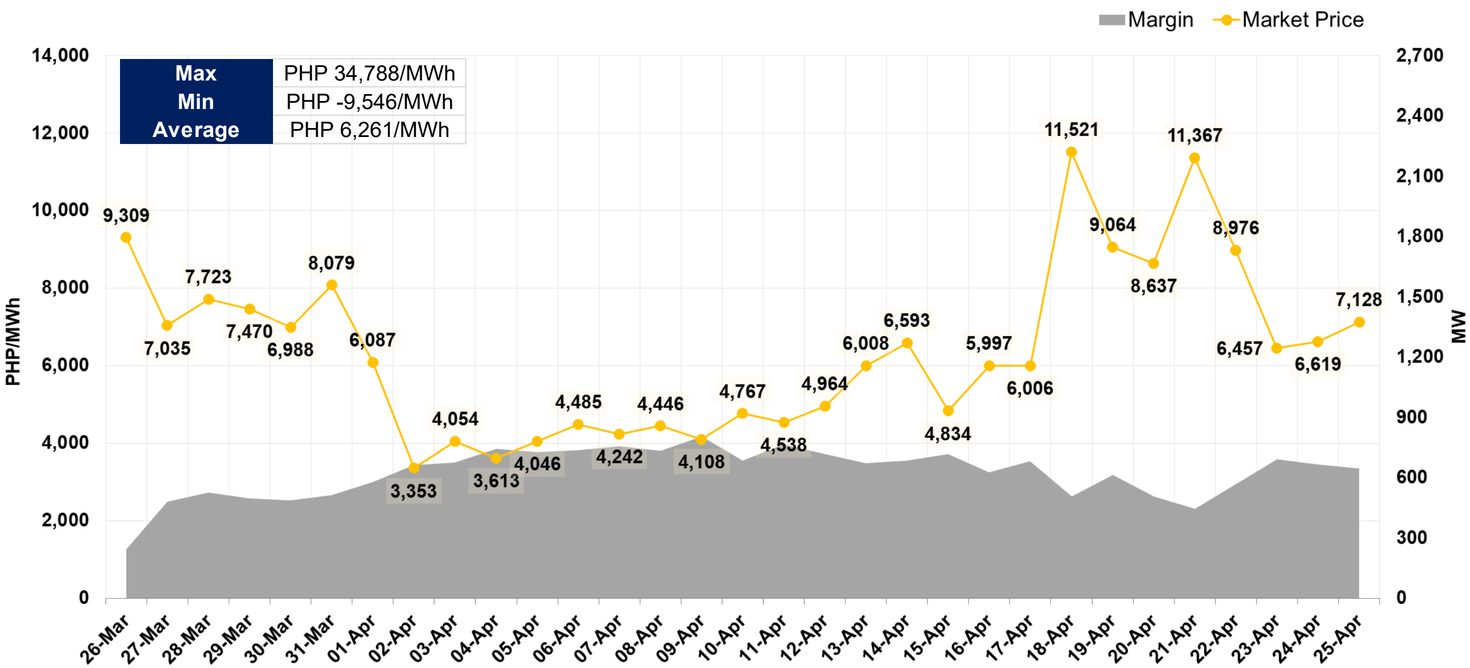
MMAR-2022-04

MARKET OUTCOME

Zone	Average LWAP (PHP/MWh)
NLUZON	6,011.91
MMANILA	6,111.16
SLUZON	6,026.60
LEYTE	6,187.54
CEBU	5,979.95
NEGROS	9,330.32
BOHOL	8,989.27
PANAY	9,578.92

Given the dynamics between the supply and demand, the April 2022 billing month opened with relatively high level of market prices. However, average daily prices went on a decreasing trend over the course of the period following the decrease in the level of system demand due to the observance of low-pressure areas and the onslaught of typhoon Agaton coupled with various holidays observed during the month (e.g. Day of Valor and Holy Week). Subsequently, this resulted in an average decrease of 10.1 percent in the market price outcome or an average of PHP6,261/MWh from PHP6,966/MWh last month.

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

6,261

PHP/MWh

(PHP6,966/MWh in March)

MONTHLY MARKET ASSESSMENT REPORT

(26 March – 25 April 2022)

Philippine Electricity Market Corporation

MMAR-2022-04

MARKET OUTCOME

RAMP LIMITED CAPACITY

1,889

MW

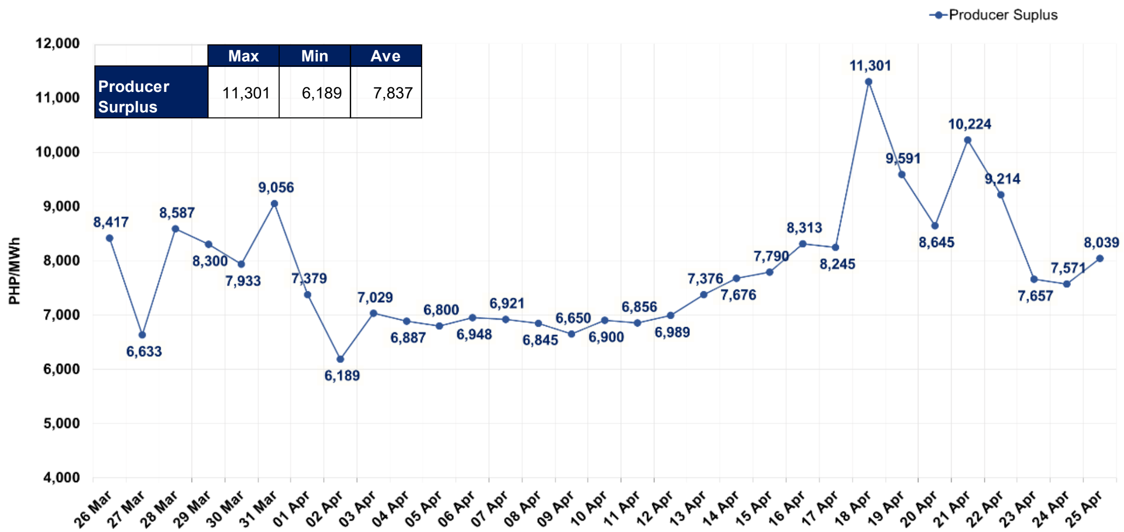
(1,347MW in March)

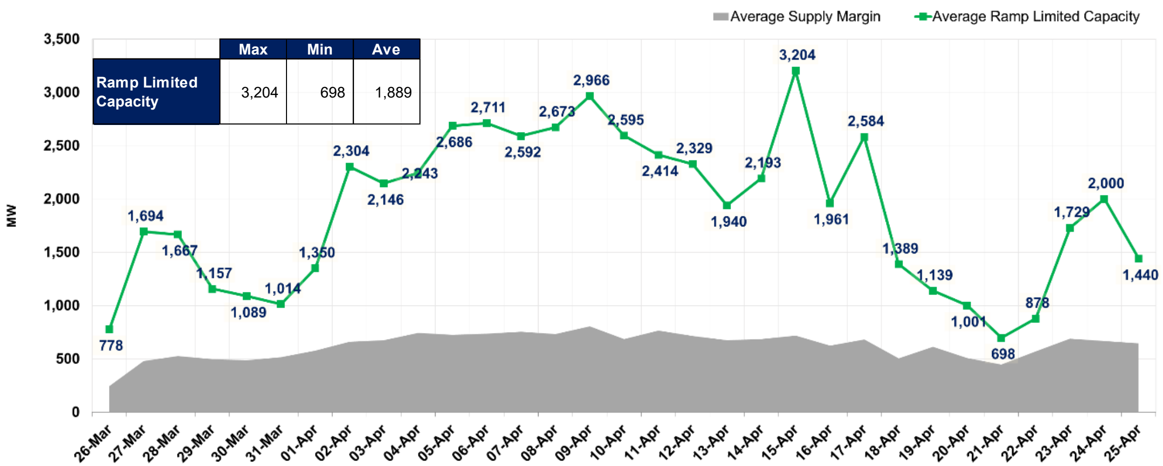
PRODUCER SURPLUS

7,837

PHP/MWh

(PHP8,465/MWh in March)





For the month of April, **ramp-limited capacity** rose by an average of 40.3 percent. Its occurrences were more noticeable under the new market regime due to shorter intervals that required quicker delivery of scheduled generations. Ramp-limited generator units, become price takers and their offer prices will not clear or influence the market. The opposite also holds true for ramping down limitations of generators but will clear a cheaper price instead.

Producer/generator surplus, derived from the difference between actual market price and respective offer prices, averaged at PHP7,837/MWh this month from PHP8,465/MWh across all generators last month. This is an average of 7 percent decrease as compared to March 2022.

Daily average price of the producer/generator surplus was 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.

MONTHLY MARKET ASSESSMENT REPORT

(26 March – 25 April 2022)

Philippine Electricity Market Corporation

MMAR-2022-04

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
1,106 MW
(5%)

BIOMASS
404 MW
(2%)

WIND
428 MW
(2%)

BATTERY
230 MW
(1%)

- The WESM registered capacity increased by 666.6 MW from a total of 21,136.7 MW to 21,803.3 MW.
    - GNPower Dinginin Ltd. Coal power plant was added to the capacity mix.
    - Subsequently, five (5) units of the Isabel Ancillary Services Co. Ltds' Oil-based power plants increased their respective capacities.

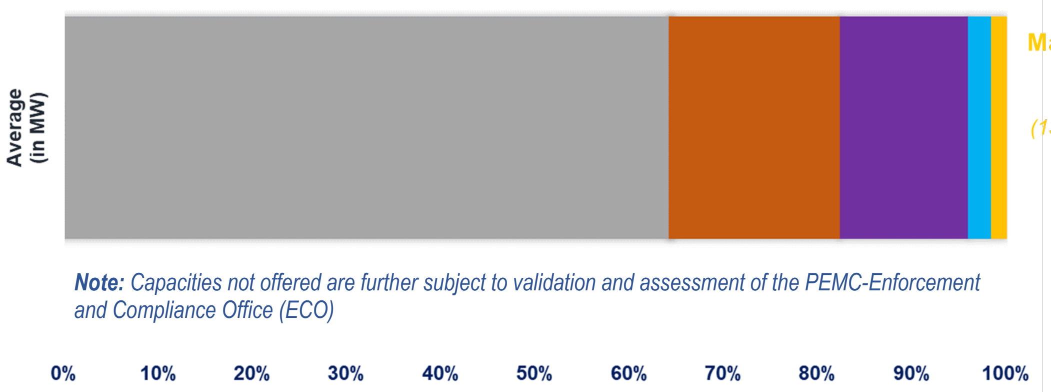
63%
Capacity Offered/ Nominated
13,825 MW
(13,338 MW in March)

18%
Capacity Not Offered/ Not Nominated
3,936 MW
(4,159 MW in March)

13%
Outage Capacity
2,923 MW
(3,015 in March)

2%
Capacity of Plants on Commissioning
532 MW
(561 MW in March)

2%
Malaya Capacity (for MRU)
370 MW
(130 MW in March)



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

- The number of generators on testing and commissioning (T&C) decreased and constituted 2 percent of the total registered capacity. Provisional Certificate of Approval to Connect (PCATC) of 3 plants have been extended while 3 battery plants were still on T&C with valid PCATCs
- Provisional Authority to Operate (PAO) or Certificate of Compliance (COC) of 14 plants were under evaluation/review by the ERC
- COC of 1 plant has been issued by the ERC but is not yet injecting power to the grid.
- 1 plant has just started its T&C period.

MONTHLY MARKET ASSESSMENT REPORT

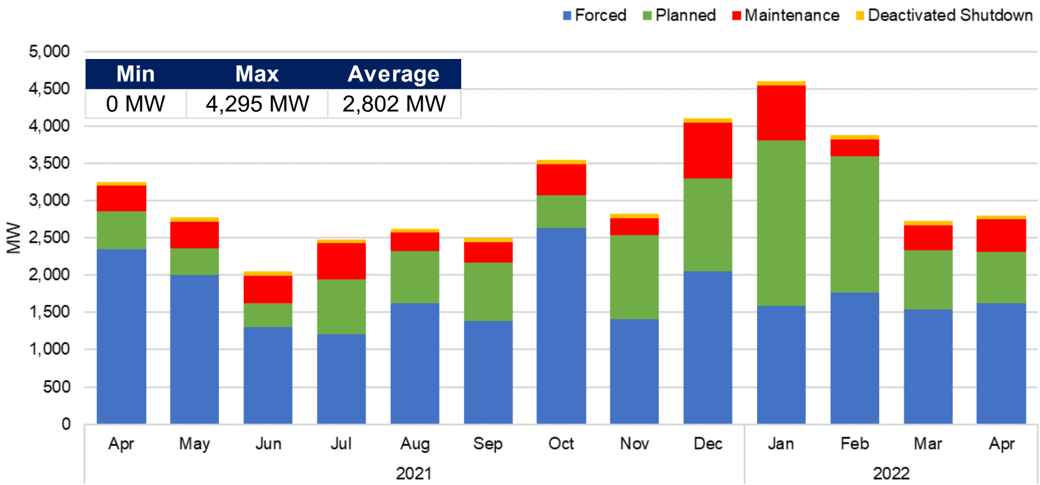
(26 March – 25 April 2022)

Philippine Electricity Market Corporation

MMAR-2022-04

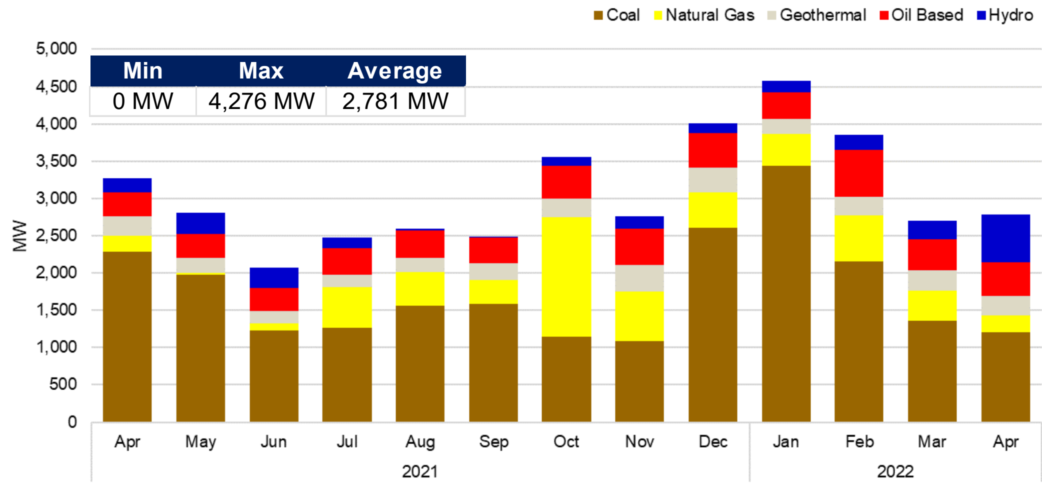
CAPACITY PROFILE

CAPACITY ON OUTAGE BY CATEGORY



Average capacity on outage was generally observed to have decreased for the April billing. However, forced and maintenance outages both posted an increase and were noted to have an average increase of 6 and 28 percent, respectively, from previous month, attributed to the outages from Hydro, Coal and Oil-based power plants brought about by the observance of summer season and due to the technical issues of the power plants.

CAPACITY ON OUTAGE BY PLANT TYPE



The outages in April 2022 billing month which mostly came from large Coal, Oil-based and Natural gas generators generally decreased. With the onset of the dry season, capacity on outage of hydro power plants relatively increased by an average of 156 percent. Considering these instances, capacity on outage decreased to an average of 2,923 MW from 3,015 MW of the previous month. However, recorded forced outages of Coal and Hydro power plants have been observed on the latter part of the month. For ease of reference, Annex A shows the detailed information on plant outages in both categories.

MONTHLY MARKET ASSESSMENT REPORT

(26 March – 25 April 2022)

Philippine Electricity Market Corporation

MMAR-2022-04

MARKET TRANSACTIONS

BCQ

87.2%

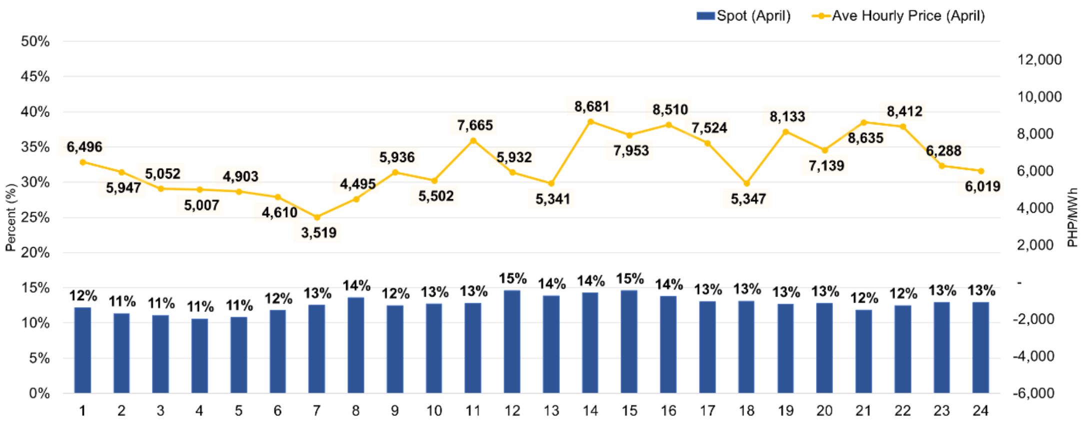
(84.9% in March)

SPOT

12.8%

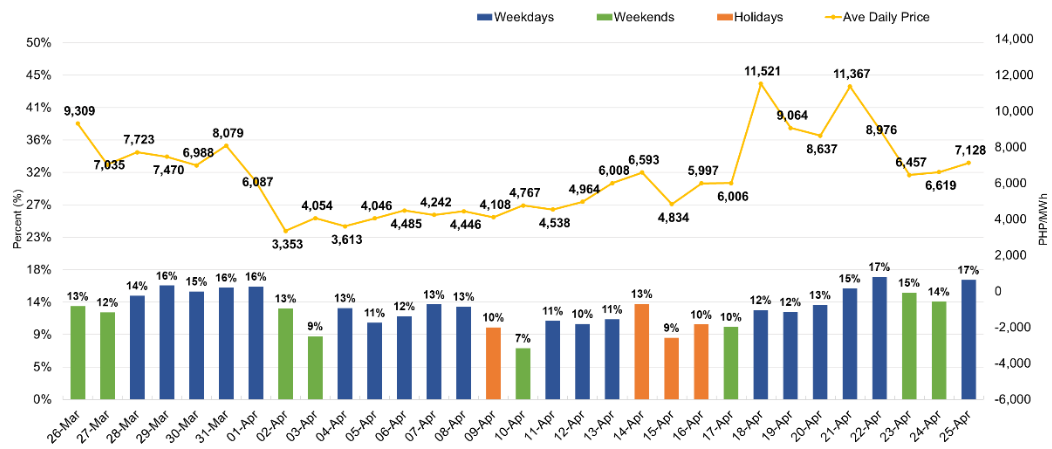
(15.1% in March)

HOURLY SPOT

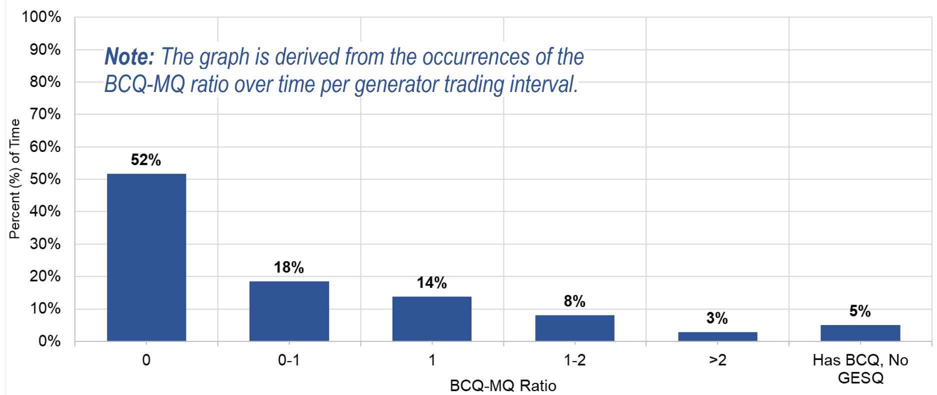


Total spot quantities of generator participants in April stood at an average of 12.1 percent during off-peak and 13.3 percent during peak hours. Relatively high prices persisted even on off-peak hours due to relatively high demand during the dry season.

DAILY SPOT



Spot exposures during weekdays averaged at 13.4 percent while it was 11.4 percent during weekends. The relatively high average spot exposures may have been driven by lower market prices brought about by the availability of contracted capacities during the period.



- The resulting BCQ to MQ ratio of 0 demonstrates that the entire generations were fully sold in the market 52 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 5 percent of the time.
- The remaining 29 percent accounted for BCQs consuming a fraction of their MQ (18 percent), declared BCQs up to twice their MQ (8 percent), and declared BCQs more than twice their MQ (3 percent).

MONTHLY MARKET ASSESSMENT REPORT

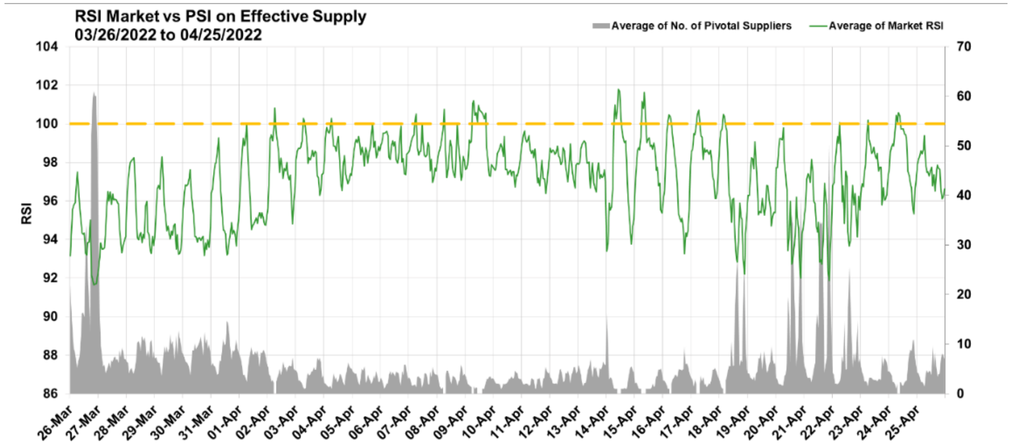
(26 March – 25 April 2022)

Philippine Electricity Market Corporation

MMAR-2022-04

STRUCTURAL COMPETITION INDICES

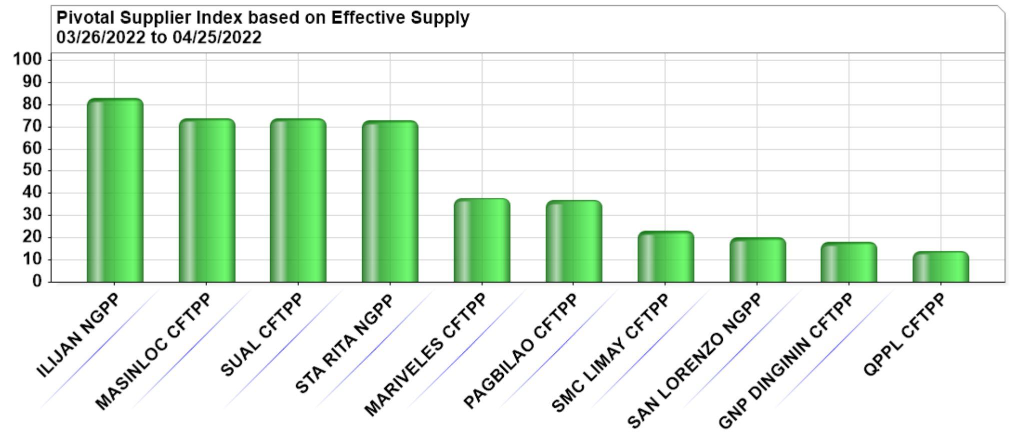
MARKET RSI



The market Residual Supply Index (RSI) was below the 100-percent mark for about 93 percent of the time this month from about 99.7 percent last month.

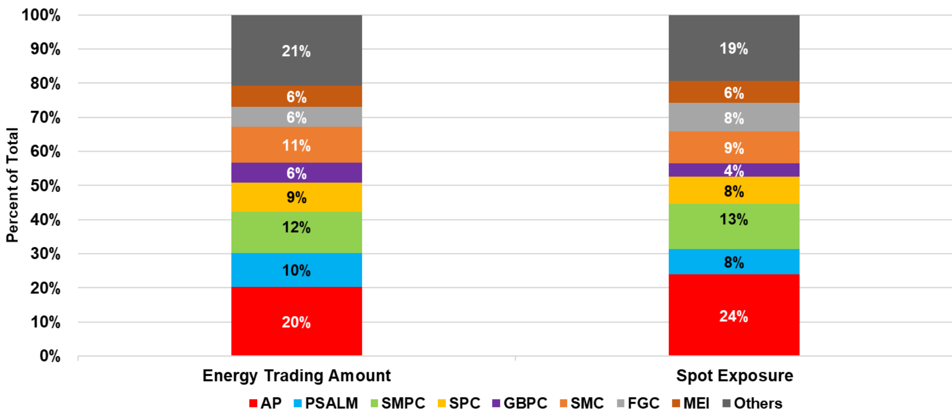
During the April 2022 billing month, the market resulted in RSIs ranging from 90.5 to 103.4 percent and averaging at 97.2 percent. The average market prices for intervals with RSI below 100 percent was PHP6,694/MWh while those with RSI above 100 was PHP2,872/MWh.

PIVOTAL PLANTS



- A total of 132 power plants were pivotal during the period with 90 of them coming from Luzon and 42 from Visayas.
- The noted decrease in effective supply despite the low outage level translated to a high RSI and low number of pivotal suppliers per 5-min dispatch interval.

ETA AND SPOT SHARE



- Aboitiz Power (AP) topped the list as the entity with the highest ETA share of sellers in the market with approximately 20 percent.
- San Miguel Power Corp. (SMPC) came in second place this month, ending with a 12 percent of ETA share.
- San Miguel Corporation (SMC) came third in the list of entity with the highest ETA share of sellers in the market with approximately 11 percent.
- The top 3 highest ETA shares comprised 43% of the total shares in the market.
- Energy trading amount is derived from the total energy sold and purchased in the market.

DEFINITIONS, REFERENCES, AND INTERPRETATION

- **Pricing Error Notice (PEN)**
  - Pricing errors is 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)**
  - is 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**
  - Producer surplus represents the difference between the price a generator receives and their willingness to sell for each quantity.

- **Price Substitution Methodology (PSM)**
  - is 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**
  - are generators 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.

Annex A. List of Major Plant Outages

Plant Type	Plant/ Unit Name	Capacity (MW)	Date Out	Date In	Duration (Days)	Outage Type	Remarks
HYD	Kalayaan 1	180	04/19/2022 0:01	04/25/2022 18:17	6.76	Maintenance Outage	Maintenance outage until 23 April 2022
GEO	Leyte 3	40.2	04/18/2022 0:42	04/23/2022 9:09	5.35	Forced Outage	Emergency shutdown for SF6 gas leakage correction
GEO	Leyte 2	39.3	04/18/2022 0:42	04/22/2022 23:50	4.96	Forced Outage	Emergency shutdown for SF6 gas leakage correction
GEO	Leyte 1	41	04/18/2022 0:42	04/22/2022 23:31	4.95	Forced Outage	Emergency shutdown for SF6 gas leakage correction
COAL	Pagbilao 1	382	04/17/2022 20:37	04/21/2022 21:04	4.02	Forced Outage	Boiler Tube Leak
HYD	Pantabangan 2	60	04/16/2022 8:07	04/24/2022 18:44	8.44	Planned Outage	Annual Preventive Maintenance until 24 April 2022.
BIOF	FFHC	9	04/14/2022 10:22	04/20/2022 2:17	5.66	Maintenance Outage	Offline due to holy week shutdown
COAL	SMC 3	150	04/14/2022 4:03	04/21/2022 10:57	7.29	Forced Outage	Emergency shutdown due to condenser tube leak
COAL	Pagbilao 2	382	04/14/2022 0:46	04/17/2022 11:25	3.44	Maintenance Outage	Maintenance Outage
COAL	SLPGC 2	150	04/13/2022 1:06	04/18/2022 2:18	5.05	Maintenance Outage	On maintenance outage unitl April 17. 2022 to address condenser tube leak and main transformer phase B hotspot.(RECLASSIFIED FROM FORCE OMC OUTAGE)
COAL	GNP Dinginin 1	668	04/12/2022 23:50	04/19/2022 12:10	6.51	Maintenance Outage	On maintenance outage until April 19. 2022 to correct HP Bypass Valve B leak.
BIOF	SCBE	7.4	04/12/2022 22:38	04/18/2022 23:10	6.02	Maintenance Outage	Offline due to scheduled maintenance.
HYD	Binga 4	35	04/12/2022 8:01	04/17/2022 12:01	5.17	Maintenance Outage	Annual Preventive Maintenance until April 18. 2022.
BIOF	HPCO	2	04/10/2022 8:06	04/13/2022 13:45	3.24	Maintenance Outage	Offline due to weekly maintenance.
BIOF	FFHC	9	04/10/2022 5:12	04/13/2022 2:05	2.87	Maintenance Outage	Offline due to weekly maintenance.
COAL	Masinloc 3	335	04/09/2022 2:20	04/11/2022 15:38	2.55	Forced Outage	Tripped due to turbine stress high.
COAL	Calaca 1	240	04/08/2022 1:18	04/18/2022 13:02	10.49	Forced Outage	Emergency shutdown due to coal leak at Pulverizer C burner.
COAL	SLTEC 1	122	04/05/2022 23:58	04/20/2022 20:54	14.87	Maintenance Outage	On maintenance outage on April 6-21. 2022 to rectify turbine bearing vibration.
HYD	Binga 3	35	04/05/2022 5:01	04/10/2022 16:05	5.46	Planned Outage	Preventive maintenance.
BIOF	HPCO	2	04/03/2022 8:28	04/05/2022 8:52	2.02	Maintenance Outage	Offline due to weekly maintenance.
OIL	CENPRI 4	6.7	04/02/2022 14:36	04/06/2022 21:44	4.30	Forced Outage	Offline due to actuator hunting
BIOF	San Carlos Bio	20	04/01/2022 1:27	04/08/2022 10:01	7.36	Maintenance Outage	Offline. conducted load rejection test.
GEO	PGPP1 Unit 3	37.5	03/31/2022 2:08	04/02/2022 15:56	2.58	Maintenance Outage	Offline due to maintenance activity.
HYD	Binga 2	35	03/29/2022 8:01	04/04/2022 2:18	5.76	Maintenance Outage	Annual preventive maintenance
OIL	PB101 Unit 1	6	03/28/2022 13:35	04/05/2022 19:45	8.26	Forced Outage	FO low lube oil 2nd filter
BIOF	FFHC	9	03/27/2022 15:05	03/30/2022 14:04	2.96	Maintenance Outage	Offline due to weekly maintenance.
GEO	Malitbog 3	72	03/27/2022 0:11	04/04/2022 21:35	8.89	Forced Outage	Emergency shutdown.
OIL	TPVI 4	6.8	03/26/2022 20:11	04/16/2022 18:10	20.92	Forced Outage	EMERGENCY CUT-OUT
OIL	TPVI 5	6.8	03/26/2022 13:15	04/16/2022 18:31	21.22	Forced Outage	TRIPPED
GEO	Mahanagdong B1	5	03/26/2022 7:23	04/17/2022 10:31	22.13	Forced Outage	Emergency shutdown.
OIL	TPVI 2	6.7	03/25/2022 16:59	04/08/2022 13:01	13.83	Forced Outage	FUEL LEAK
COAL	THVI 2	169	03/19/2022 9:40	03/31/2022 21:38	12.50	Forced Outage	EMERGENCY CUT-OUT DUE TO POSSIBLE TUBE LEAK
NATG	Sta. Rita 3	265.5	03/25/2022 23:42	03/31/2022 5:16	5.23	Maintenance Outage	PM.
COAL	SMC 4	150	03/06/2022 23:30	03/30/2022 8:39	23.38	Planned Outage	On planned outage on 07--28 March 2022(RECLASSIFIED FROM FORCE. OMC OUTAGE)
WIND	SLWind	54	03/08/2022 21:45	04/09/2022 6:18	31.36	Forced Outage	Offline to conduct Line Clearing.
COAL	SLTEC 2	124	03/01/2022 23:17	04/01/2022 4:05	30.20	Forced Outage	Tripped due to high pressure relative expansion.(RECLASSIFIED FROM FORCE. OMC OUTAGE)
GEO	PGPP1 Unit 1	37.5	03/22/2022 0:01	03/30/2022 1:11	8.05	Maintenance Outage	Offline to conduct replacement of high pressure middle casing.
COAL	PEDC 1	83.7	12/16/2021 20:40	03/28/2022 12:35	101.66	Forced Outage	Autotripped
OIL	PB101 Unit 2	6	03/23/2022 20:46	03/26/2022 17:26	2.86	Forced Outage	Fuel leak
HYD	Maris 2	4.3	03/25/2022 8:45	04/03/2022 19:55	9.47	Maintenance Outage	Maintenance outage.
HYD	Maris 1	4.3	03/25/2022 8:45	04/03/2022 19:55	9.47	Maintenance Outage	Maintenance outage.
HYD	Magat 4	97	03/01/2022 7:04	04/25/2022 19:38	55.52	Planned Outage	On Planned Outage until 04 May 2022
HYD	Magat 3	97	03/07/2022 0:04	04/03/2022 19:44	27.82	Planned Outage	Annual Preventive Maintenance
COAL	Kepco Salcon 2	103	03/10/2022 0:01	03/27/2022 3:53	17.16	Planned Outage	PMS (GOMP)
BIOF	IPower 1	10.8	03/14/2022 0:01	03/29/2022 22:01	15.92	Planned Outage	Annual Preventive Maintenance
COAL	CEDC 3	82	03/24/2022 22:46	03/28/2022 15:27	3.70	Forced Outage	POSSIBLE TUBE LEAK
HYD	Binga 1	35	03/22/2022 8:01	03/28/2022 1:06	5.71	Maintenance Outage	Annual Preventive Maintenance.
GEO	Bacman 2	60	03/17/2022 0:12	03/26/2022 23:50	9.98	Forced Outage	Total plant shutdown on 20--30 March 2022.