Market Surveillance Committee
Monthly Market Assessment Report

26 February to 25 March 2022

OCTOBER 2022

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

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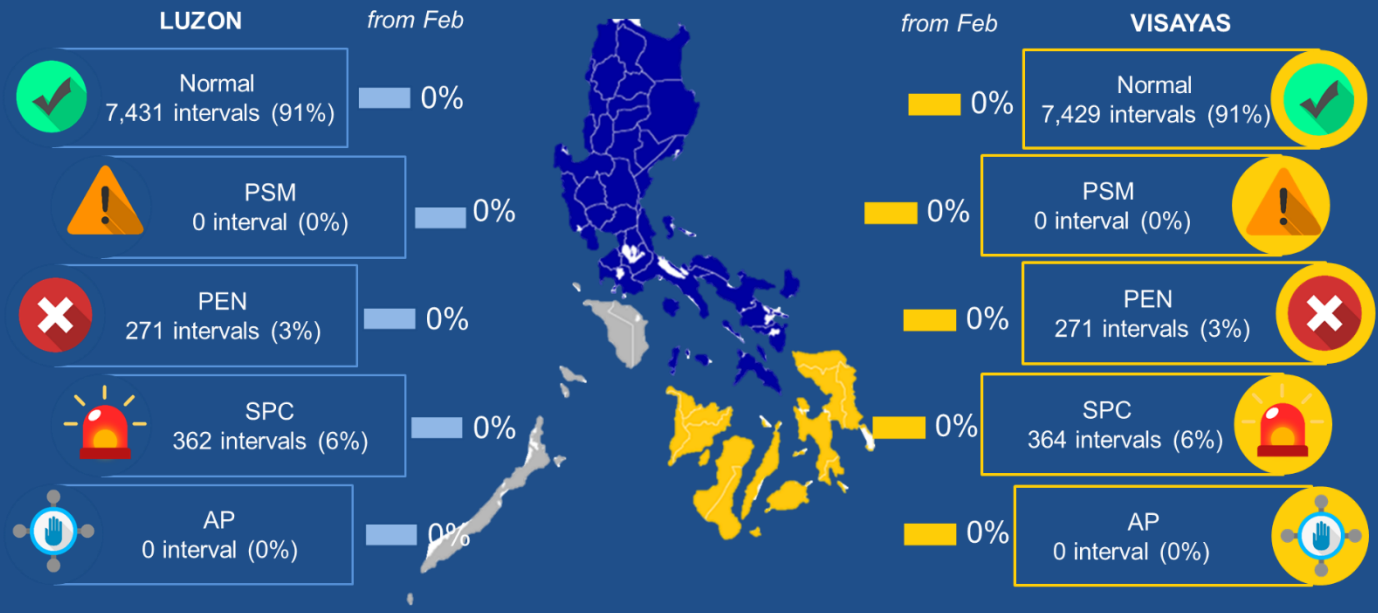
ASSESSMENT OF THE MARKET

SUMMARY OF PRICING CONDITIONS



- The cumulative 3-day average computation of generator-weighted average prices (GWAP) breached the PHP9,000/MWh threshold and resulted to the imposition of secondary price cap for 362 intervals from 503 intervals last month, in both Luzon and Visayas. Regional imposition of secondary price cap was also observed in Luzon for 8 intervals and 10 intervals for Visayas region, which were mainly brought about by depleted supply margin leading to relatively higher prices in the market.
- Intervals with pricing error notices were mainly due to inappropriate input data which affected prices and schedules across 271 intervals both for Luzon and Visayas.
- No intervals were imposed with price substitution methodology during the month in review. Radial lines are not anymore one of the considerations in the PSM criteria which took effect upon the commercial operation of the Enhanced WESM Design and Operations (EWDO).
- No Market Intervention (MI) was implemented in the March 2022 billing period as the transmission lines that had been destroyed by the onslaught of Typhoon Odette were completely repaired and were once again in operation.

NOTABLE HIGHLIGHTS

1. Luzon grid placed under yellow alert level
   - High demand recorded in Luzon and Visayas due to the observance of dry season
   - Forced outages of 7 power plants and derated capacities of 4 power plants on 23 March 2022
2. Observance of congestion in transmission lines and transformer equipment
   - Samboan-Amlan were congested 6 percent of the time or for 520 intervals.
   - Lamao and Sta. Barbara Transformers were also congested, both at 3 percent of the time or for 240 and 233 intervals, respectively, during the March 2022 billing.
3. Average system demand noted an increase in March 2022, surpassing the all-time highest hourly demand of 13,676 MW which was observed on 28 May 2021, 1500H and posted a new record of 13,835 MW on 23 March 2022, at 1410H.
   - Notable increase of 8.3 percent from 9,961 MW of the last month to 10,778 MW with the observance of dry season.
4. The effective supply increased to 12,189 MW from 11,488 MW due to the decrease in outage capacity.
5. Market prices posted an average increase of 17 percent.
   - Average price increased from PHP5,954/MWh last month to PHP6,966/MWh in March 2022
6. Year-on-year comparison of monthly average price posted a 59 percent increase from an average of PHP4,381/MWh last year during the height of the pandemic with strict implementation of quarantine measures.

MARKET OUTCOME

SUPPLY MARGIN

499 MW

(525 MW in February)

EFFECTIVE SUPPLY

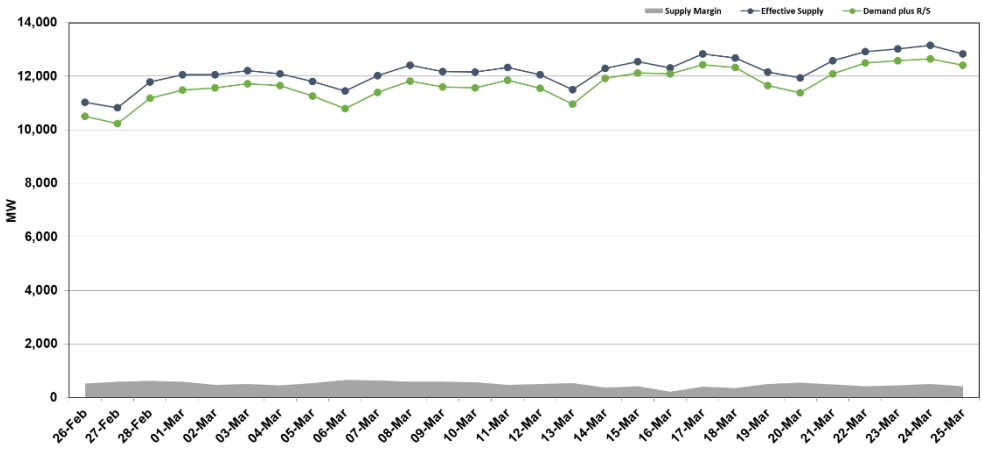
12,189 MW

(11,488 MW in February)

DEMAND PLUS RESERVE

11,690 MW

(10,963 MW in February)



- Electricity demand with consideration of reserve schedules increased by an average of 7 percent or 10,963 MW last month to 11,690 MW this month.
- Effective supply also increased as outage capacity generally declined due to, among others, the complete restoration of transmission lines damaged by Typhoon Odette and the decline in the capacity of planned and maintenance outages of Coal and Geothermal power plants.
- Despite an increase in effective supply, average supply margin was typically noted to have decreased by an average of 5%, or an average of 499 MW, from 526 MW in the February billing.

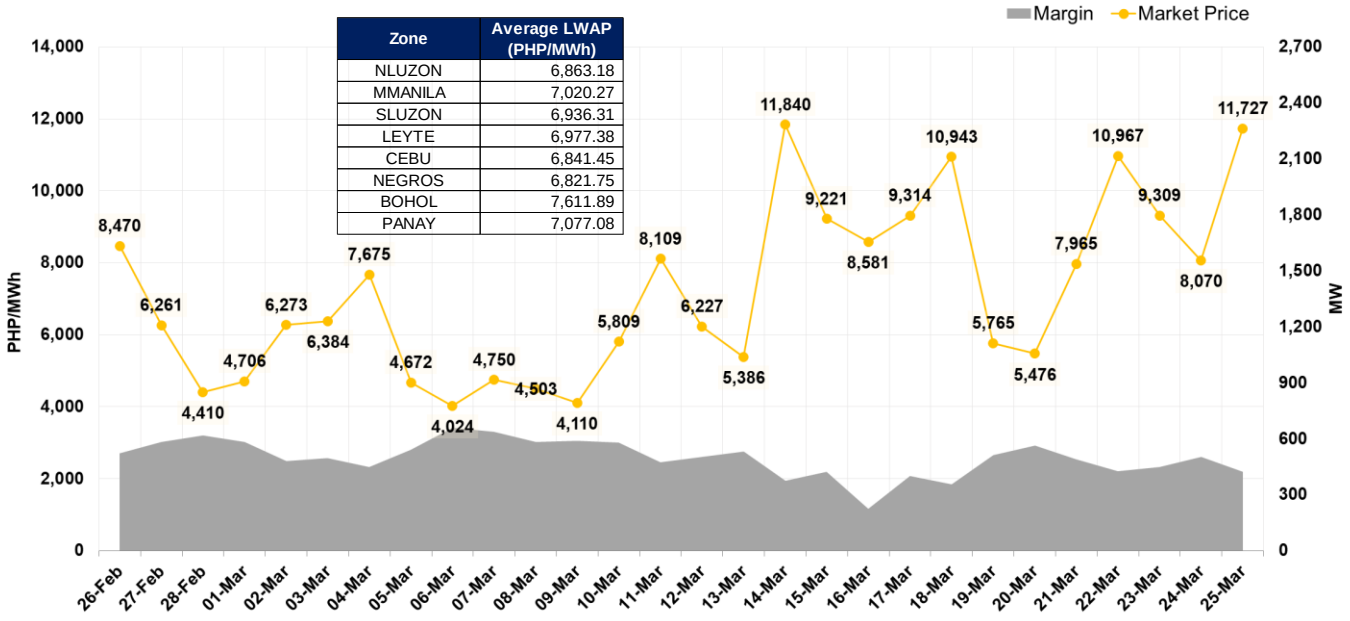
PRICE

6,966
PHP/MWh
(PHP5,954/MWh in February)

Given the dynamics between the supply and demand, the March 2022 billing month opened with relatively low level of market prices. However, average daily prices went on an increasing trend over the course of month following the increase in the level of system demand due to the observance of the dry season and with the more flexible implementation of COVID-19 alert level restrictions, which allowed for more economic activities. Subsequently, this resulted to an average increase of 17 percent in the market prices outcome or an average of PHP6,966/MWh from PHP5,954/MWh last month.

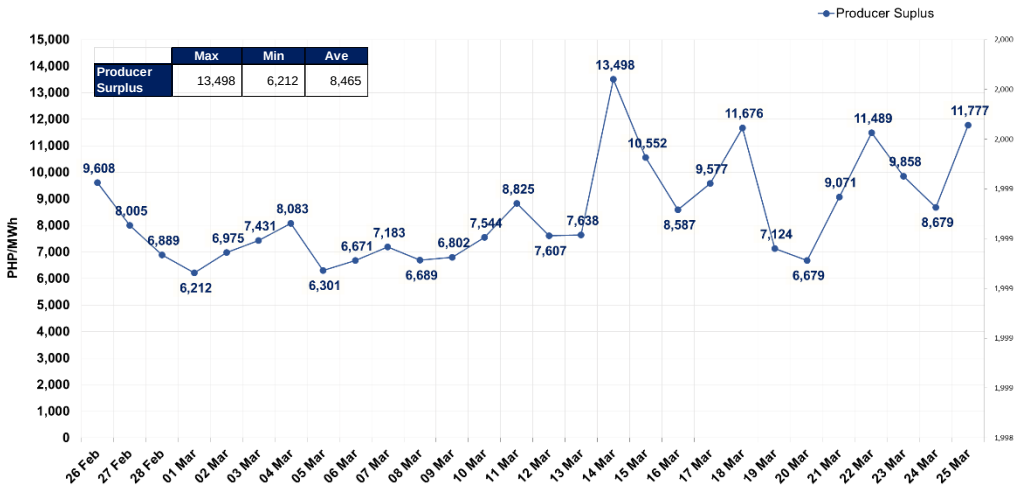
The 15 June 2021 incident involving the underwater drilling operations of DPWH that damaged one of the submarine cables of NGCP connecting the Cebu-Negros islands has kept congestion events present in the area which, in turn, continuously affected the power rates disparity of the Visayas region.

Zone	Average LWAP (PHP/MWh)
NLUZON	6,863.18
MMANILA	7,020.27
SLUZON	6,936.31
LEYTE	6,977.38
CEBU	6,841.45
NEGROS	6,821.75
BOHOL	7,611.89
PANAY	7,077.08



PRODUCER SURPLUS

8,465
PHP
(7,503MW in February)



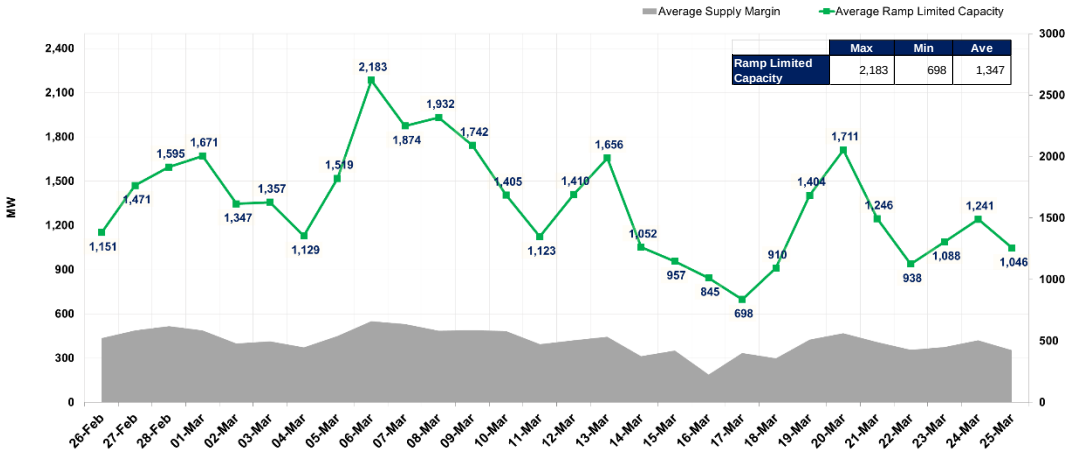
	Max	Min	Ave
Producer Surplus	13,498	6,212	8,465

Producer/generator surplus, derived from the difference between actual market price and respective offer prices, averaged at PHP8,465/MWh across all generators during the month. This is an average of 13 percent increase as compared to February 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.

RAMP LIMITED CAPACITY

1,347
MW
(1,351MW in February)



For the month of March, **ramp-limited capacity** declined on average by 0.33 percent. Its occurrences were more noticeable under the new market regime due to shorter intervals that required quicker delivery of scheduled generations. However, due to the observation of reduced level of outage capacity, capacities offered or nominated increased.

CAPACITY PROFILE

COAL
9,052 MW
(43%)

NATURAL GAS
3,286 MW
(15%)

OIL-BASED
2,337 MW
(12%)

HYDRO
2,538 MW
(12%)

GEOTHERMAL
1,754 MW
(8%)

SOLAR
1,109 MW
(5%)

BIOMASS
404 MW
(2%)

WIND
428 MW
(2%)

BATTERY
230 MW
(1%)

- The WESM registered capacity increased to 21,136.7 MW in March 2022 from 21,099.6 MW during the previous month. The adjustment in the capacity of Coal, solar, and biomass power plants were the reason for the shift up in the net recorded change.
- The number of generators on testing and commissioning (T&C) increased and constituted 3 percent of the total registered capacity. Provisional Authority to Operate (PAO) or Certificate of Compliance (COC) of 8 plants were under evaluation/review by the ERC. On another note, COC application of one (1) plant has been denied by the ERC.

63%
Capacity Offered/ Nominated
13,338 MW
(12,616 MW in February)

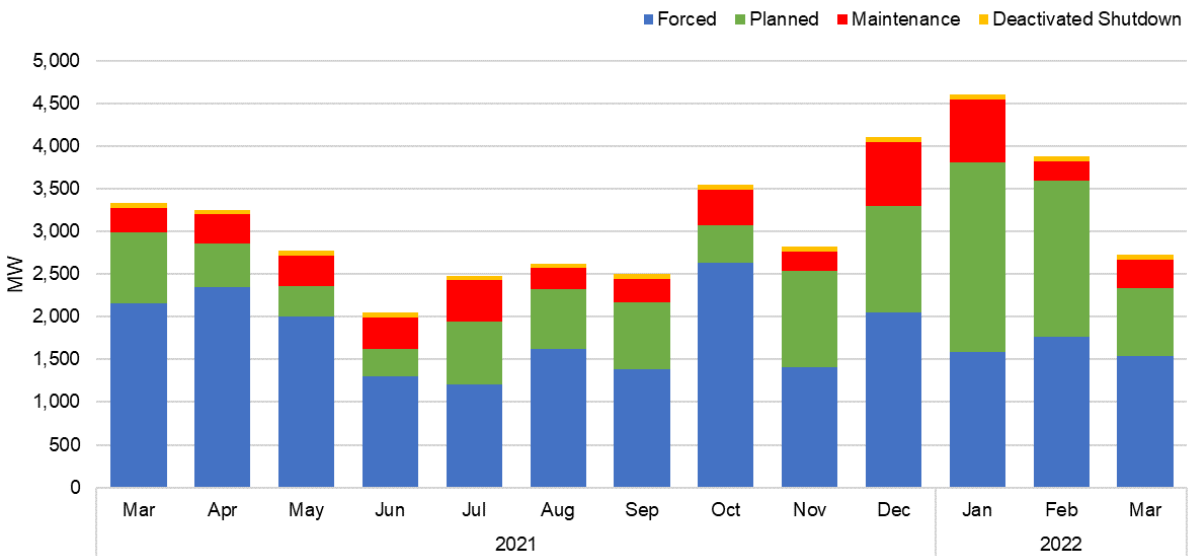
20%
Capacity Not Offered/ Not Nominated
4,159 MW
(4,044 MW in February)

14%
Outage Capacity
3,015 MW
(3,912 in February)

3%
Capacity of Plants on Commissioning
561 MW
(527 MW in February)

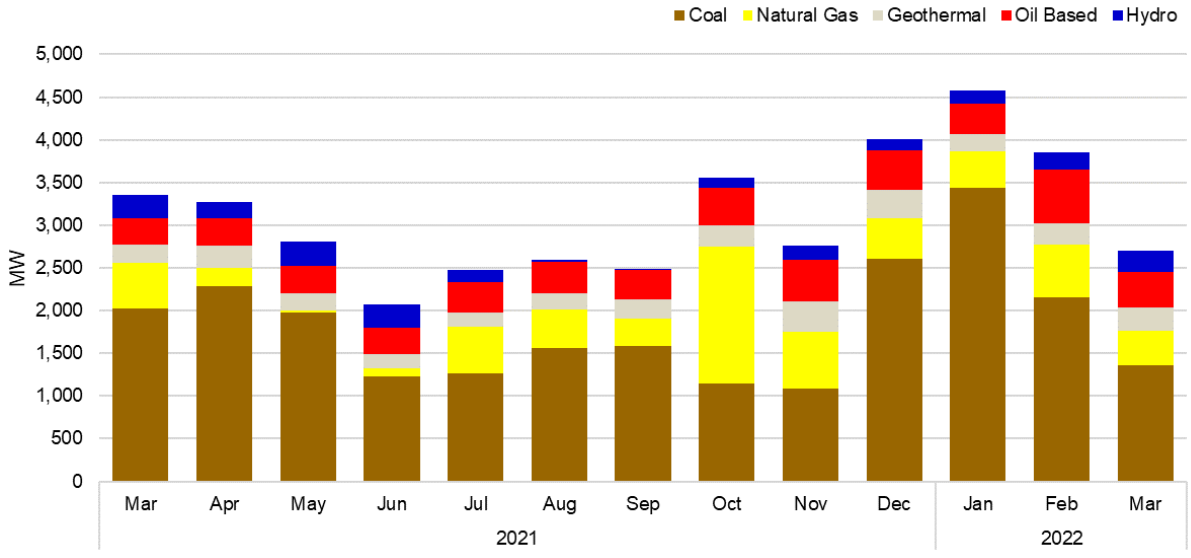
1%
Malaya Capacity (for MRU)
130 MW
(430 MW in February)

OUTAGE CAPACITY BY OUTAGE CATEGORY



Average outage capacity was generally observed to have decreased for the March billing. All categories posted a decrease except for maintenance outage which was noted to have an average increase of 46 percent from previous month attributed to the outages from Coal and Natural gas power plants brought about by technical issues of these plants and the effects of the gas restriction from Malampaya.

OUTAGE CAPACITY BY PLANT TYPE



The outages in March 2022 billing month which mostly came from large Coal, oil-based and natural gas generators generally decreased. With the observance of the dry season, outage capacity of hydro power plants relatively increased by an average of 22 percent. Considering these instances, outage capacity decreased to an average of 3,015 MW from 3,912 MW of the previous month. However, recorded forced outages of Coal and Geothermal power plants have been observed on the latter part of the month which contributed for the Luzon Grid to be placed under yellow alert level. For ease of reference, Annex A shows the detailed information on plant outages in both categories.

MARKET TRANSACTIONS

BCQ

84.9%

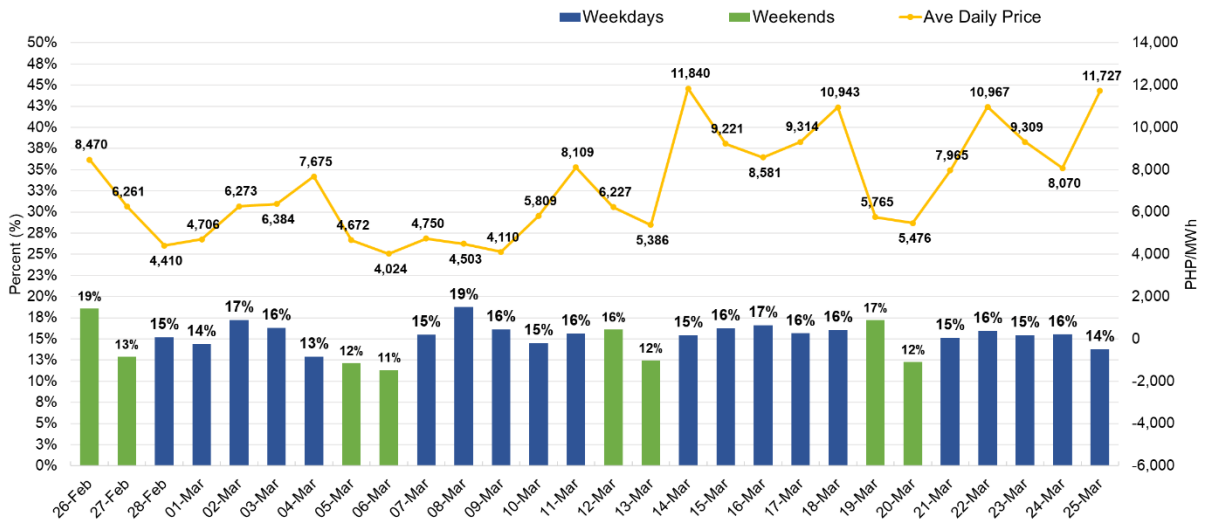
(88.2% in February)

SPOT

15.1%

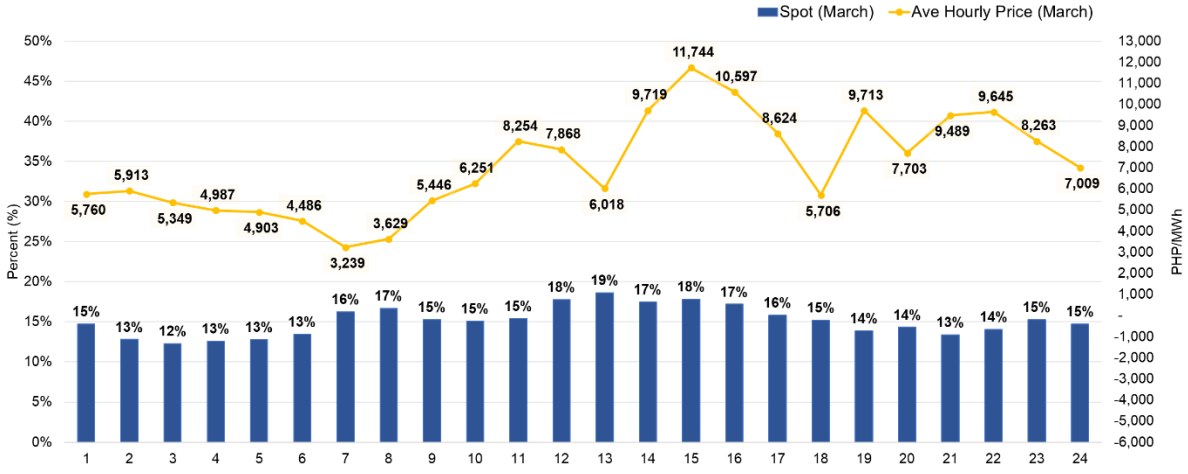
(11.8% in February)

DAILY SPOT



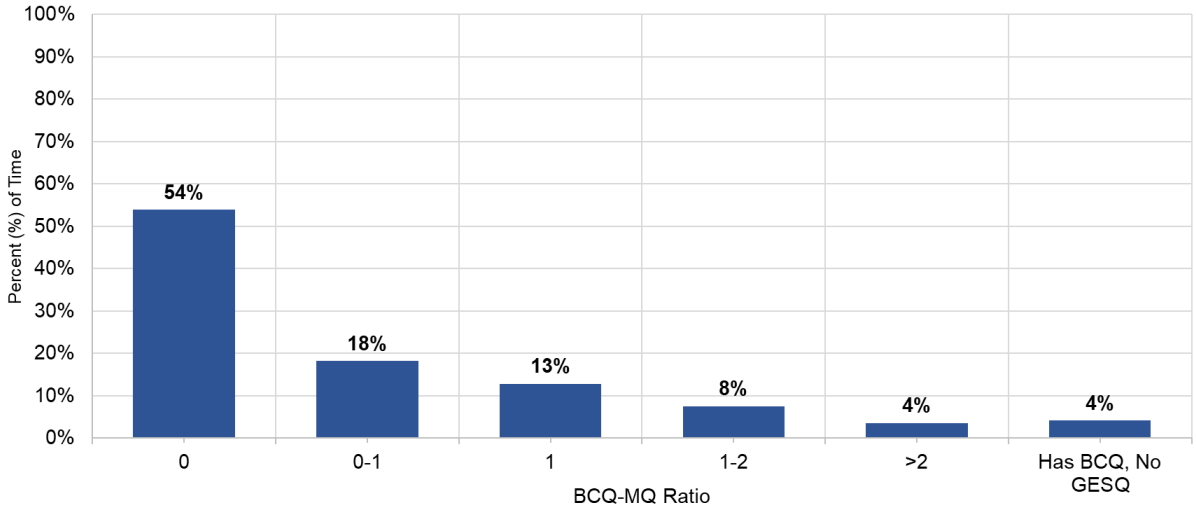
Spot share during weekdays averaged at 15.6 percent while the spot share during weekends average at 14.2 percent. The relatively high spot exposures may have been brought about by the unavailability/deration of the contracted capacities while exposures during the weekend may have been driven by lower market prices typically present at these times.

HOURLY SPOT



Total spot quantities of generator participants in March stood at an average of 14.3 percent during off-peak and 16 percent during peak hours. High prices still persisted even on off-peak hours due to relatively high demand attributed to dry season.

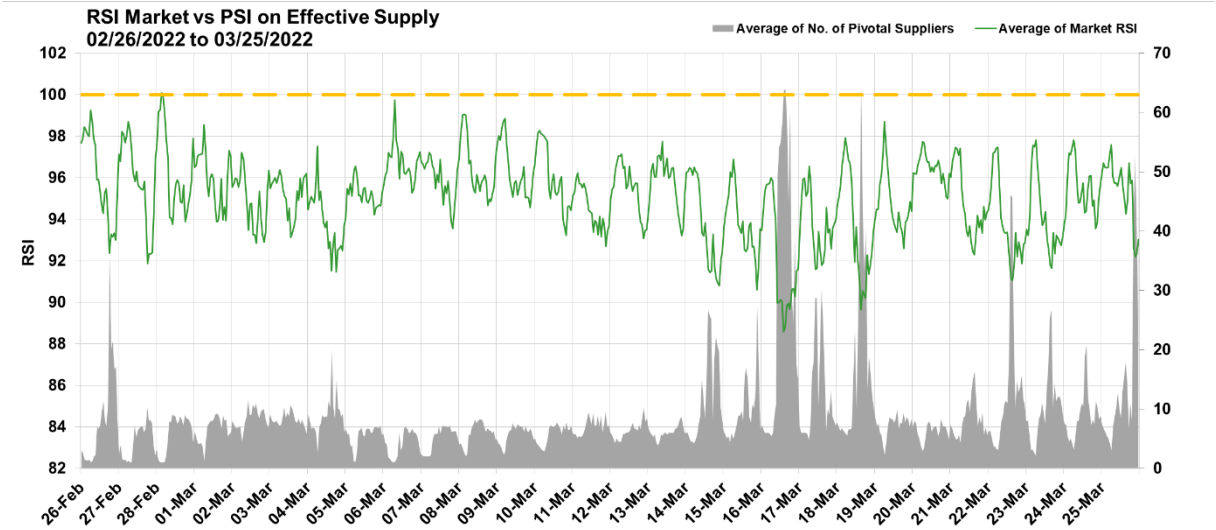
BCQ-MQ RATIO



- The resulting BCQ to MQ ratio of 0 demonstrates that the entire generated quantities were fully sold in the market 54 percent of the time.
- Roughly 13 percent of the time had a BCQ to MQ ratio of 1 which means that the entire metered quantities were being 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 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 (4 percent).

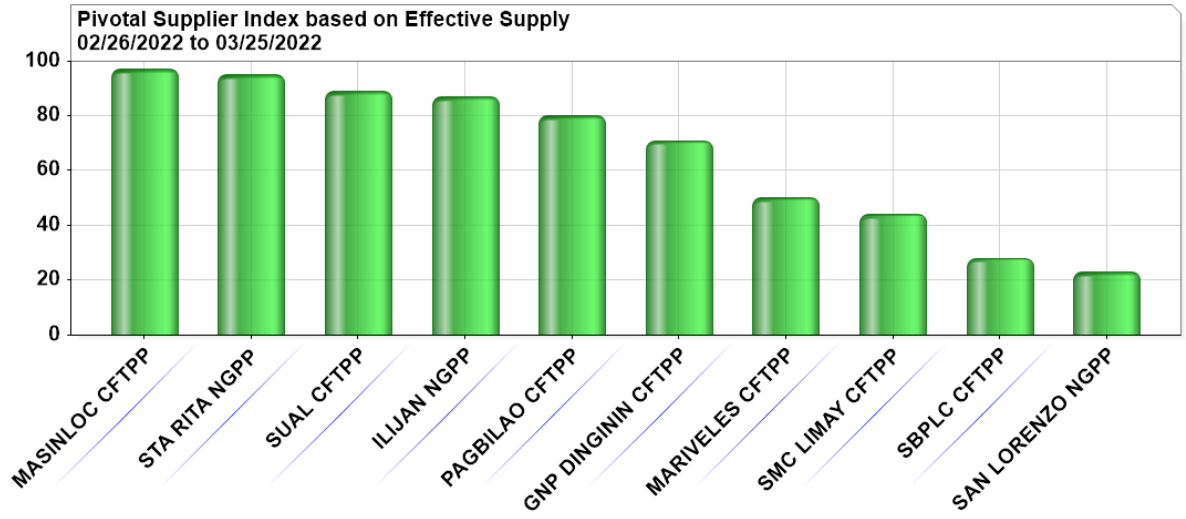
STRUCTUTAL COMPETITION INDICES

MARKET RSI



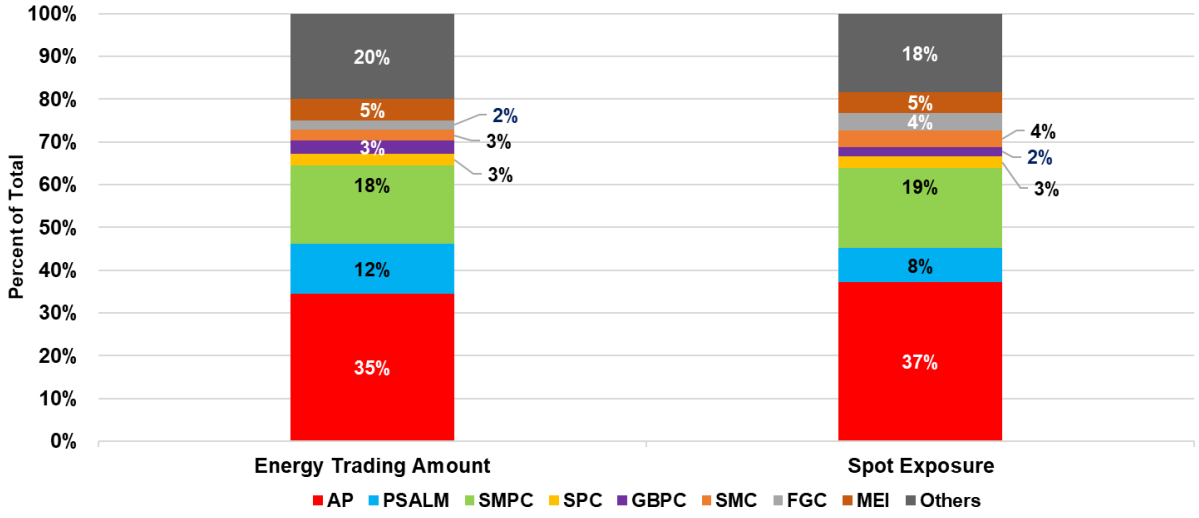
The market Residual Supply Index (RSI) was below the 100-percent mark for about 99.7 percent of the time this month from about 98 percent last month, owing to the narrower level of supply margin. During the March 2022 billing month, the market resulted to an RSI ranging from 87.3 to 101.5 percent and averaging at 95.1 percent. The average market prices for intervals with RSI below 100 percent was PHP7,284/MWh while those with RSI above 100 was PHP1,283/MWh.

PIVOTAL PLANTS



A total of 152 power plants were pivotal during the period with 106 coming from Luzon and 46 from Visayas.
The depleted supply margin due to high system demand level translated to a low RSI and subsequently recording high 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 35 percent.
- San Miguel Power Corp. (SMPC) came in second place this month, ending with an 18 percent of ETA share.
- Power Sector Assets and Liabilities and Management (PSALM) became third in the list of entity with the highest ETA share of sellers in the market with approximately 12 percent.
- The top 3 highest ETA shares comprised 64% of the total shares in the market.
- Energy trading amount is derived from the total energy sold and purchased in the market.

Annex A. Definitions of Term

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.

- **Must Run Unit**
  - Is a generating unit identified and instructed, on real time or scheduled basis, by the System Operator to either come on-line or provide additional energy on a particular Trading Interval but the dispatch of which is said to be Out of Merit to address System Security requirements. However, MRUs shall be utilized only after the System Operator has exhausted all available Ancillary Services.
- **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 B. List of Major Plant Outages

Plant Type	Plant/ Unit Name	Capacity (MW)	Date Out	Date In	Duration (Days)	Outage Type	Remarks
BIOF	HPCO	2	03/20/2022 5:36	03/22/2022 6:32	2.04	Maintenance Outage	Offline due to weekly maintenance.
BIOF	SCBE	7.4	03/19/2022 18:56	03/24/2022 0:13	4.22	Forced Outage	Offline due to boiler problem.
NATG	Ilijan A2	190	03/19/2022 0:58	03/23/2022 16:35	4.65	Maintenance Outage	Plant interim plan maintenance schedule
NATG	Ilijan A3	220	03/19/2022 0:45	03/23/2022 12:02	4.47	Maintenance Outage	Plant interim plan maintenance schedule
BIOF	San Carlos Bio	20	03/17/2022 9:21	03/22/2022 15:02	5.24	Maintenance Outage	Offline due to low fuel. Under test and commissioning
GEO	Bacman 3	20	03/16/2022 6:07	03/21/2022 16:33	5.43	Planned Outage	O FACILITATE MAINTENANCE AND VARIOUS ACTIVITIES AT BACMAN 230 KV SWITCHYARD
GEO	PGPP1 Unit 3	37.5	03/15/2022 4:53	03/19/2022 12:11	4.30	Forced Outage	Auto-tripped due to condenser vacuum very low.
GEO	PGPP1 Unit 3	37.5	03/11/2022 6:03	03/15/2022 4:52	3.95	Forced Outage	Auto tripped due to condenser vacuum very low.
BIOF	San Carlos Bio	20	03/10/2022 18:08	03/15/2022 9:06	4.62	Forced Outage	Auto-tripped with indication main steam high high. Test and commissioning.
COAL	GN Power 1	316	03/09/2022 10:03	03/16/2022 14:57	7.20	Forced Outage	Tripped due to activated earth fault protection caused by arcing at excitation system
GEO	Bacman 1	60	03/08/2022 0:04	03/20/2022 15:02	12.62	Maintenance Outage	APM
BIOF	VMC	2.5	03/07/2022 3:08	03/09/2022 10:58	2.33	Forced Outage	Offline due to fire formed at bagasse conveyor.
COAL	GN Power 2	316	03/04/2022 22:07	03/07/2022 20:31	2.93	Forced Outage	Emergency shutdown due to main steam pipe leak.
COAL	SLTEC 1	121	03/04/2022 15:34	03/06/2022 16:15	2.03	Forced Outage	Tripped due to BoilerMaster Fiuel Trip alarm.
BIOF	San Carlos Bio	20	03/04/2022 11:04	03/10/2022 11:07	6.00	Forced Outage	Offline to conduct inspection of furnace condition. test and commissioning.
NATG	Ilijan B1	190	03/04/2022 0:53	03/06/2022 19:10	2.76	Planned Outage	Interim Maintenance Inspection
NATG	Ilijan B3	220	03/04/2022 0:41	03/06/2022 17:43	2.71	Planned Outage	Interim Maintenance Inspection
NATG	San Lorenzo 2	265	03/02/2022 9:14	03/04/2022 19:17	2.42	Forced Outage	Emergency shutdown due to fire at GT enclosure.
COAL	THVI 1	169	03/01/2022 13:42	03/05/2022 13:05	3.97	Forced Outage	CIRCULATING WATER PUMP TRIPPED
NATG	Ilijan A1	190	02/28/2022 12:12	03/02/2022 21:55	2.40	Forced Outage	Tripped due to high pressure drum vent rupture.
GEO	Leyte 3	40.2	02/28/2022 2:56	03/02/2022 22:30	2.82	Planned Outage	32 days scheduled APMS
OIL	Limay 3	60	02/26/2022 10:01	02/28/2022 20:11	2.42	Forced Outage	For fuel nozzle replacement.
COAL	TPC-Sangi 1	82	02/25/2022 1:01	02/28/2022 1:17	3.01	Maintenance Outage	UNIT CUT-OUT FROM THE SYSTEM TO FACILITATE CORRECTIVE MAINTENANCE
COAL	THVI 2	169	02/17/2022 23:24	03/03/2022 2:14	13.12	Planned Outage	UNIT CUT-OUT FROM THE SYSTEM. ANNUAL PMS SCHEDULE. ECD -- 03-04-2022
COAL	Sual 1	647	02/23/2022 23:40	02/27/2022 12:48	3.55	Maintenance Outage	Maintenance outage on 24--28 February 2022 to rectify hotspot on GSU transformer
WIND	SLWind	54	12/16/2021 23:53	03/08/2022 18:17	81.77	Forced Outage	Autotriped due to high voltage
COAL	SLTEC 2	122.9	02/25/2022 16:03	02/27/2022 22:30	2.27	Forced Outage	Tripped due to high vibration.
COAL	SLTEC 1	121	02/18/2022 8:59	03/03/2022 14:02	13.21	Forced Outage	Emergency shutdown due to high hp relative expansion
NATG	San Lorenzo 1	265	02/14/2022 3:42	03/15/2022 12:10	29.35	Maintenance Outage	Major overhaul of unit.
NATG	San Gabriel	420	02/24/2022 23:33	02/28/2022 11:11	3.48	Forced Outage	Shutdown due to Malampaya gas restriction.
BIOF	San Carlos Bio	20	02/21/2022 9:03	02/27/2022 9:01	6.00	Forced Outage	Auto-tripped due to Fuel Feeding System trouble.
COAL	QPPL	460	02/04/2022 23:59	03/18/2022 22:55	41.96	Planned Outage	Planned outage from Feb 5 - Mar 21 2022
OIL	Malaya 2	130	01/19/2022 20:12	03/15/2022 7:17	54.46	Planned Outage	Commissioning test
GEO	Mahanagdong A1	5	01/11/2022 0:08	02/27/2022 17:05	47.71	Planned Outage	35 days scheduled APMS with replacement of cooling tower
OIL	Limay 7	60	02/01/2022 21:15	03/04/2022 18:23	30.88	Forced Outage	Tripped due to loss of excitation.
OIL	Limay 5	60	01/10/2022 0:02	02/27/2022 14:57	48.62	Planned Outage	Planned outage is until 23 Feb 2022. PANASIA to conduct inspection of Gas Turbine or Generator and Heat Recovery Steam Generator and carry out other pending works of the unit.
COAL	Kepco Salcon 1	103	02/12/2022 0:01	03/01/2022 7:12	17.30	Planned Outage	Unit 1 manually shutdown for Schedule PMS (GOMP)
NATG	Ilijan B2	190	02/25/2022 4:33	02/28/2022 19:27	3.62	Forced Outage	Shutdown due to Malampaya gas restriction.
BIOF	GIFT 2	6	01/03/2022 4:50	03/11/2022 7:54	67.13	Forced Outage	Furnace trouble.
COAL	CEDC 3	82	02/02/2022 9:51	03/24/2022 22:45	50.54	Forced Outage	INSTRUMENT AIR PRESSURE LOW(AFFECTED BY THE TRIPPING OF UNIT 1)