Market Surveillance Committee Monthly Market Assessment

26 June to 25 July 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 June – 25 July 2022)

Philippine Electricity Market Corporation

MMAR-2022-07

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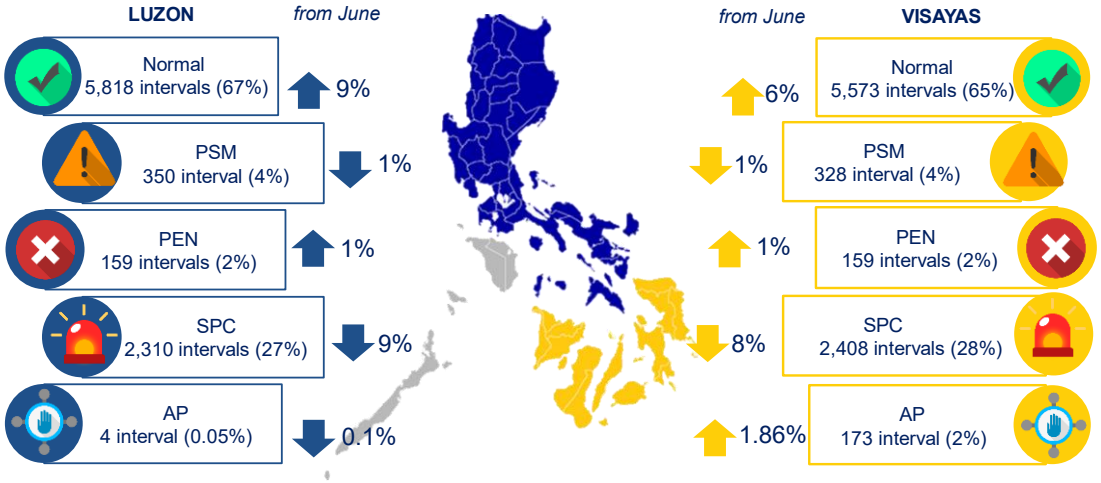
ASSESSMENT OF THE MARKET

SUMMARY OF PRICING CONDITIONS



- Intervals imposed with price substitution methodology (PSM) decreased during the month in review.
- Intervals with pricing error notices were mainly due to inappropriate input data which affected prices and schedules across 159 intervals both for Luzon and Visayas.
- 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 2,197 intervals from 3,188 intervals last month, both in Luzon and Visayas brought about by depleted supply margin from 01-09, and 11-25 July 2022. On another note, regional imposition of secondary price cap was also observed in Luzon for 113 intervals and 211 intervals for Visayas region during those instances when the inter-connection between the grids was unavailable.
- Market Intervention (MI) was declared in Luzon and Visayas for 4 intervals on 30 June 2022 at 2215H, 02 and 23 July 2022 at 0025H and 2200H to 2205H, respectively due to Market Systems switch over as part of Business Continuity Management System (BCMS) drill. Meanwhile, System Operator (SO)-initiated Market Intervention in the Visayas region was due to isolation of Panay grid caused by tripping of Negros-Panay Submarine Cable. During these declarations, administered prices (AP) were imposed to the market.

NOTABLE HIGHLIGHTS

1. System demand declined with the onset of the rainy season.
   - Average decrease of 4.6% or was noted to be at an average of 10,971 MW from 11,497 MW last month
2. ***Damaged Panay-Negros submarine cables*** caused massive brownouts to the sub-grid of Negros and Panay.
3. With the increase in the level of capacities on outage from 3,310 MW last month to 3,816 MW this month, supply level decreased, and affected the resulting market prices.
   - Average market prices increased to PHP8,918/MWh from PHP8,515/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:
   - Maasin-Ubay line 1 was congested for 1,753 intervals or equivalent to 20% of the time brought about by natural congestion as a result of the frequent maximization of the line's capacity limit, and
   - Samboan-Amlan line 2 was also congested 16% of the time or equivalent to 1,364 intervals as a result of the continuous unavailability of Samboan-Amlan line 1.

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MARKET OUTCOME

SUPPLY MARGIN

492 MW

(478 MW in June)

EFFECTIVE SUPPLY

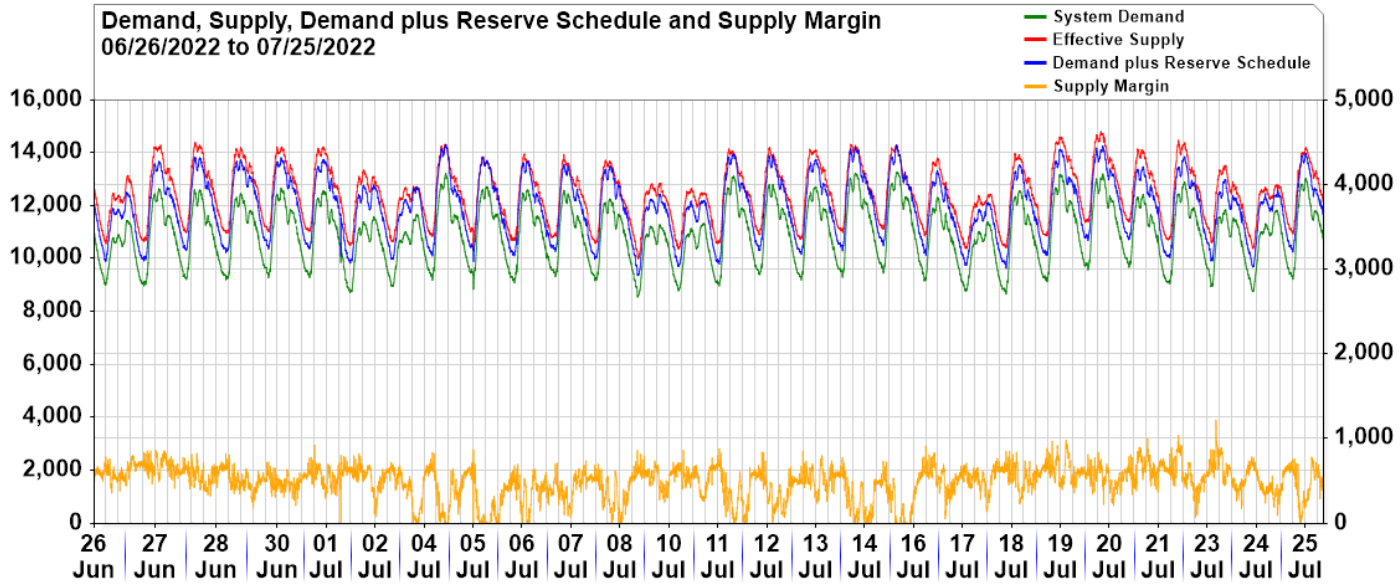
12,487 MW

(13,041 MW in June)

DEMAND PLUS RESERVE SCHEDULE

11,996 MW

(12,563 MW in June)



- The average effective supply for the July 2022 billing month decreased to an average of 12,487 MW from last month's 13,041 MW.
- On the other hand, system demand, including reserve requirements, posted a decrease by an average of 4.5 percent or an average capacity level of 11,996 MW as compared to last month's 12,563 MW brought about by, among others, onset of the rainy season.
- Considering the factors above, the level of supply margin improved by 2.9%, or was recorded at an average of 492 MW from 478 MW last billing month.

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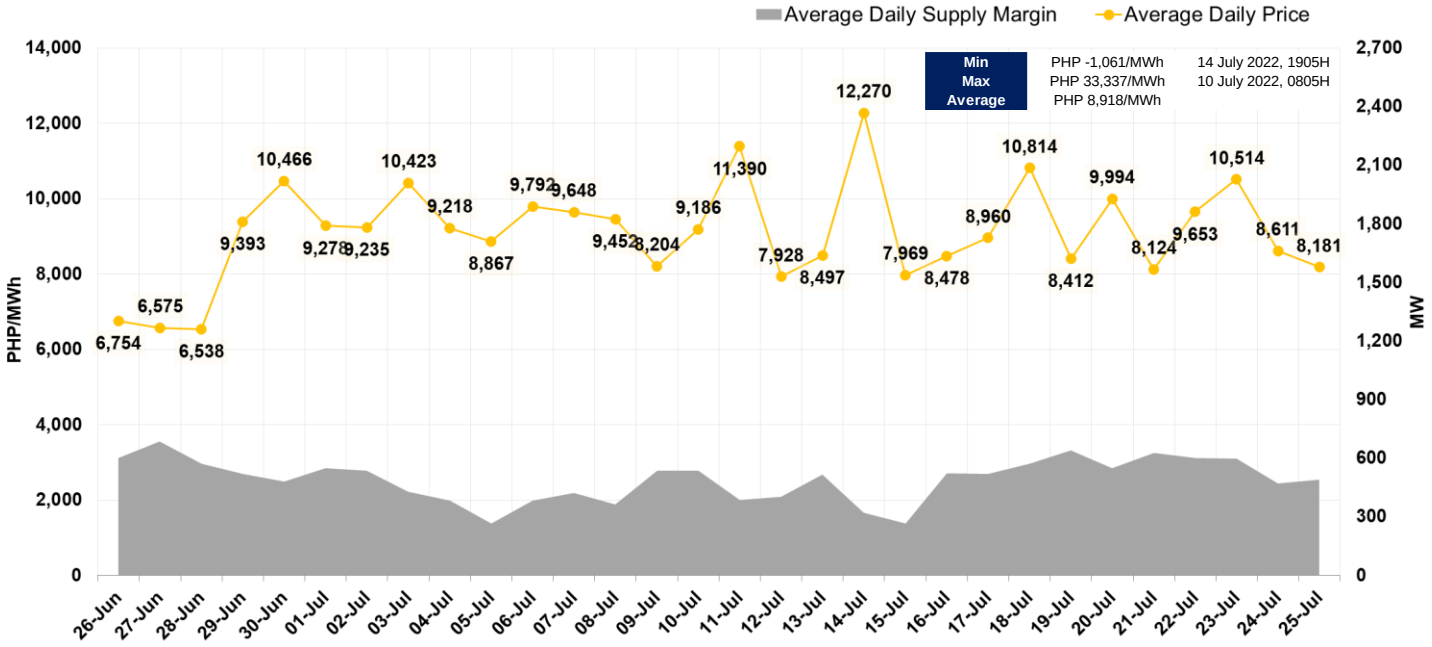
Zone	Average LWAP (PHP/MWh)
NLUZON	8,751.44
MMANILA	8,953.36
SLUZON	8,850.85
LEYTE	8,847.30
CEBU	8,812.77
NEGROS	9,621.75
BOHOL	10,230.06
PANAY	9,820.53

MARKET OUTCOME

Given the dynamics of supply and demand, the market price outcome continued to rise, on average, by 4.7% or was noted at an average of PHP8,918/MWh from PHP8,515/MWh last month. Year-on-year comparison posted a 28.1% increase from an average of PHP6,963/MWh last year noting that outages this year were significantly higher than in July 2021.

The 15 June 2021 incident involving the underwater drilling operations of the 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 in the Visayas region causing disparity as depicted in the table of prices.



PRICE

8,918
PHP/MWh
(PHP8,515/MWh in June)

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MARKET OUTCOME

RAMP LIMITED CAPACITY

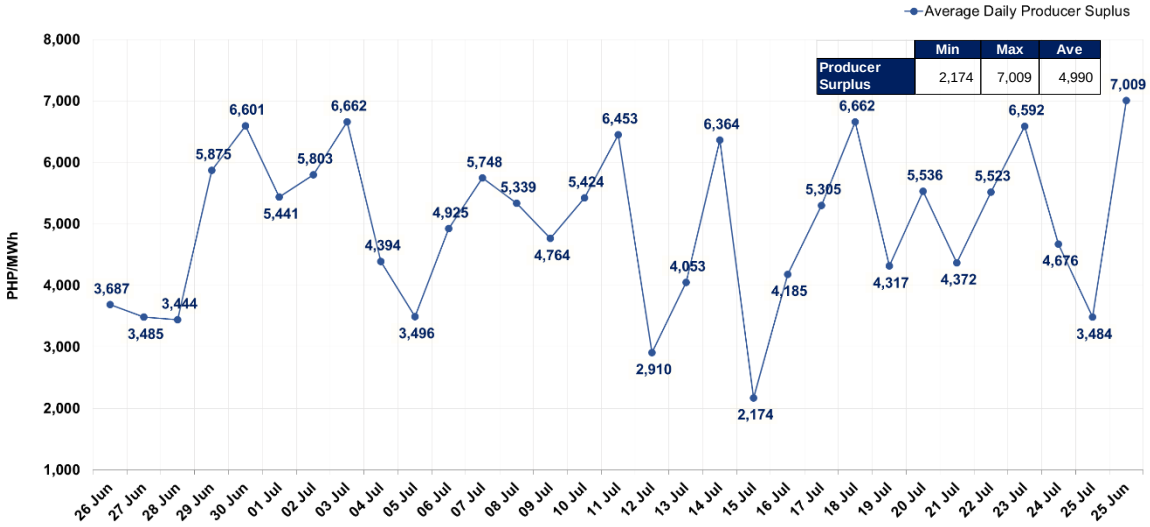
2,205 MW

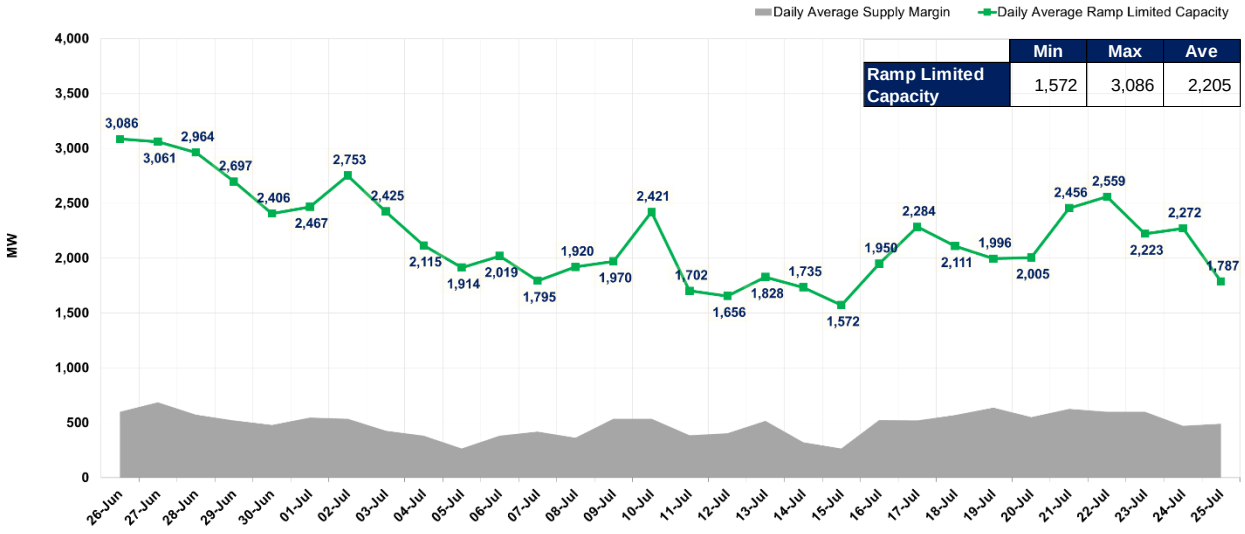
(2,170MW in June)

PRODUCER SURPLUS

4,990 PHP/MWh

(PHP5,022/MWh in June)





Producer/generator surplus, averaged at PHP4,990/MWh this month from PHP5,022/MWh last month. This is an average of 2 percent decrease as compared to June 2022.

For the month of July, **ramp-limited capacity** slightly increased by an average of 1% from an average of 2,170 last month to 2,205 this month.

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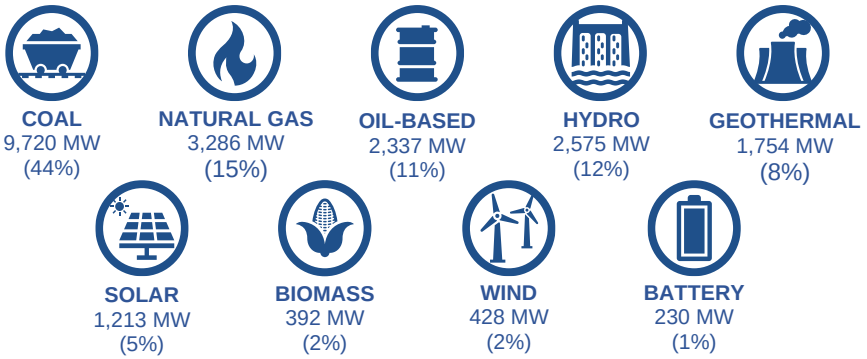
CAPACITY PROFILE

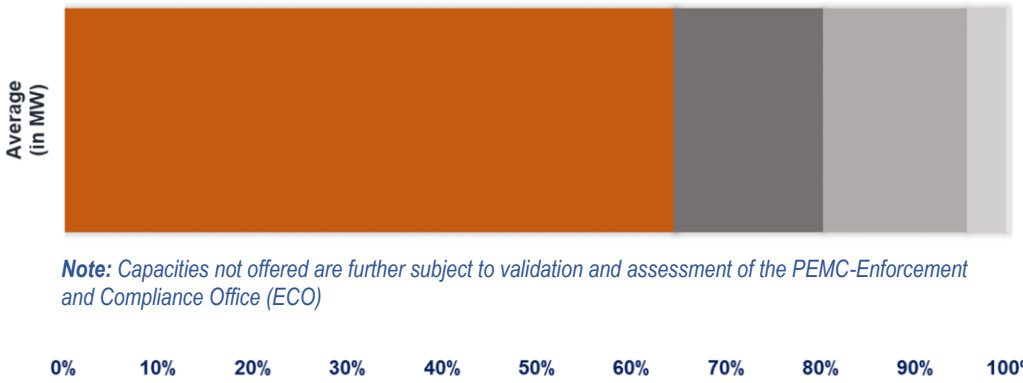


61%
Capacity Offered/ Nominated
13,477 MW
(14,066 MW in June)

17%
Capacity Not Offered/ Not Nominated
3,710 MW
(3,464 MW in June)

17%
Capacity on Outage
3,816 MW
(3,310 in June)

4%
Capacity of Plants on Commissioning
785 MW
(909 MW in June)



1%
Malaya Capacity (for MRU)
130 MW
(130 MW in June)

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

- The WESM's registered capacity grew in July 2022 from 21,913.8 MW to 21,934.4 MW due to additional registration of the following plants:
  - Bicol Hydropower Corporation 1.6 MW Hydro power plant, and
  - Oriental Energy & Power Generation Corp. 18.9 MW Hydro power plant

- For the July 2022 billing month, the capacity of plants undergoing commissioning tests dropped to 785 MW (equivalent to 4% of the total registered capacity) from 909 MW in June 2022.
  - Provisional Certificates of Approval to Connect (PCATCs) of 3 plants have been extended while 4 plants were still on commissioning test with expired PCATCs
  - Meanwhile, 5 plants have just started their respective commissioning tests.

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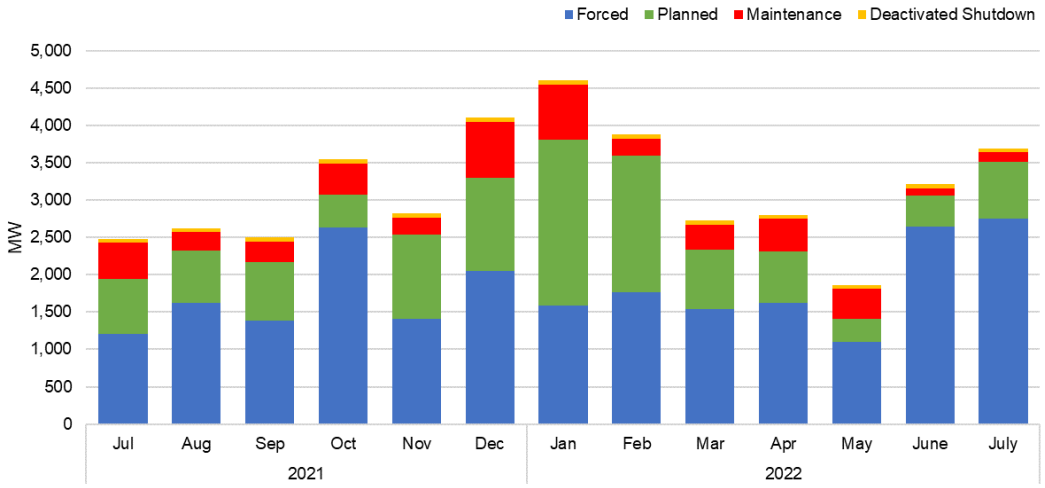
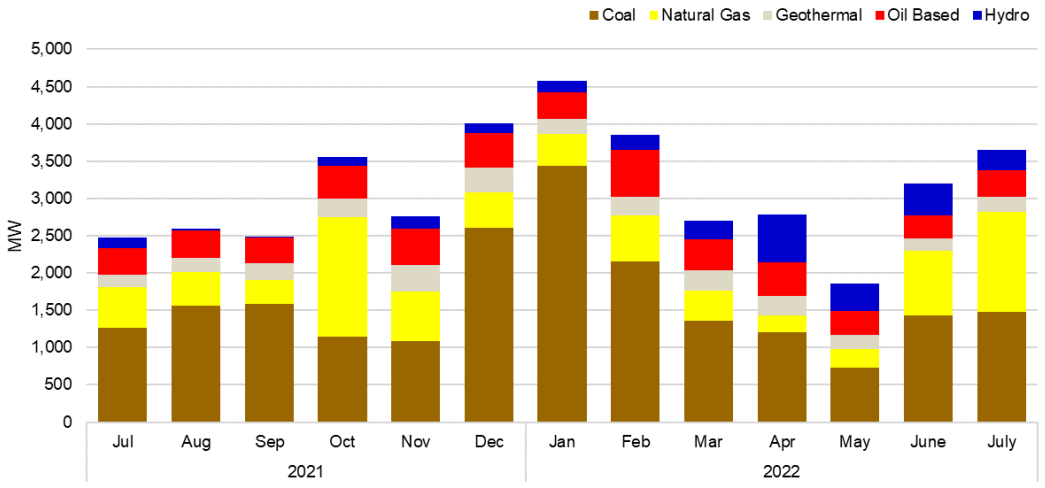
CAPACITY PROFILE

CAPACITY ON OUTAGE BY CATEGORY



CAPACITY ON OUTAGE BY PLANT TYPE



The July 2022 billing month opened with a relatively high level of capacities on outage coming from last month at around 3,400 MW which then posted an average capacity on outage of 4,000 MW on 05-11 July 2022. The noted increase in the capacities on outage reached as high as 4,472 MW, recorded on 17 July 2022 (1325H to 1630H).

The high level of forced outages was mainly due to technical issues of the plants and the end of cooperation period. Meanwhile, outages under planned and maintenance categorization were properly coordinated with the System Operator based on approved procedures.

The comprehensive information on plant outages in all categories is shown in Annex A, for convenience and reference.

The July 2022 outages accounted for 17% of the total registered capacity, or an average of 3,816 MW which is considerably higher than the 3,310 MW in June 2022 billing period. The high level of outage for Natural gas was due to the aforementioned end of cooperation period. Meanwhile, the main contributory factor for high outage level of Coal plants were purely technical in nature.

As the month ended, the outage level was at about an average of 3,600 MW.

	JULY 2022		
	Min	Max	Average
Capacity on Outage	2,802 MW	4,472 MW	3,816 MW

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MARKET TRANSACTIONS

BILATERAL CONTRACT QUANTITIES

89.3%

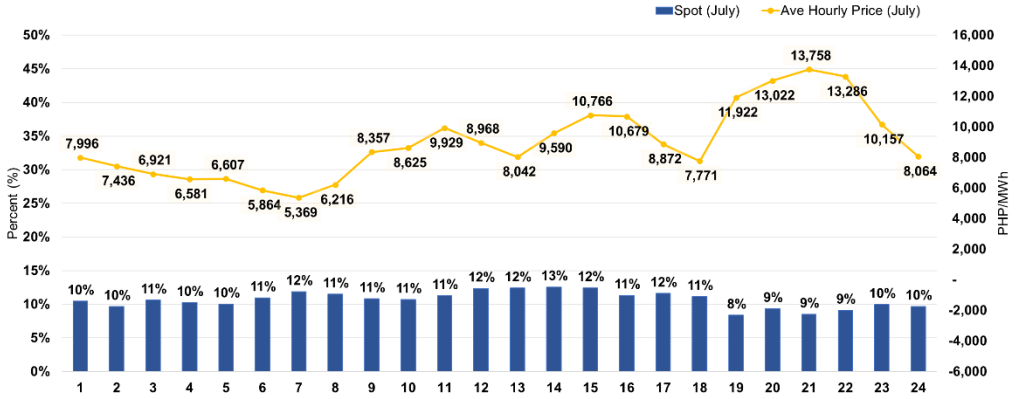
(88.2% in June)

SPOT EXPOSURES

10.7%

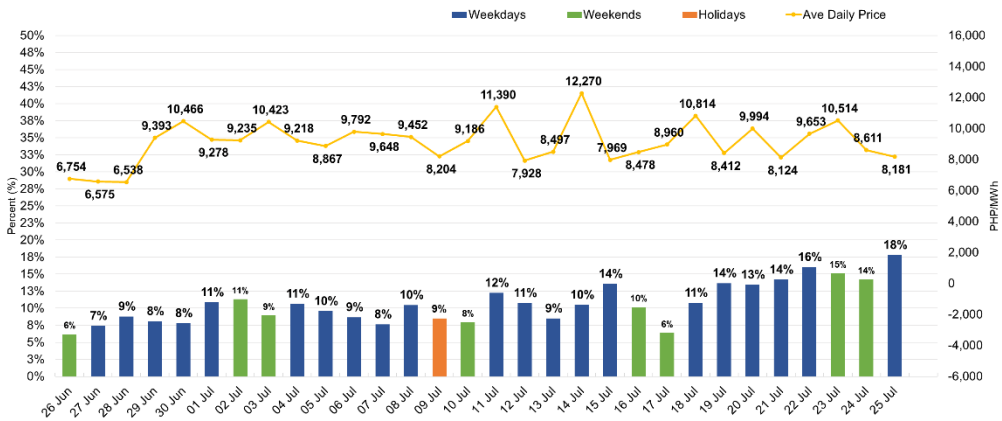
(11.8% in June)

HOURLY SPOT



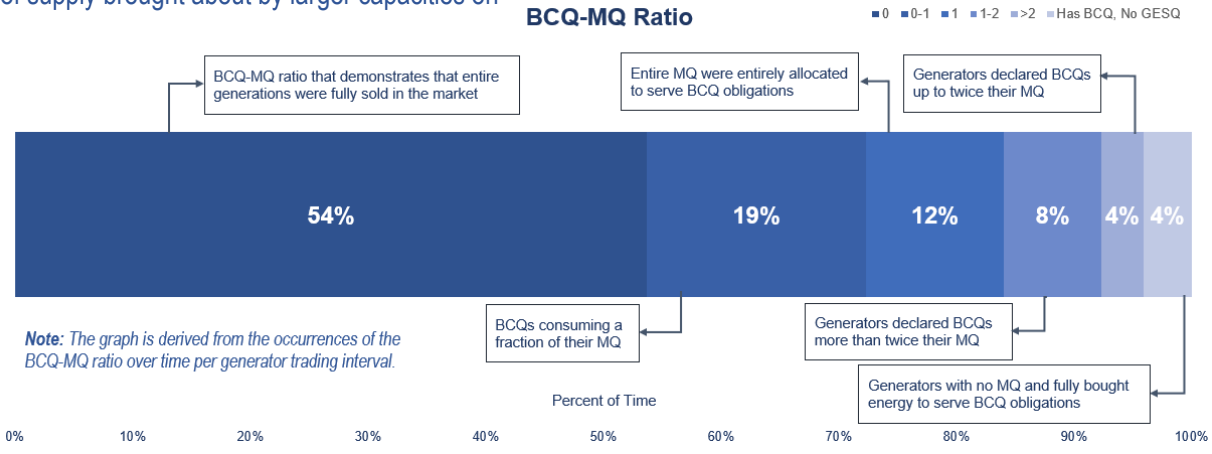
Total spot quantities of generator participants in July posted an average of 10.4% during off-peak hours and 11% during peak hours. Prices during the period was relatively higher compared to last month due to low level of supply brought about by larger capacities on outages.

DAILY SPOT



Spot exposures during weekdays averaged at 11.1% while it was 9.9% during weekends.

BCQ-MQ Ratio



Note: *The graph is derived from the occurrences of the BCQ-MQ ratio over time per generator trading interval.*

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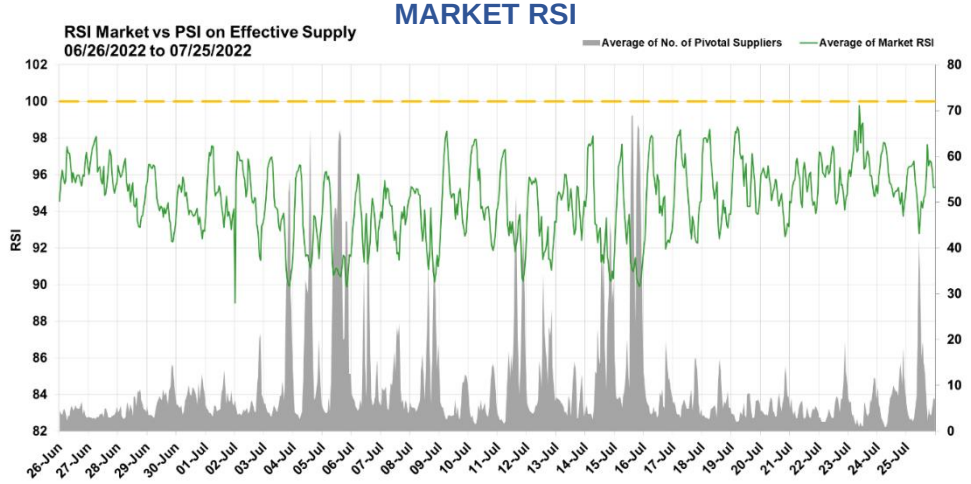
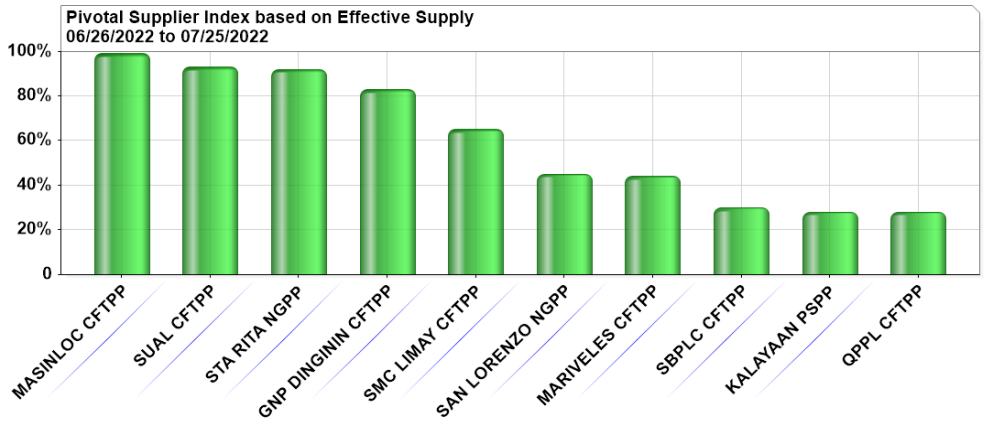
STRUCTURAL COMPETITION INDICES

MARKET RSI



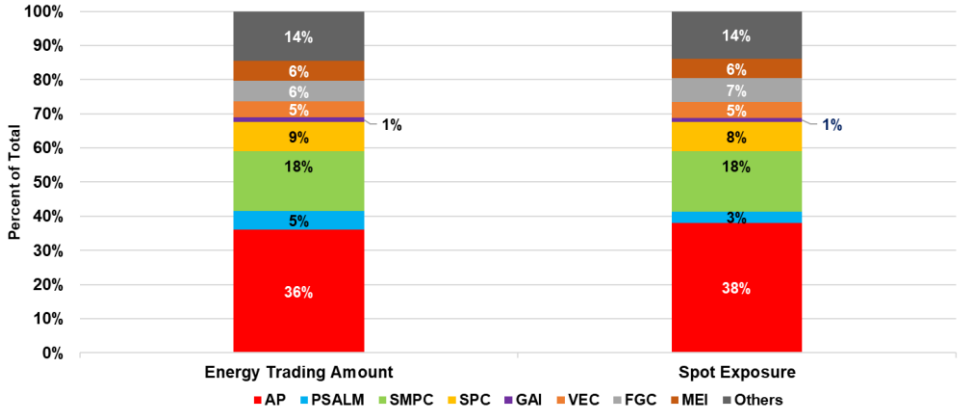
- The market Residual Supply Index (RSI) was below the 100% mark for about 99.8% of the time this month compared to about 99.5% last month.
- During the July 2022 billing month, the market resulted in RSIs ranging from 89.3 to 102% and averaging at 94.6%. The average market prices for intervals with RSI below 100% was PHP9,107/MWh while those with RSIs above 100 was PHP1,716/MWh.

PIVOTAL PLANTS



- A total of 155 power plants were pivotal during the period from 107 last month, with 71% or 110 plants coming from the Luzon region and 48 plants from the Visayas region.
- The noted decrease in effective supply due to high outage level translated to a low RSI and high number of pivotal suppliers per 5-min dispatch interval.

ENERGY TRADING AMOUNT AND SPOT EXPOSURE



- The top 3 participants with highest shares in both measures comprised 62% of the total ETA and spot exposure which may indicate high level of market concentration which affects market competition.

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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.

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Annex A. List of Major Plant Outages

Plant Type	Plant/ Unit Name	Capacity (MW)	Date Out	Date In	Duration (Days)	Outage Type	Remarks
OIL	TPVI 6	6.8	07/25/2022 10:46			Forced Outage	Unit cut-out due to cooling water leak at turbo charger B-bank line
HYD	Ambuklao 2	35	07/25/2022 8:01			Forced Outage	On maintenance outage for replacement of shaft seal and inspection of turbine bearing
OIL	Limay 7	60	07/23/2022 0:05			Planned Outage	Maintenance Outage until July 29. 2022
COAL	Sual 2	647	07/22/2022 21:29			Maintenance Outage	To replace boiler circulating pump 2Cs heat exchanger and cleaning of strainer.
COAL	THVI 2	169	07/21/2022 10:27			Maintenance Outage	CORRECTIVE MAINTENANCE
OIL	Isabel 2	10.1	07/20/2022 20:14	07/22/2022 21:01	2.0	Forced Outage	RESERVE SHUTDOWN.
OIL	Isabel 1	10.04	07/20/2022 20:14	07/22/2022 21:01	2.0	Forced Outage	RESERVE SHUTDOWN.
OIL	TPVI 3	6.8	07/18/2022 14:18	07/20/2022 18:59	2.2	Forced Outage	MANUALLY CUT-OUT DUE TO FUEL LEAK AT BOOSTER MODULE HEATER FLANGE
OIL	TPC Carmen 1	10	07/15/2022 20:30	07/17/2022 23:18	2.1	Forced Outage	EMERGENCY CUT-OUT UNIT 1 DUE TO GAS CUTTING AT CYLINDER NO. 4
OIL	TPVI 6	6.8	07/15/2022 11:01	07/17/2022 18:41	2.3	Forced Outage	F.O. LOAD FLUCTUATION
NATG	Sta. Rita 3	265.5	07/14/2022 23:57	07/17/2022 4:28	2.2	Planned Outage	Planned Outage due to NDC Test
GEO	Leyte 3	40.2	07/14/2022 1:52	07/16/2022 17:39	2.7	Forced Outage	Condenser level high
BAT	Kabankalan Bat	20	07/11/2022 10:12	07/14/2022 12:01	3.1	Maintenance Outage	Offline due to scheduled preventive maintenance of equipment.
COAL	Kepco Salcon 1	103	07/11/2022 5:31	07/16/2022 23:48	5.8	Forced Outage	Possible boiler tube leak
OIL	Limay 1	60	07/11/2022 0:01			Planned Outage	Planned outage.
NATG	Sta. Rita 2	255.7	07/09/2022 3:55	07/11/2022 9:03	2.2	Planned Outage	Planned Outage
BIOF	CBEC	13.5	07/09/2022 0:08			Planned Outage	Planned Outage
NATG	Sta. Rita 1	257.3	07/08/2022 19:57	07/11/2022 5:45	2.4	Planned Outage	Planned outage
OIL	TPVI 3	6.8	07/07/2022 13:23	07/09/2022 19:05	2.2	Forced Outage	EXCESSIVE GAS LEAK
COAL	THVI 1	169	07/07/2022 10:59	07/19/2022 7:13	11.8	Forced Outage	High furnace pressure
OIL	CENPRI 5	6.7	07/06/2022 15:31	07/24/2022 20:13	18.2	Forced Outage	Offline due to turbocharger surging.
OIL	CENPRI 4	6.7	07/06/2022 15:30	07/14/2022 12:01	7.9	Forced Outage	Offline due to turbocharger surging.
COAL	PALM 1	135	07/06/2022 6:51	07/08/2022 15:31	2.4	Forced Outage	Autotripped due to over frequency
WIND	SLWind	54	07/05/2022 20:33			Forced Outage	Auto tripped due to line fault.
GEO	Tiwi 6	57	07/05/2022 0:03			Planned Outage	Unit overhaul
GEO	PGPP2 Unit 3	20	07/05/2022 0:01			Maintenance Outage	Offline due to scheduled maintenance activities
COAL	GN Power 2	316	07/04/2022 9:30	07/09/2022 12:34	5.1	Forced Outage	Trip due to boiler tube leak
COAL	Pagbilao 1	382	07/04/2022 0:29			Planned Outage	Annual Preventive Maintenance Schedule
OIL	TPVI 6	6.8	07/03/2022 18:18	07/07/2022 10:24	3.7	Forced Outage	Unit cut-out due to tripping of rocker gear oil pump
OIL	TPC Carmen 1	10	07/02/2022 13:33	07/04/2022 14:10	2.0	Forced Outage	Unit 1 emergency shutdown due to cooling system problem
COAL	Masinloc 1	315	07/02/2022 13:21	07/04/2022 18:36	2.2	Forced Outage	Due to condenser tube leak
COAL	TPC-Sangi 1	82	07/01/2022 23:58			Planned Outage	ANNUAL PMS (GOMP)
NATG	San Lorenzo 1	265	07/01/2022 23:55	07/04/2022 4:23	2.2	Planned Outage	Maintenance Outage
BIOF	IPower 2	10.8	07/01/2022 0:02			Planned Outage	Planned Outage
NATG	San Lorenzo 2	265	06/30/2022 23:27	07/04/2022 2:11	3.1	Planned Outage	Preparation for Net Dependable Capacity Test.
BIOF	South Negros	25	06/30/2022 20:09	07/13/2022 9:27	12.6	Forced Outage	Auto-tripped due to turbine problem
COAL	Kepco Salcon 1	103	06/29/2022 11:48	07/02/2022 17:26	3.2	Forced Outage	Manually cut-out due to possible boiler tube leak
HYD	Ambuklao 3	35	06/27/2022 8:05	07/01/2022 20:11	4.5	Planned Outage	Cooling fans installation for Main Power transformer No. 2 (41MVA) and commissioning for the Unit 3 uprating activities.
GEO	Upper Mahiao 3	32	06/15/2022 23:19	07/17/2022 16:29	31.7	Planned Outage	Part of Plant Testing (Economic Shutdown)
OIL	TPVI 3	6.8	06/21/2022 9:24	06/30/2022 13:37	9.2	Forced Outage	EMERGENCY CUT-OUT DUE TO STEAM LEAK AT STEAM COLLECTOR
COAL	TPC-Sangi 3	40.36	11/27/2021 0:07	07/15/2022 4:47	230.2	Maintenance Outage	BOILER REHAB
COAL	TPC-Sangi 2	20.38	11/27/2021 0:07	07/15/2022 4:47	230.2	Maintenance Outage	BOILER REHAB
GEO	Tiwi 1	60	11/30/2021 18:32			Forced Outage	Steam supply diverted to Unit 2.
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
COAL	SLPGC 1	150	06/17/2022 15:01	06/28/2022 23:06	11.3	Forced Outage	Cyclone separator HP bypass left side tube leak
BIOF	SCBE	7.4	05/06/2022 6:45			Forced Outage	Offline due to internal problem
HYD	San Roque 1	145	03/14/2022 0:01			Planned Outage	Plammed outage from 14 March--09 September 2022.
OIL	MGTPP	85	09/29/2021 16:52			Forced Outage	Tripped from 14MW due to turbine bearing shaft vibration
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
GEO	Leyte 1	41	05/18/2022 13:28	07/17/2022 9:01	59.8	Forced Outage	Emergency cut-out to effect repair of steam leak.
NATG	Ilijan B3	220	06/05/2022 0:01			Forced Outage	End of Cooperation Period of Ilijan NGPP.
NATG	Ilijan B2	190	06/05/2022 0:01			Forced Outage	End of Cooperation Period of Ilijan NGPP.
NATG	Ilijan B1	190	05/02/2022 20:08			Forced Outage	Malampaya Natural Gas Supply Restriction
NATG	Ilijan A3	220	06/04/2022 22:42			Forced Outage	End of Cooperation Period of Ilijan NGPP.
NATG	Ilijan A2	190	06/04/2022 19:45			Forced Outage	End of Cooperation Period of Ilijan NGPP.
NATG	Ilijan A1	190	06/04/2022 22:53			Forced Outage	End of Cooperation Period of Ilijan NGPP.
COAL	GNP Dinginin 2	668	06/10/2022 23:59	07/19/2022 11:01	38.5	Forced Outage	Manual turbine trip due to condenser tube leak
COAL	GN Power 2	316	06/18/2022 13:53	06/26/2022 2:45	7.5	Forced Outage	Affected by the tripping of Hermosa - BCCPP 230kV Lines 1 and 2
COAL	Calaca 2	300	11/18/2021 7:49			Forced Outage	Tripped due to generator stator ground fault
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.
HYD	Ambuklao 2	35	06/21/2022 8:01	06/26/2022 19:12	5.5	Maintenance Outage	Installation of cooling fan at unit transformer and commissioning for the uprating of unit.
HYD	Ambuklao 1	35	06/21/2022 8:01	06/26/2022 18:01	5.4	Maintenance Outage	Installation of cooling fan at unit transformer and commissioning for the uprating of unit.

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*