

Market Surveillance Committee Monthly Market Assessment Report

26 March 2023 to 25 April 2023

July 2023

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

MONTHLY MARKET ASSESSMENT REPORT

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MONTHLY MARKET ASSESSMENT REPORT

ASSESSMENT OF THE MARKET

NOTABLE HIGHLIGHTS

1. Relatively **lower levels of demand** during holidays due to the **observance of the Holy week** which translated to **lower prices**.
2. **Congestions in transmission lines and transformer equipment** resulted from the current design of the transmission system, as well as the N-1 contingency impositions by the System Operator (SO). Some notable congestions were as follows:
 - **Maasin-Ubay line 1** was congested for 2,946 intervals, or equivalent to 34% of the time, brought about by the frequent maximization of the line's capacity limit.
 - **Mexico-Hermosa lines 1&2** were congested for 1,348 and 1,672 intervals, or equivalent to 15% and 19% of the time, respectively, due to high demand situation.
 - **Samboan-Amlan line 1** was congested for 452 intervals, or equivalent to 5% of the time, similarly.

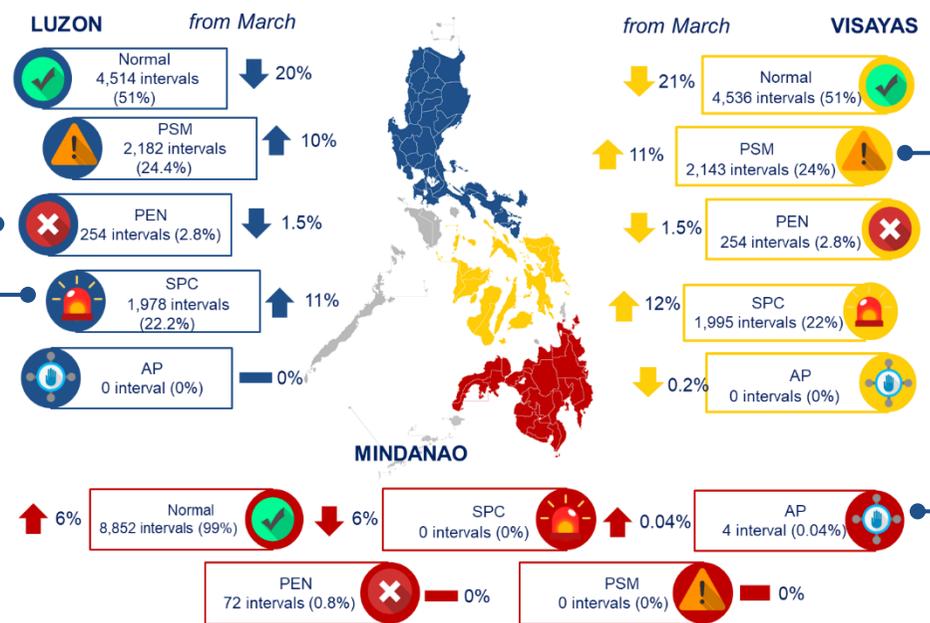
SUMMARY OF PRICING CONDITIONS

Pricing Error Notice (PEN)

- Issuances were due to inappropriate input data which affected prices and schedules both for Luzon and Visayas.
- Regional issuances for 72 intervals in Mindanao were likewise due to inappropriate input data which affected the resulting prices and schedules.

Secondary Price Cap (SPC)

- **System-wide:** increased impositions from last month due to depleted supply margin resulting in high market prices from 26 March to 02 April, and 19-22 April 2023.
- **Regional:** 3 intervals for Luzon and 20 intervals in Visayas region during those instances when the inter-connection between the two grids was unavailable



Price Substitution Methodology (PSM)

- System-wide issuance for 2,143 intervals on 28 March to 01-18 April, and 23-25 April 2023
- Issued to Luzon on 01, 04-05, 09-12, 14-18, and 24-25 April 2023, when the inter-connection between the grids was unavailable.

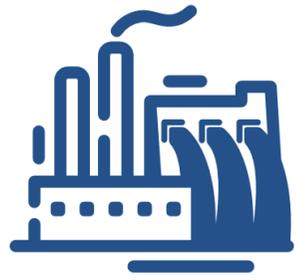
Market Intervention (MI) event was noted on 30 March 2023.

- This **affected intervals 1135H-1150H** when the SO initiated Market Intervention in Mindanao due to tripping of Agus5-Aurora 138kV Line followed by tripping of multiple WMPC units resulting to manual load dropping.

MONTHLY MARKET ASSESSMENT REPORT

MARKET OUTCOME: LUZON AND VISAYAS

EFFECTIVE SUPPLY



12,589
MW
(12,050MW in March)

DEMAND PLUS RESERVE SCHEDULE



11,903
MW
(11,422MW in March)

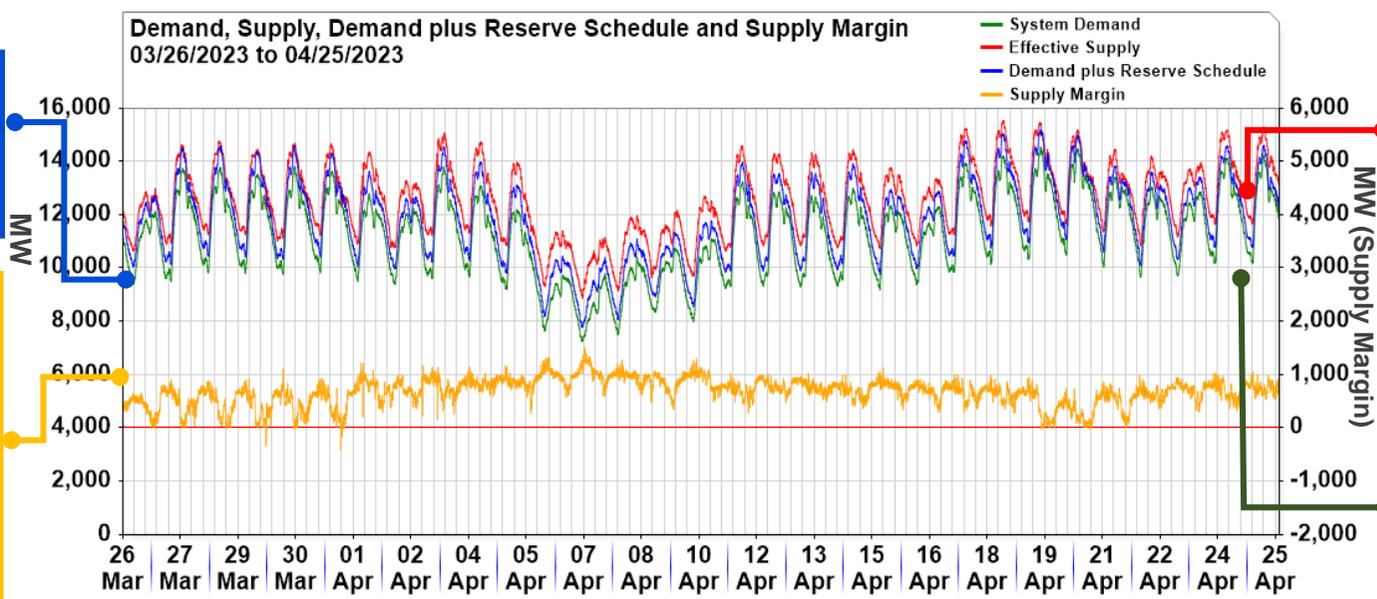
SUPPLY MARGIN



687
MW
(629 MW in March)

Demand plus Reserve Schedules increased by an average of 4.2% mainly caused by the onset of summer season which influenced the electricity consumption for the month.

Supply Margin improved by 9.2% considering the dynamics between the supply and demand. The observance of holidays during holy week when the demand levels were relatively low, contributed to the improvement in the supply margin outcome. Meanwhile, episodes of thin supply margin were observed during instances of abrupt change in the supply level due to, among others, forced outages and other technical limitations experienced by the generator participants.



Effective Supply increased by 4.5% highly related to the decrease in the capacities on outage this month. The lesser ramp limited capacities this billing period, as considered in the determination of the effective supply, likewise contributed to the resulting higher effective supply for this billing period.

System Demand increased by 8.3% also caused by the onset of summer season.

MONTHLY MARKET ASSESSMENT REPORT

MARKET OUTCOME: MINDANAO

EFFECTIVE SUPPLY



↓
2,123
MW
(2,356MW in March)

DEMAND PLUS RESERVE SCHEDULE



↓
1,910
MW
(1,960MW in March)

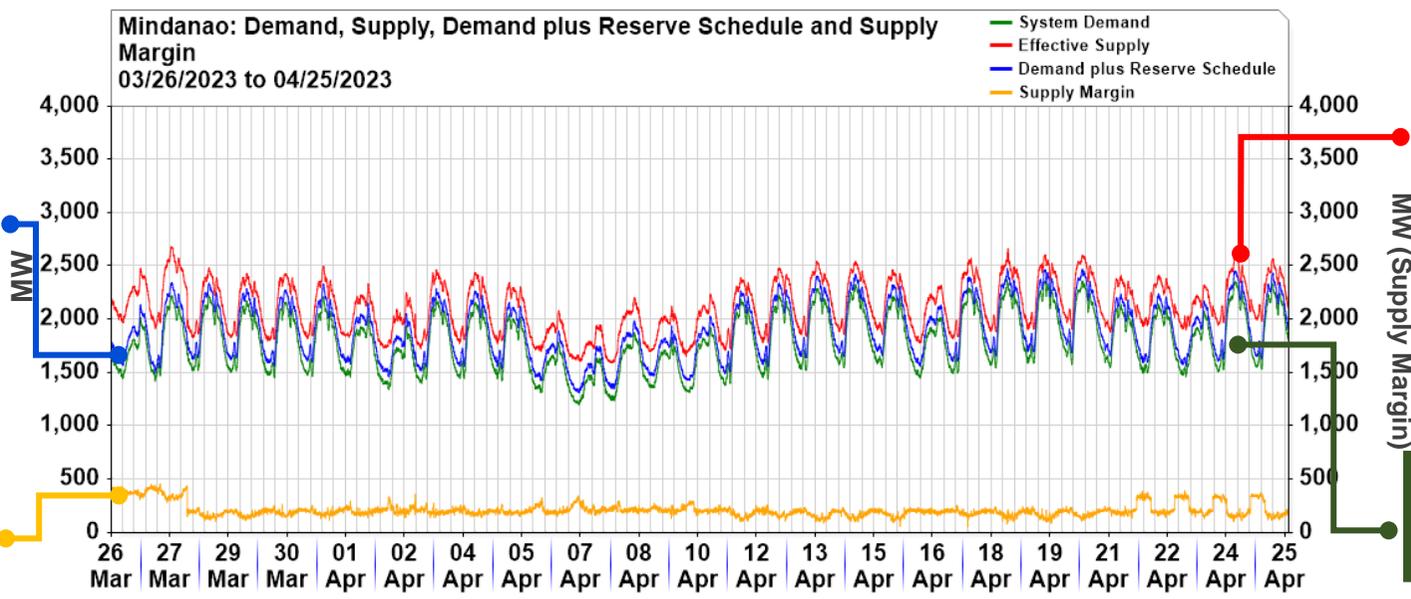
SUPPLY MARGIN



↓
213
MW
(395MW in March)

Demand plus Reserve Schedules slightly dipped by an average of 2.6%, even with the onset of summer season, mainly attributable to the observance of long holidays such as the holy week where the demand were relatively low. The level of reserve schedule was likewise lower this month as compared to last month.

Supply Margin decreased by 46.2% considering the dynamics between the supply and demand. Episodes of thin supply margin was observed during instances of abrupt change in the supply level due to, among others, forced outages and other technical limitations experienced by the generator participants.



Effective Supply decreased by 9.9% due to the noted increase in the ramp limited capacities even with the observed decrease in the level of capacities on outage this month.

System Demand increased by 2.7% also caused by the onset of summer season.

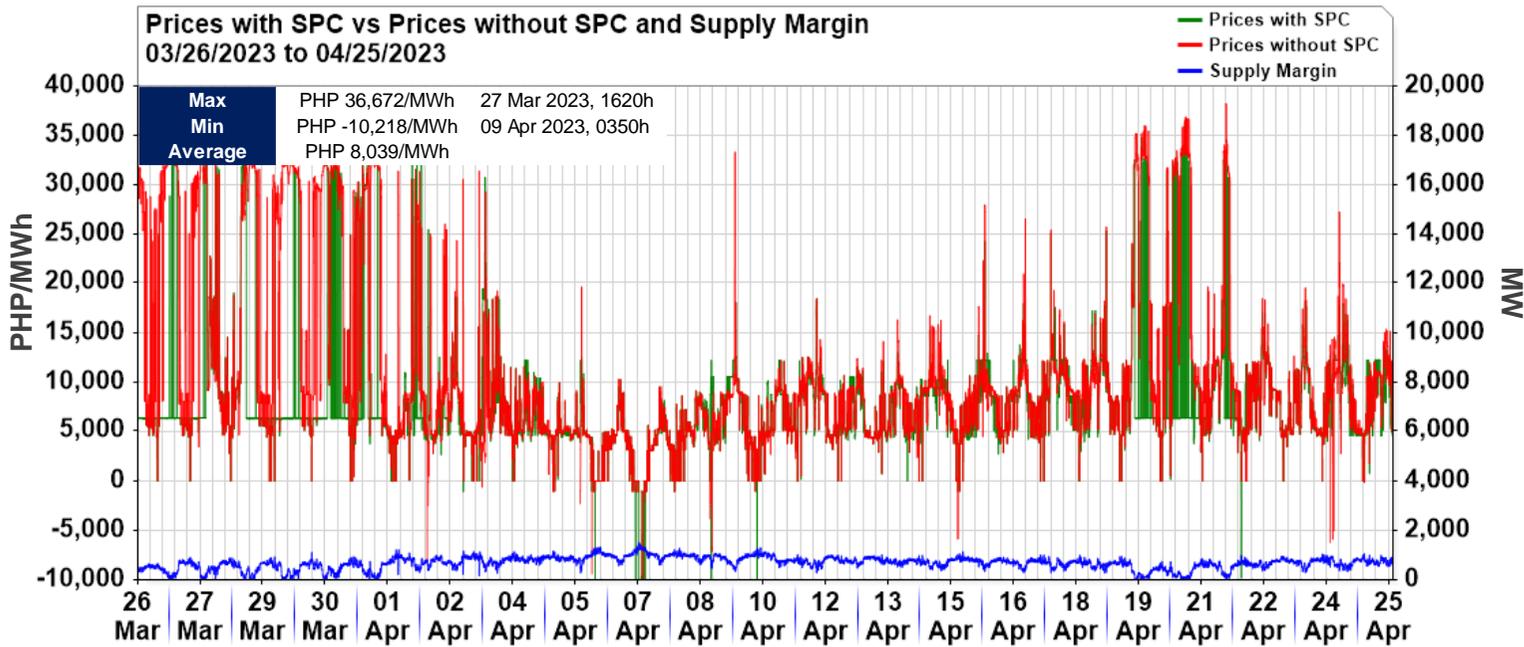
MONTHLY MARKET ASSESSMENT REPORT

MARKET OUTCOME: LUZON AND VISAYAS

Zone	Average LWAP (PHP/MWh)
NLUZON	7,608.89
MMANILA	7,693.80
SLUZON	7,621.31
LEYTE	7,856.14
CEBU	7,694.64
NEGROS	7,897.21
BOHOL	10,391.92
PANAY	7,982.73

Given the dynamics between the supply and demand, the level of market prices increased by 17% or was noted to be at an average of PHP 7,693/MWh from PHP 6,575/MWh last billing period. The estimated monthly average price would have been at PHP10,887/MWh if SPC was not imposed to the relevant trading intervals. Based on a year-on-year comparison, the average market price posted a 23% increase from an average price of PHP 6,261/MWh last year. While it was noted that the capacities on outages in April 2023 billing period was higher than the same period of last year, the increase on the price was mainly brought about by the increase in the level of system demand, while the supply remained relatively close to its level last year.

Congestions in Leyte-Bohol interconnection were still persistent this billing month due to the tight supply situation in the Bohol grid which, in turn, continuously affected the power rates in the area causing the disparity, as depicted in the table of prices provided in this portion.



PRICE

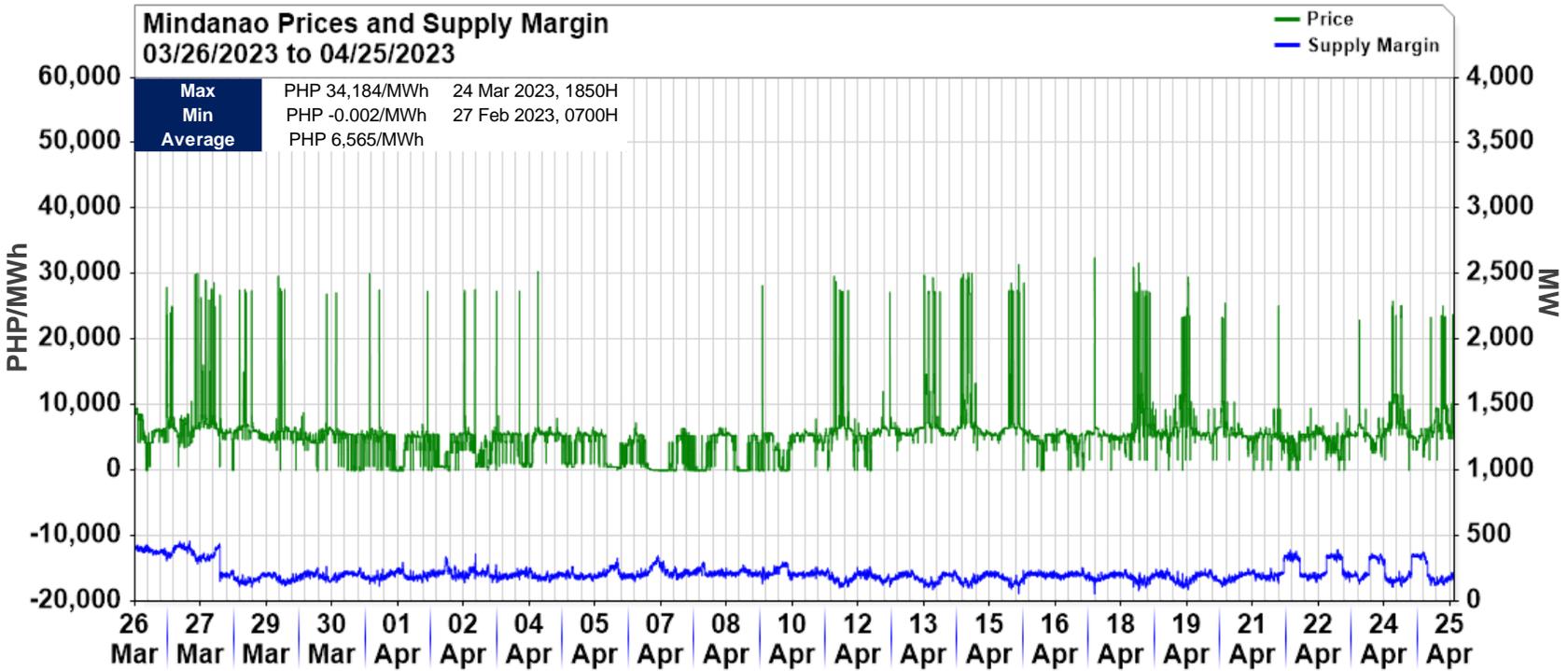
7,693
PHP/MWh
(PHP6,575/MWh in March 2023)

MONTHLY MARKET ASSESSMENT REPORT

MARKET OUTCOME: MINDANAO

Zone	Average LWAP (PHP/MWh)
LANAO	2,451.95
NCENTMIN	2,462.90
NEASTMIN	2,506.97
NWESTMIN	2,527.64
SEASTMIN	2,489.71
SWESTMIN	2,502.22

For the Mindanao region, the level of market prices for April 2023 billing period was noted to have decreased, when compared to last month, by an average of 16.7%. Episodes of price spikes were mainly brought about by the abrupt changes in the supply due to forced outages of baseload power plants in the region which led for Oil-based power plants with high offered prices to be dispatched in the WESM.



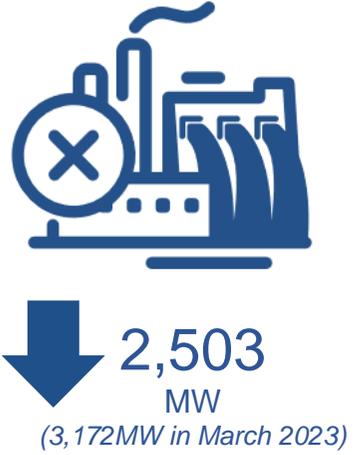
PRICE

5,467
PHP/MWh
(PHP6,565/MWh in March 2023)

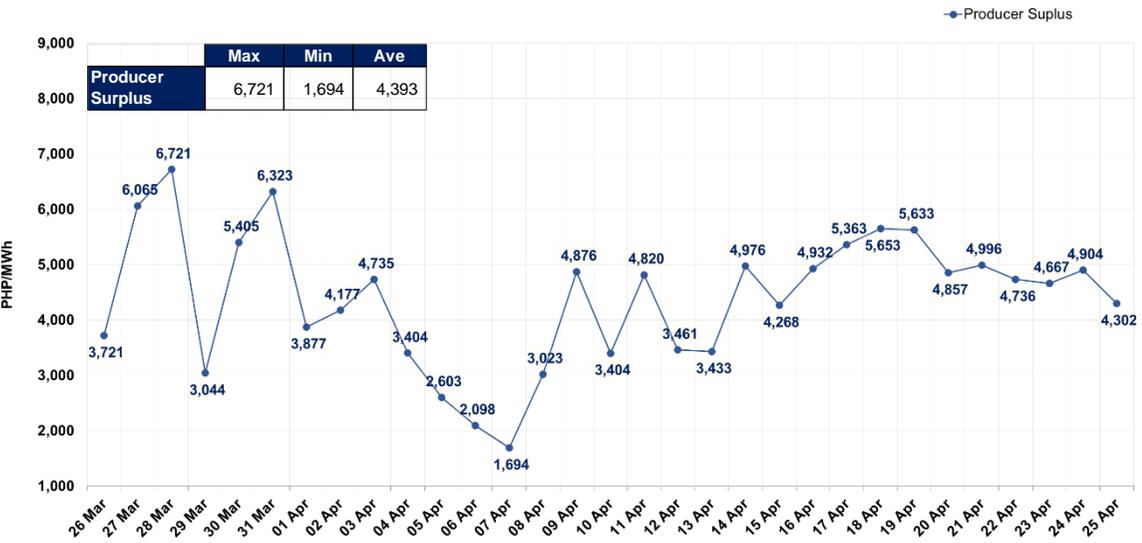
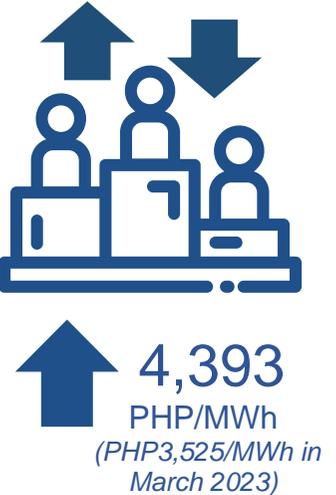
MONTHLY MARKET ASSESSMENT REPORT

MARKET OUTCOME: LUZON AND VISAYAS

RAMP LIMITED CAPACITY



PRODUCER SURPLUS



Producer/generator surplus had a 25% increase as compared to March 2023 billing period which was affected by the changes in the offered and resulting prices in the market. Offers from Coal and Hydro power plants had the most significant changes in the offer pattern which likewise contributed to the noted changes.

For the month of April 2023, **ramp-limited capacities** decreased, on average, by 7%, in consideration of the submitted ramp rates from the generators which were subsequently considered in the optimization of the market.

Interestingly, during the Holy week, there was a noted increase in the supply margin in spite of the observed changes in the submitted ramp rates from some generators which contributed to the increased level of ramp limited capacities.

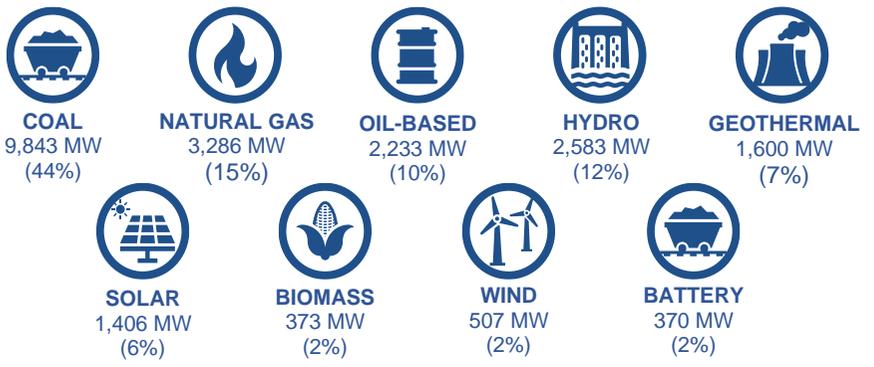
MONTHLY MARKET ASSESSMENT REPORT

CAPACITY PROFILE

Luzon-Visayas					
Status	Market Participant Name	Market Trading Node	Plant Type	Pmax (MW)	Change (MW)
				New	
Decreased	RASLAG Corp.	01RASLAG_G03	Solar	13.4	(1.6)
	AP Renewables Inc.	03TIWI_C	Geothermal	113.8	(0.2)
	Energy Development Corporation	04LEYTE_A	Geothermal	490.1	(47.9)
	Energy Development Corporation	06NASULO_G01	Geothermal	47.5	(0.8)
	Green Core Geothermal Inc.	06PAL2A_U03	Geothermal	19.5	(0.5)
Mindanao					
Decreased	GN Power Kauswagan Ltd. Co.	10GNPK_U04	Coal	151	(0.4)
TOTAL					(51.4)

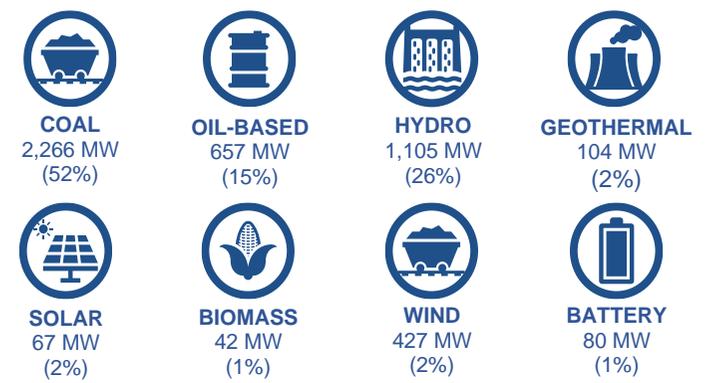
LUZON-VISAYAS

The WESM's registered capacity in Luzon and Visayas recorded changes for the April 2023 billing period from 22,251.5 MW to 22,200.5 MW due to the decreased in the capacity of Solar and Geothermal power plants.



MINDANAO

The WESM's registered capacity in Mindanao for the April 2023 billing period posted a minimal change from 4,320.5 MW last month to 4,320.1 this month.

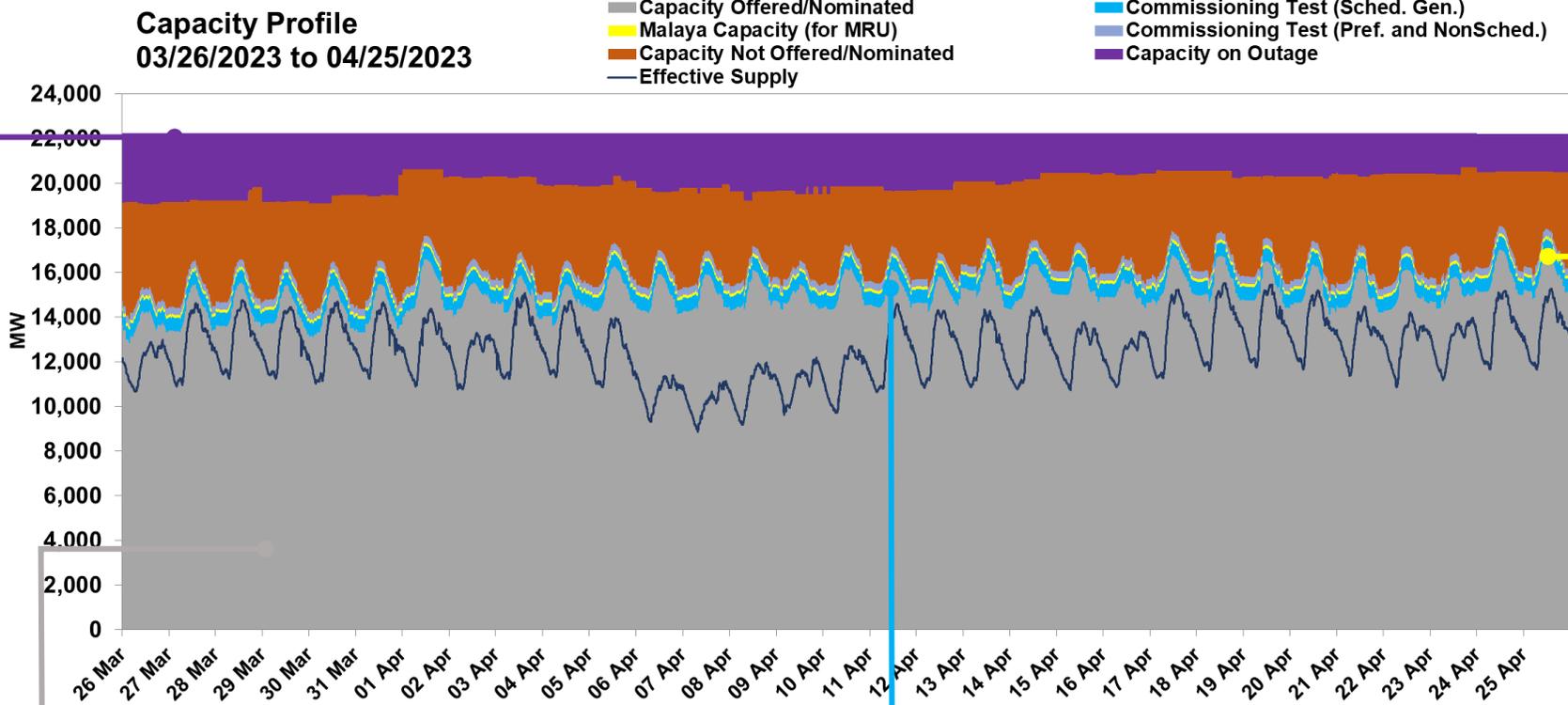


MONTHLY MARKET ASSESSMENT REPORT

CAPACITY PROFILE: LUZON-VISAYAS

Capacity on Outage (10% of Registered Capacity) decreased by 20.2%, which was mostly due to the resumption of plants that were under planned outage category.

Capacity NOT Offered/Nominated (18% of Registered Capacity) increased by 2.7% or from an average of 3,870 MW last billing period to 3,976 MW which is mostly attributable to resource constraints.



Capacity Profile
03/26/2023 to 04/25/2023

- Capacity Offered/Nominated
- Capacity Not Offered/Nominated
- Capacity on Outage
- Commissioning Test (Sched. Gen.)
- Commissioning Test (Pref. and NonSched.)
- Effective Supply

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

Capacities Offered/Nominated (67% of Registered Capacity) increased by 3.1% or was noted at an average of 14,958 MW as compared to last billing period's 14,508 MW. The graph depicts that the high level of capacities on outage, as aggravated by high level of ramp limited capacities would result in lower levels of effective supply. This is not the case when lower levels of ramp limited capacities were noted in the system.

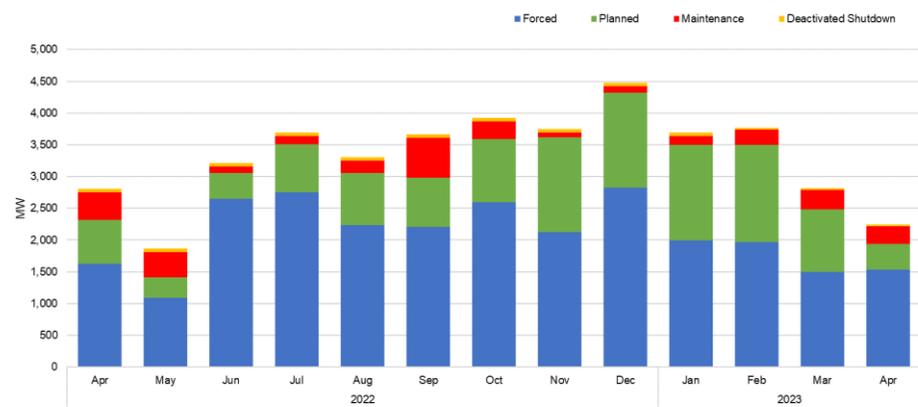
Capacities under Commissioning Test (4% of Registered Capacity) increased from 833 MW to 934 MW this billing period, noting the extension of power plants in their test and commissioning period.

Malaya Capacity as MRU (1% of Registered Capacity) retained its level at 130 MW.

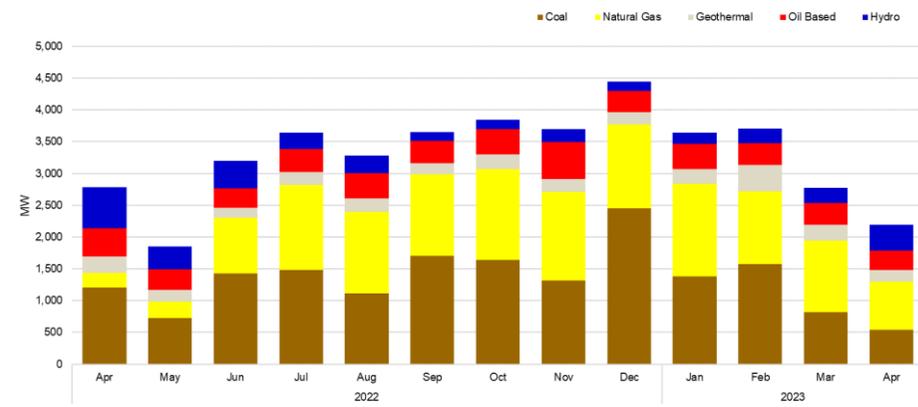
MONTHLY MARKET ASSESSMENT REPORT

CAPACITY PROFILE: LUZON-VISAYAS

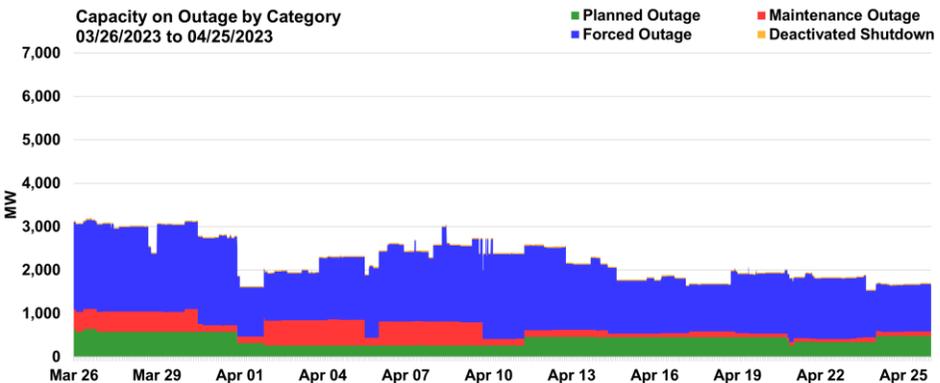
CAPACITY ON OUTAGE BY CATEGORY



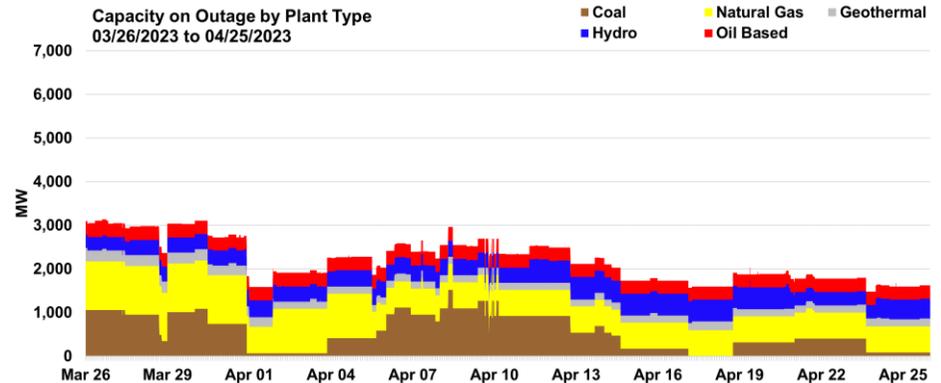
CAPACITY ON OUTAGE BY PLANT TYPE



Capacity on Outage by Category
03/26/2023 to 04/25/2023



Capacity on Outage by Plant Type
03/26/2023 to 04/25/2023



The April 2023 billing period opened with a relatively high level of capacities on outage at around 3,100MW coming from the latter part of the previous billing period. Outage levels eventually decreased following the resumption all power plants, due to the DOE's prohibition on planned and maintenance outages during the summer season, except for Hydro which are allowed to be on outage in consideration of the availability of its water supply. As the month ended, the outage level was at an average of about 1,600 MW.

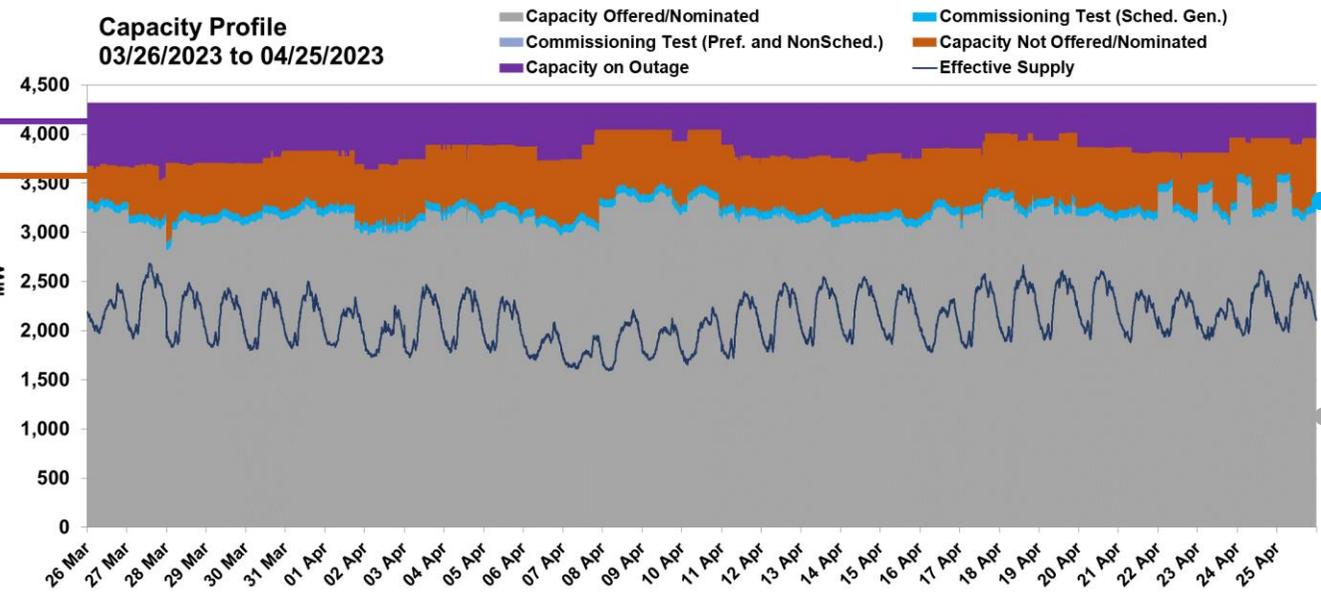
The recorded average capacities on outage were mainly attributed to forced outage category.

MONTHLY MARKET ASSESSMENT REPORT

CAPACITY PROFILE: MINDANAO

Capacity on Outage (11% of Registered Capacity) decreased from an average of 663MW last month to 485MW this month due to the changes in the outage levels from Coal and Hydro power plants.

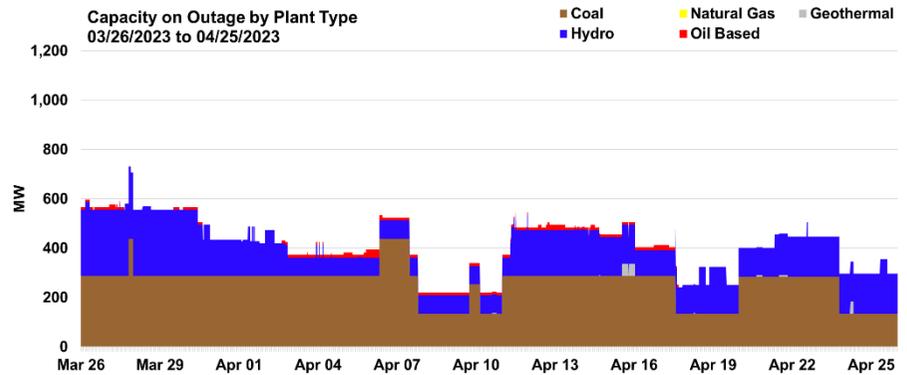
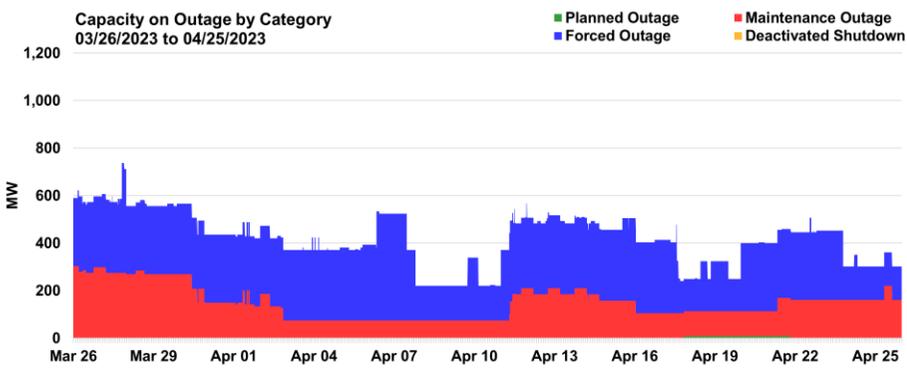
Capacity NOT Offered/Nominated (13% of Registered Capacity) increased by 42% or from an average of 404 MW last billing period to 574 MW which is attributable to resource constraints.



Capacities under Commissioning Test (2% of Registered Capacity) decreased by an average of 13.4% or from an average of 92MW last month to 80MW this billing period due to expired PCATC of 1 battery plant.

Capacities Offered/Nominated (74% of Registered Capacity) increased by 0.6% or was noted at an average of 3,181 MW as compared to last billing period's 3,161 MW.

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



Capacities on outage in the Mindanao region for the March 2023 billing period opened with a relatively high level of capacities at around 600MW due to the outages from Coal and Hydro power plants under forced outage category. Outage level eventually declined by an average of 300MW towards the end of the month.

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

MONTHLY MARKET ASSESSMENT REPORT

MARKET TRANSACTIONS

BILATERAL CONTRACT QUANTITIES



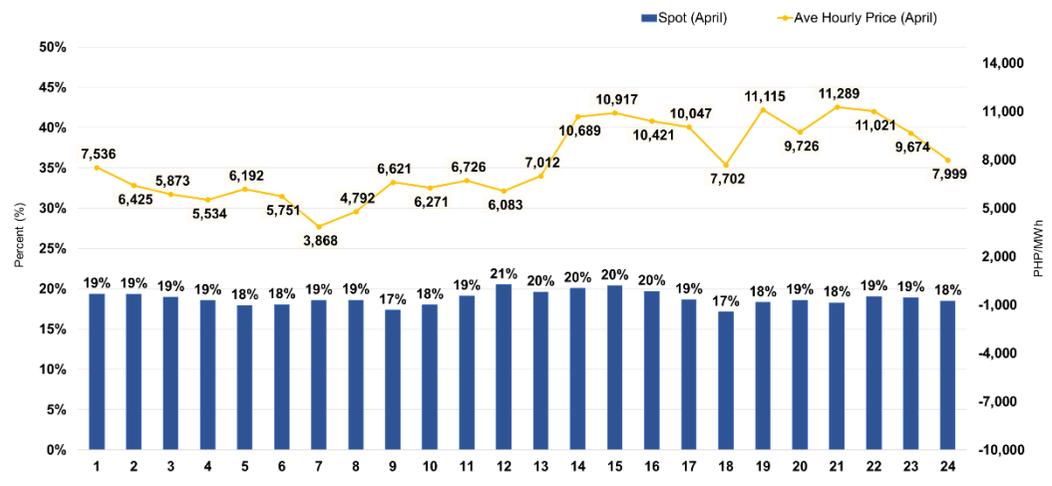
81.1%
(78.2% in March 2023)

SPOT EXPOSURES

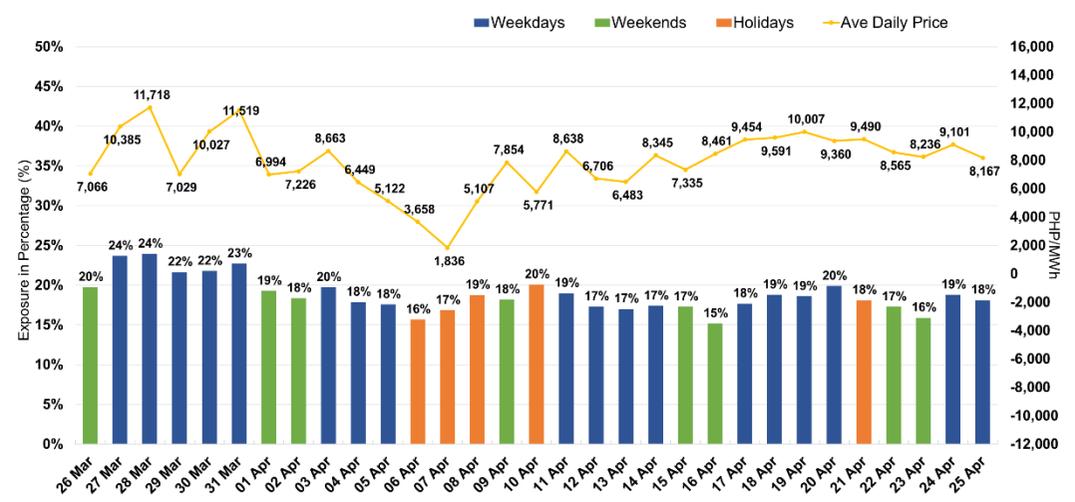


18.9%
(21.8% in March 2023)

HOURLY SPOT



DAILY SPOT

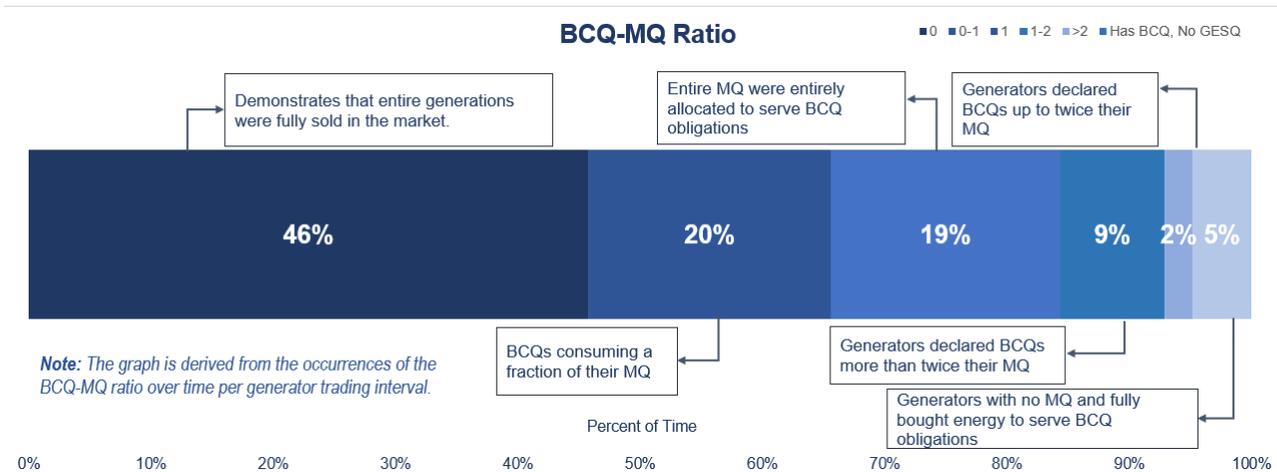


Total spot quantities of generator participants in April were at an average of 18.6% with an average price of PHP6,820/MWh during off-peak hours and 19.1% with an average price of PHP9,806/MWh during peak hours.

Spot exposures during weekdays averaged at 22.2% having an average price of PHP8,756/MWh while it was 20.8% during the weekends at an average price of PHP7,722/MWh.

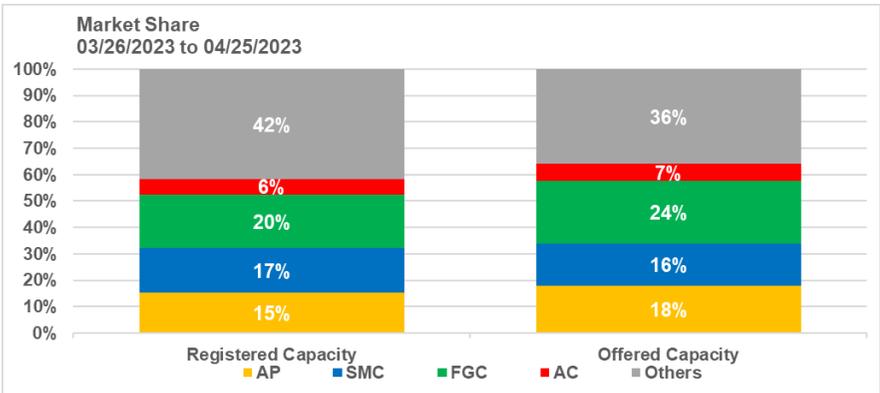
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MARKET TRANSACTIONS



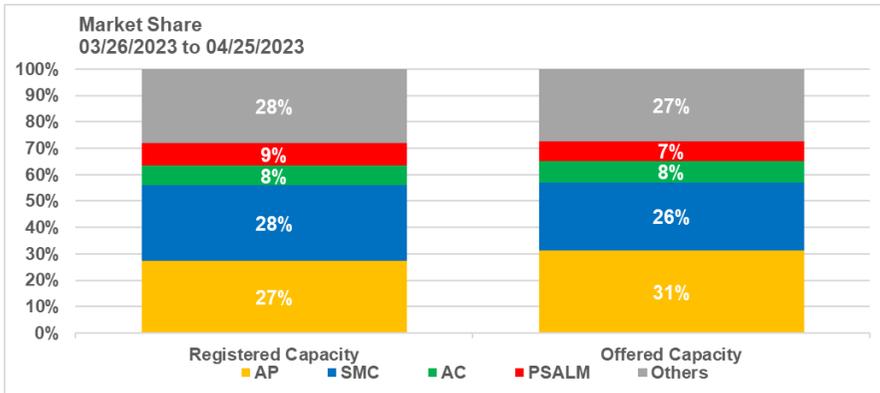
STRUCTURAL COMPETITION INDICES

MARKET SHARE: LUZON-VISAYAS



Aboitiz Power (AP), San Miguel Corporation (SMC), First Gen Corporation (FGC), and Ayala Corporation (AC) dominated the market with their combined market shares comprising 58% of the total registered capacities in the WESM. The shares of the major participant remained similarly close to previous billing period.

MARKET SHARE: MINDANAO

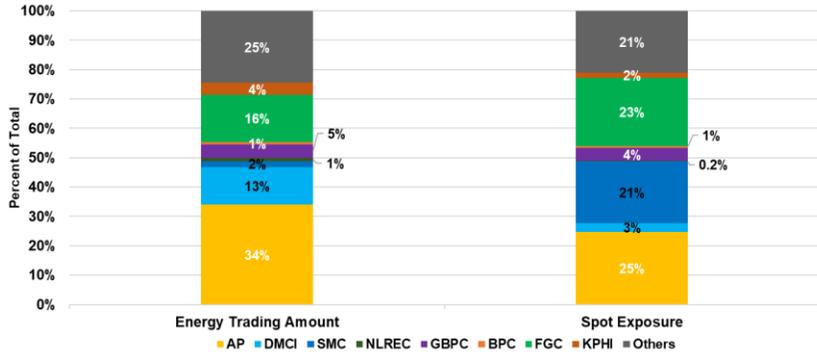


Aboitiz Power (AP), San Miguel Corporation (SMC), Ayala Corporation (AC), and Power Sector Assets and Liabilities Management (PSALM) dominated the market in Mindanao with their combined market shares comprising 72% of the total registered capacities in the WESM.

Note: The Major Participant Grouping information used in this report is consistent with the ERC's list.

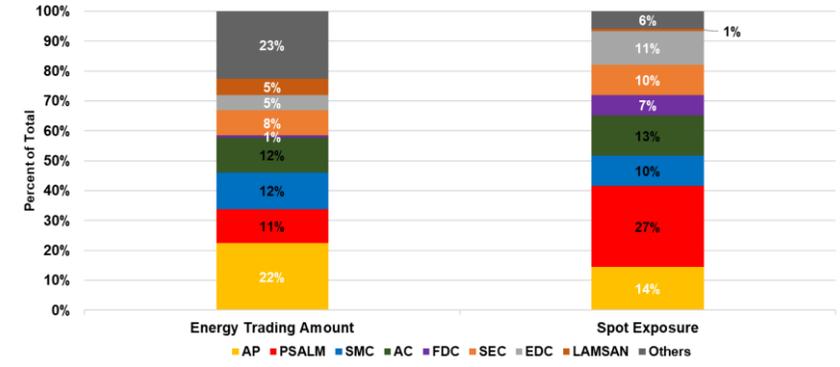
MONTHLY MARKET ASSESSMENT REPORT

ENERGY TRADING AMOUNT (ETA): LUZON-VISAYAS



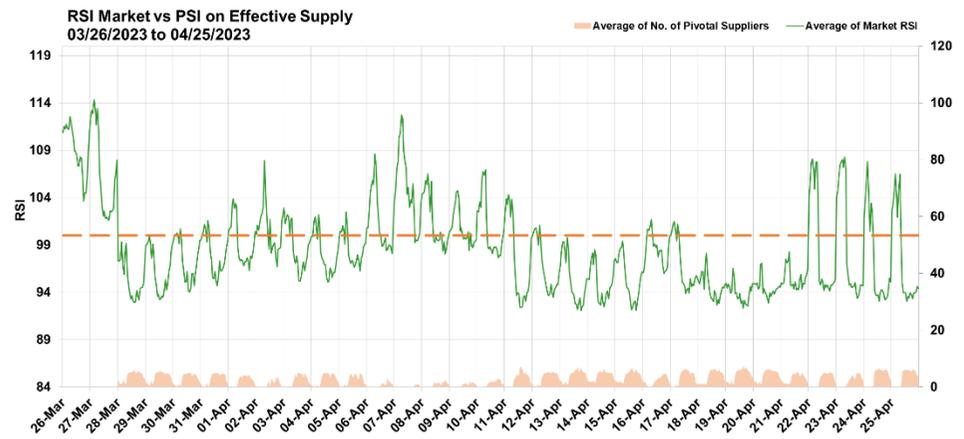
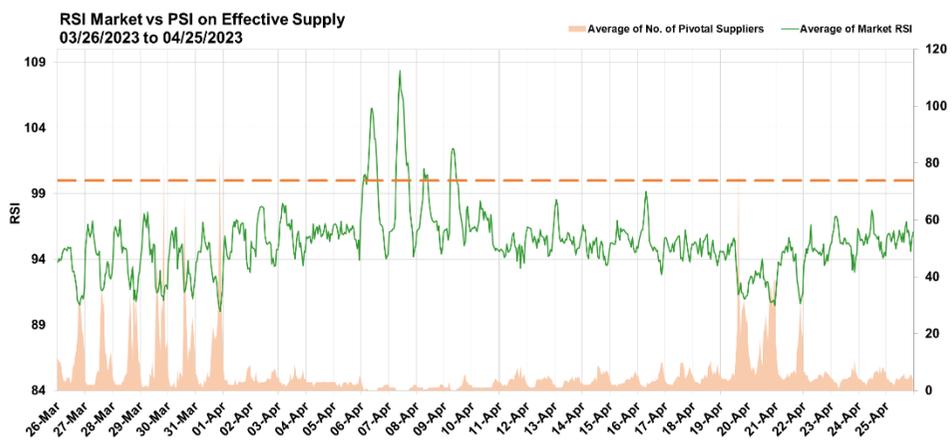
The top 4 participants with highest shares in terms of ETA and spot exposure comprised about 68% of the total shares in both measures.

ENERGY TRADING AMOUNT (ETA): MINDANAO



The top 4 participants with highest shares in terms of ETA and spot exposure comprised about 58% of the total shares in both measures.

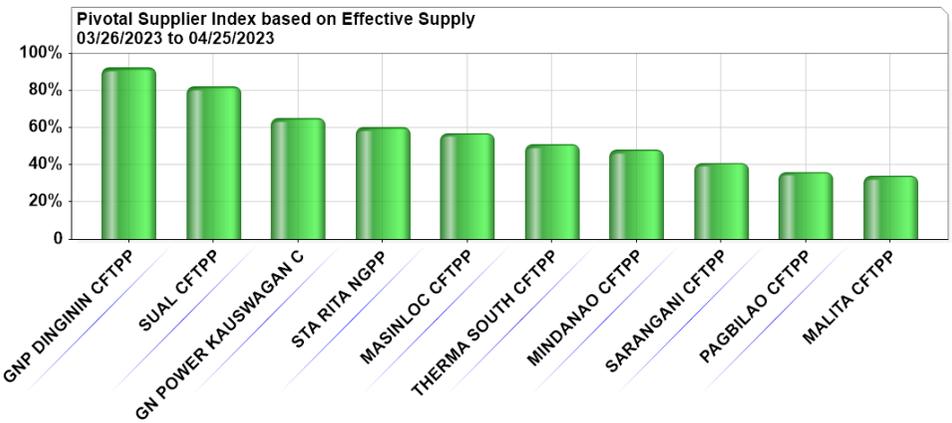
MARKET RSI



- The market Residual Supply Index (RSI) was below the 100% mark for about 95.8% of the time this billing period compared to 96.1% last period, signifying the presence of pivotal plants in Luzon and Visayas.
- During the period, the market resulted in RSIs ranging from 90% to 108.4% and averaged at 95.3%. The average market prices for intervals with RSI below 100% was PHP8,257/MWh, while those with RSIs above 100 was at PHP1,274/MWh.
- Meanwhile, the market RSI in the Mindanao region was below the 100% mark for about 69% of the time signifying relatively lowers instances of pivotal plants' presence in the region.

MONTHLY MARKET ASSESSMENT REPORT

STRUCTURAL COMPETITION INDICES



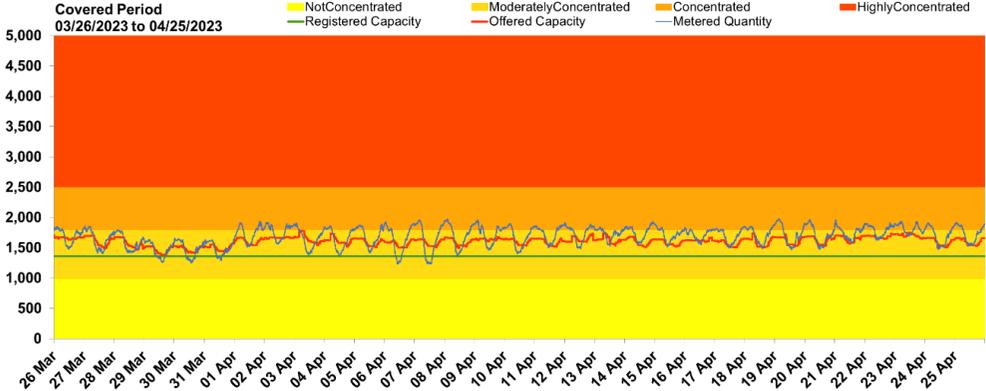
PIVOTAL PLANTS

- A total of 188 power plants were pivotal during the period from 187 last month, with 70% or 131 plants coming from Luzon and 57 plants from Visayas.
- The noted increase in effective supply influenced the resulting RSI and the number of pivotal suppliers per dispatch interval.
- The Mindanao region has only 11 pivotal suppliers for the period.

MARKET HHI: LUZON-VISAYAS

Herfindahl-Hirschman Index (HHI), by major participant grouping.

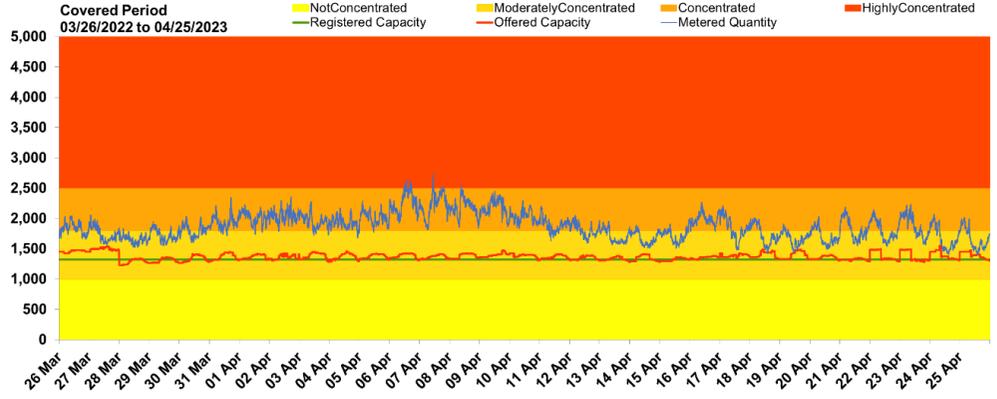
- Based on Offered Capacity, the market is **moderately concentrated** for the entire period (8,928 intervals).
 - o This was brought about by the effects of **changes in the availability of generators** based on technical limitations of the plants and capacities on outages which subsequently affected the resulting market shares.
- Based on Metered Quantities, the market is a **moderately concentrated market** 68% of the time (6,110 intervals) and **concentrated market** for 32% of the time or for 2,818 intervals.
 - o Three (3) major participant groups have consistently covered more than 50% of the MQ shares which were due to their frequent dispatch and subsequently affected the resulting market concentration.
- Based on Registered Capacity, the market is **moderately concentrated** for April 2023 billing period.



MARKET HHI: MINDANAO

Herfindahl-Hirschman Index (HHI), by major participant grouping.

- Based on Offered Capacity, the market is **moderately concentrated** for 100% of the time (8,928 intervals).
- Based on Metered Quantities, the market is **moderately concentrated market** 39.7% of the time (3,542 intervals) and **concentrated market** for 60% of the time or for 5,349 intervals as affected by the actual dispatch of the generators.
- Based on Registered Capacity, the market is **moderately concentrated** for April 2023 billing period.



MONTHLY MARKET ASSESSMENT REPORT

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
- **Pivotal Suppliers**
 - The market measures how critical a particular generator is in meeting the total demand at a particular time, taking into consideration the variables that change dynamically, mainly demand (energy withdrawn), required spinning (or operational) reserve and generation availability.
- **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.

MONTHLY MARKET ASSESSMENT REPORT

Annex A. List of Major Plant Outages

Plant Type	Plant/ Unit Name	Capacity (MW)	Date Out	Date In	Duration (Days)	Outage Type	Remarks
Luzon							
COAL	Calaca 2	300	04/07/2023 23:48	04/14/2023 15:12	7	Forced Outage	Emergency shutdown due to boiler tube leak.
COAL	Masinloc 2	344	04/03/2023 20:47	04/09/2023 15:36	6	Forced Outage	Unplanned shutdown due to boiler tube leak.
COAL	ANDA 1	72	03/30/2023 0:05	04/14/2023 7:32	15	Maintenance Outage	Maintenance outage to facilitate repair of governing valve seat.
COAL	QPPL	460	03/17/2023 19:52	03/28/2023 16:46	11	Forced Outage	Emergency shutdown due to boiler tube leak.
GEO	Tiwi 1	60	11/30/2021 18:32			Forced Outage	Steam supply diverted to Unit 2.
GEO	Makban 6	30	04/11/2023 22:44			Deactivated Shutdown	Conducted Gas compressor test.
GEO	Makban 1	57	03/18/2023 7:04	03/26/2023 1:35	8	Planned Outage	Planned Outage Gas Removal System (GRS) Commissioning
GEO	Bacman 1	60	03/12/2023 0:03	04/01/2023 21:27	21	Planned Outage	Planned Outage.
HYD	San Roque 3	145	04/24/2023 0:00			Planned Outage	Planned outage as per GOP.
HYD	Magat 4	97	04/11/2023 7:01			Planned Outage	Planned outage until May 10 2023.
HYD	Magat 3	97	04/11/2023 7:01			Planned Outage	Planned outage until May 10 2023.
HYD	Ambuklao 1	37.5	03/31/2023 19:26	04/12/2023 0:01	11	Forced Outage	Due to low water reservoir
HYD	Magat 2	97	03/16/2023 0:00	04/20/2023 21:04	36	Planned Outage	Planned outage until April 20 2023.
HYD	Magat 1	97	03/16/2023 0:00	04/20/2023 19:21	36	Planned Outage	Planned outage until April 20 2023.
HYD	Caliraya 1	14	03/17/2023 0:00	04/13/2023 21:24	28	Planned Outage	Planned outage until March 26 2023.
HYD	Angat M 4	50	02/14/2022 0:00			Planned Outage	Planned outage.
HYD	Angat M 3	50	11/02/2021 8:15			Forced Outage	Draw-out of Main Unit 3 generator breaker.
NATG	Sta. Rita 2	255.7	03/17/2023 23:09	03/31/2023 23:55	14	Forced Outage	Tripped due to gas turbine protection activation.
NATG	Sta. Rita 1	257.3	03/17/2023 23:53	03/31/2023 21:46	14	Planned Outage	On planned outage until March 29 2023.
NATG	Ilijan B3	220	06/05/2022 0:00			Forced Outage	End of Cooperation Period of Ilijan NGPP.
NATG	Ilijan B2	190	06/05/2022 0:00			Forced Outage	End of Cooperation Period of Ilijan NGPP.
NATG	Ilijan B1	190	05/02/2022 20:08			Forced Outage	End of Cooperation Period of Ilijan NGPP.
OIL	SLPGC 4	25	02/10/2022 18:07			Forced Outage	Due to low turbine lube oil supply. IEMOP deregistration effective on August 25 2022.
OIL	SLPGC 3	25	01/22/2022 21:39			Forced Outage	Declared unavailable due to turbine lube oil sump metal chips detected. IEMOP deregistration effective on August 25 2022.
OIL	MGTPP	85	09/29/2021 16:52			Forced Outage	Tripped from 14MW due to turbine bearing shaft vibration. IEMOP deregistration effective December 25 2021.
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
Visayas							
BAT	Kabankalan Bat	20	04/19/2023 15:26			Forced Outage	Auto-tripped due to Damaged 13.8kV PCB
BIOF	FFHC	9	04/23/2023 13:03			Maintenance Outage	Offline due to weekly maintenance.
BIOF	SCBE	7.4	03/31/2023 10:35			Maintenance Outage	Offline ongoing plant testing.
BIOF	VMC	2.5	03/13/2022 9:38			Maintenance Outage	Offline due to weekly maintenance.
BIOF	South Negros	25	12/12/2022 17:41			Forced Outage	Offline due to unavailability of bagasse.
COAL	PEDC 2	83.7	04/21/2023 1:06			Maintenance Outage	Under PMS
COAL	PEDC 2	83.7	04/21/2023 1:06			Planned Outage	Under PMS
COAL	THVI 2	169	04/09/2023 9:24	04/17/2023 3:09	8	Forced Outage	Unit tripped due to boiler furnace pressure high-high Possible Tube Leak
GEO	Malitbog 2	72	01/21/2023 0:13			Maintenance Outage	CUT OUT
OIL	PDPPI Unit 1	5	04/25/2023 18:16			Forced Outage	Internal Problem.
OIL	CENPRI 4	6.7	04/19/2023 18:18			Forced Outage	Offline due to overheating of right bank cylinders.
OIL	TPC Carmen 3	10	04/04/2023 17:02	04/12/2023 0:03	7	Forced Outage	Tripped with indication at the protection of oil mist
OIL	TPVI 1	6.7	12/06/2022 21:54			Forced Outage	Heavy water leak
Mindanao							
BIOF	14TACUR	6	04/22/2023 16:05			Forced Outage	SPGI was not able to start (from unplanned outage) due to boiler problem.
COAL	GNKP U1	151.9	04/10/2023 23:38	04/17/2023 13:50	7	Forced Outage	Manually shutdown due to suspected Boiler Tube leak.
COAL	MCC U3	55	01/28/2023 0:00			Maintenance Outage	Maintenance schedule (Non-GOP) from January 28 to March 13 2023 extended until May 29 2023.
COAL	GNKP U3	151.3	03/23/2023 17:12	04/07/2023 19:05	15	Forced Outage	Manually shutdown due to suspected Boiler Tube Leak. ETC None.
COAL	FMP U2	135	02/01/2022 22:08			Forced Outage	Extended PMS. ETC May 05 2023.
HYD	AG5 U2	27.5	04/21/2023 8:05			Maintenance Outage	PMS (GOMP). ETC May 01 2023 0800H.
HYD	AG5 U1	27.5	04/21/2023 8:05			Maintenance Outage	PMS (GOMP). ETC May 01 2023 0800H.
HYD	AG6 U2	31.1	04/11/2023 10:19			Maintenance Outage	PMS (GOMP). ETC May 8 2023.
HYD	PG4 U1	75	03/23/2023 7:03			Maintenance Outage	APMS(GOMP). ETC 05/06/2023 at 0759H.
HYD	BHP U0	6.6	03/13/2023 7:00	04/02/2023 19:00	21	Maintenance Outage	PMS (Non-GOP). ETC April 03 2023 0700H.
OIL	WMPC Unit 4	10.7	04/02/2023 13:32	04/17/2023 17:00	15	Forced Outage	Unplanned outage. Indication Generator differential alarm.

Notes:

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