

Market Surveillance Committee Monthly Market Assessment Report

26 April 2023 to 25 May 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 – May 2023

MONTHLY MARKET ASSESSMENT REPORT

ASSESSMENT OF THE MARKET

NOTABLE HIGHLIGHTS

1. Implementation of **single Settlement for WESM trading participants in Luzon, Visayas, and Mindanao grids** pursuant to DOE Advisory dated 11 May 2023.
2. **New all-time highest peak demand recorded on 09 May 2023, 1350H at 14,854 MW** from 14,358 MW last year on 12 May 2022, 1440H.
3. **Grid was placed under red and yellow alert levels** due to forced outages from various power plants.
4. **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 3,991 intervals, or equivalent to 46% of the time, brought about by the frequent maximization of the line's capacity limit.
 - **Mexico-Hermosa lines 1&2** were congested for 1,543 and 2,053 intervals, or equivalent to 18% and 24% of the time, respectively, aggravated by the high demand situation.
 - **Samboan-Amlan line 1** was congested for 401 intervals, or equivalent to 5% of the time.

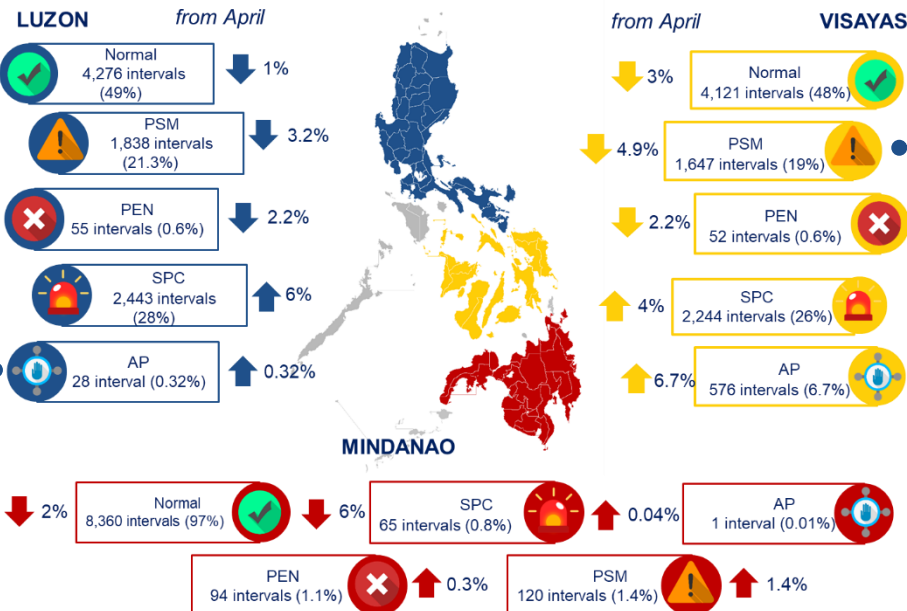
SUMMARY OF PRICING CONDITIONS

Pricing Error Notice (PEN)

- Issuances were due to inappropriate input data which affected prices and schedules both for Luzon and Visayas
- Regional issuances for 41 intervals in Luzon, 38 intervals in Visayas, and 80 intervals in Mindanao were likewise due to inappropriate input data which also affected the resulting prices and schedules

Market Intervention (MI) events were declared during the billing period:

- This affected intervals **1135H-1150H** when the SO declared MI in Luzon due to generation deficiency resulting in the implementation of Manual Load Dropping (MLD) (**08 May 2023**)
- MO initiated MI in all regions due to error in publication of RTD results (**16 May 2023**)



Price Substitution Methodology (PSM)

- Issuances of PSM were due to Network Congestions (**26 April to 18 May, 22-23, and 25 May 2023**)
- Regional issuances occurred when the inter-connection between the grids was unavailable (**08 May 2023**)

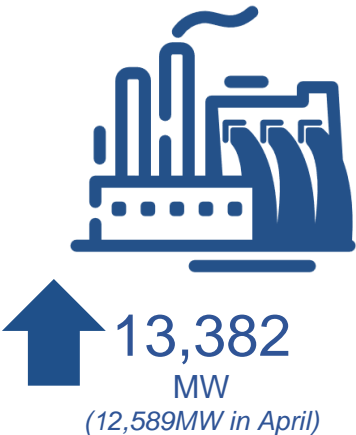
Secondary Price Cap (SPC)

- **System-wide:** increased issuances from last month due to depleted supply margin resulting in high market prices on 23 May 2023
- **Regional:** issuances in Luzon, Visayas, and Mindanao regions were observed during those instances when the inter-connection between the grids was unavailable

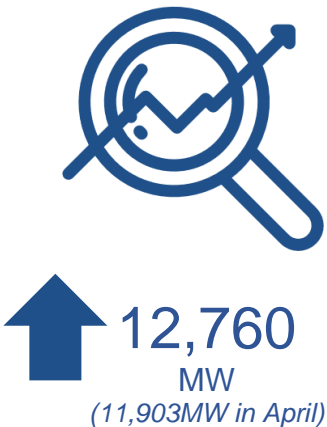
MONTHLY MARKET ASSESSMENT REPORT

MARKET OUTCOME: LUZON AND VISAYAS

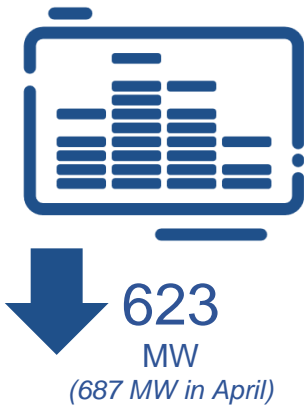
EFFECTIVE SUPPLY



DEMAND PLUS RESERVE SCHEDULE

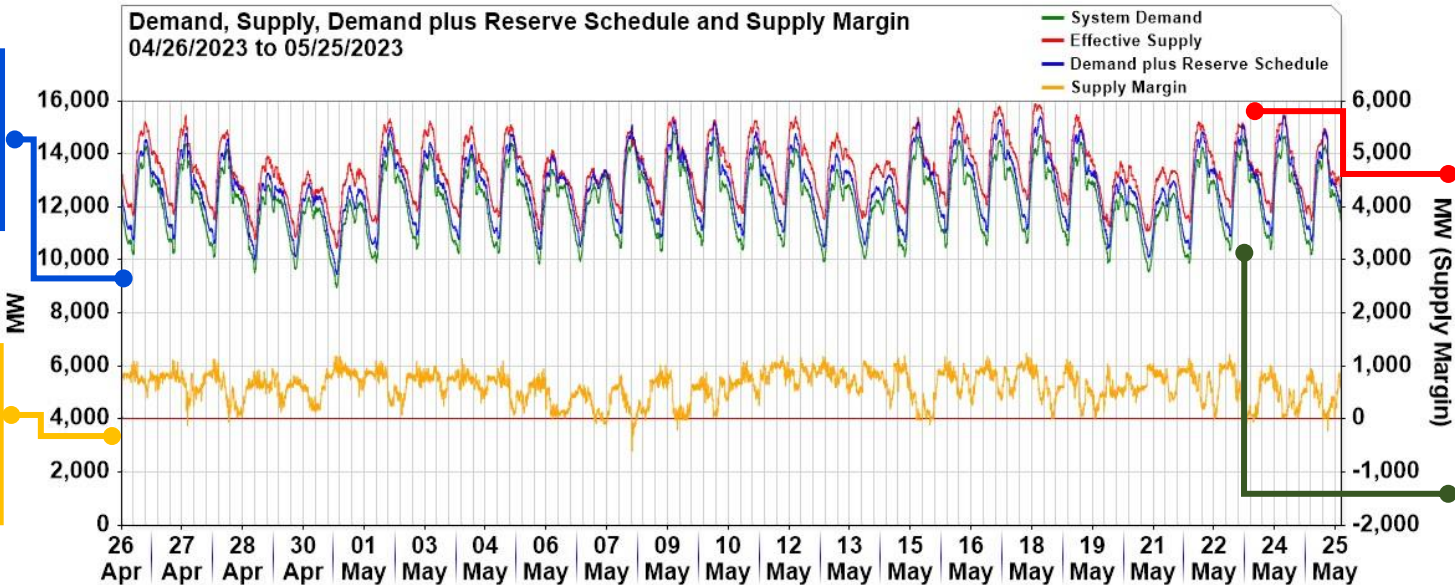


SUPPLY MARGIN



Demand plus Reserve Schedules increased by an average of 7.2% mainly caused by the onset of summer season which influenced the electricity consumption for the month.

Supply Margin decreased by 9.3% considering the dynamics between the supply and demand, even with the increase in the level of effective supply.



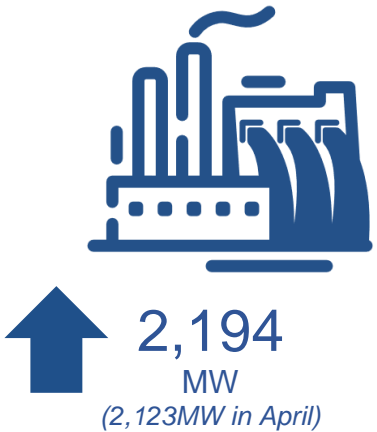
Effective Supply increased by 6.3% highly related to the lesser ramp limited capacities this billing period, as considered in the determination of the effective supply.

System Demand increased by 8.5% also caused by the onset of summer season.

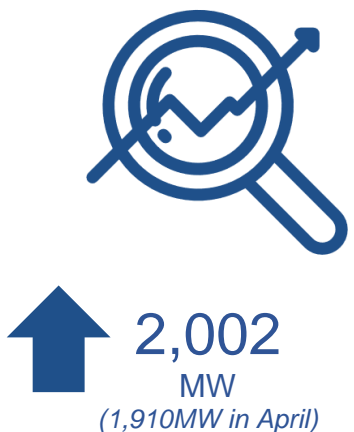
MONTHLY MARKET ASSESSMENT REPORT

MARKET OUTCOME: MINDANAO

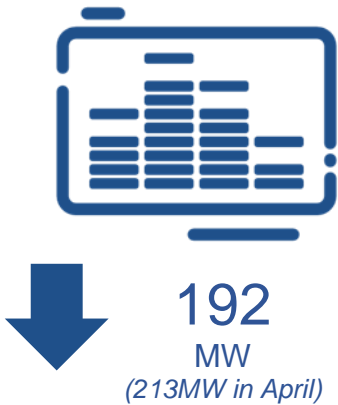
EFFECTIVE SUPPLY



DEMAND PLUS RESERVE SCHEDULE

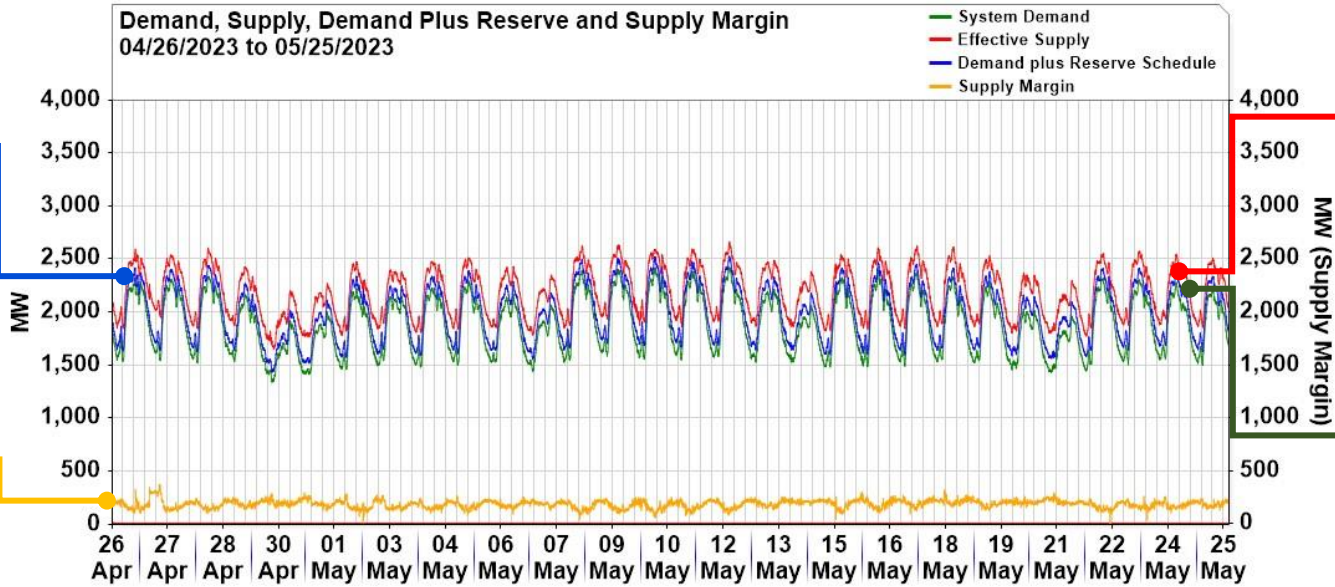


SUPPLY MARGIN



Demand plus Reserve Schedules increased by an average of 4.8%, attributed to the onset of summer season which influenced the electricity consumption for the billing period.

Supply Margin decreased by 9.7% 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 increased by 3.3% due to the observed decrease in the level of capacities on outage this month.

System Demand increased by 5% also caused by the onset of the summer season.

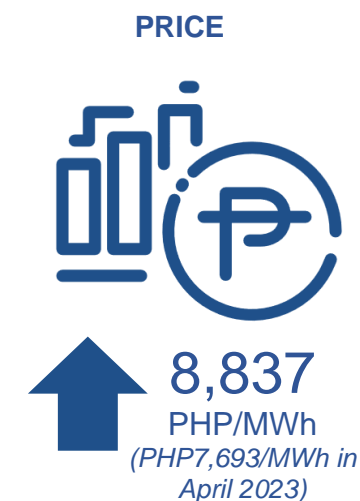
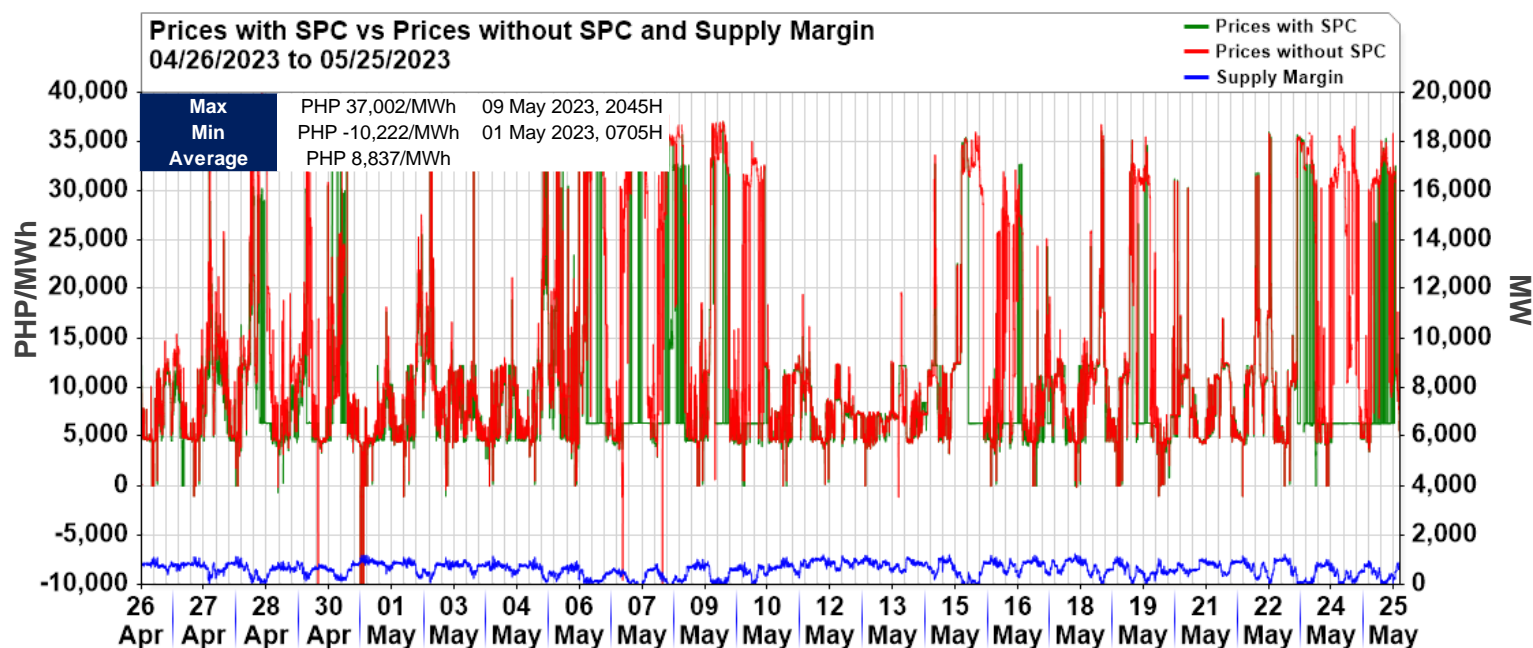
MONTHLY MARKET ASSESSMENT REPORT

MARKET OUTCOME: LUZON AND VISAYAS

Zone	Average LWAP (PHP/MWh)
NLUZON	8,722.49
MMANILA	8,833.92
SLUZON	8,744.35
LEYTE	9,093.97
CEBU	8,838.01
NEGROS	9,073.97
BOHOL	12,269.19
PANAY	9,213.92

Given the dynamics between the supply and demand, the level of market prices increased by 15% or was noted to be at an average of PHP 8,837/MWh from PHP 7,693/MWh last billing period. The estimated monthly average price would have been at PHP14,002/MWh if SPC was not issued to the relevant trading intervals. Based on a year-on-year comparison, the average market price posted a 42.4% increase from an average price of PHP 6,205/MWh last year, noting that outages were significantly higher by an average 29.6% this 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.

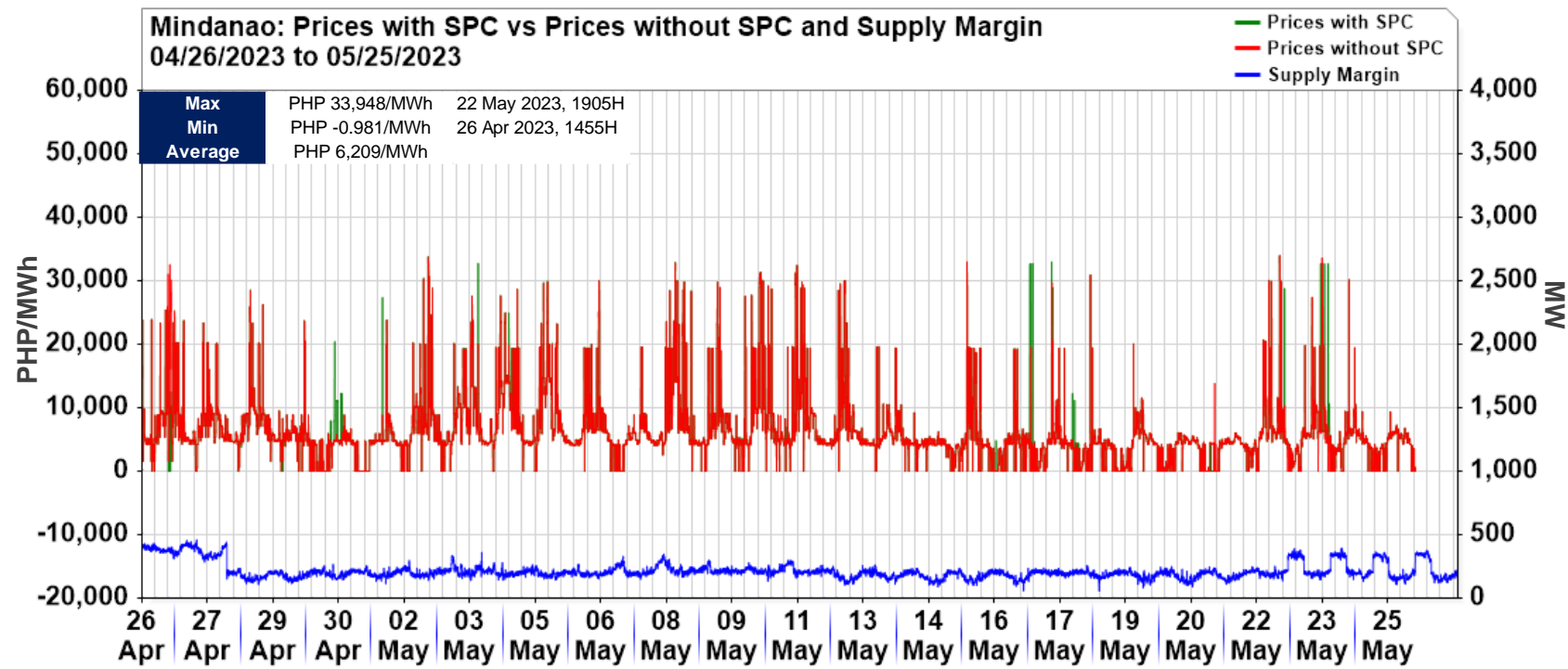


MONTHLY MARKET ASSESSMENT REPORT


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 May 2023 billing period was likewise noted to have increased, when compared to last month, by an average of 13.6%. 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 higher offered prices to be dispatched in the WESM.



PRICE



6,209
PHP/MWh
(PHP5,467/MWh in
March 2023)

MONTHLY MARKET ASSESSMENT REPORT

MARKET OUTCOME: LUZON AND VISAYAS

RAMP LIMITED CAPACITY

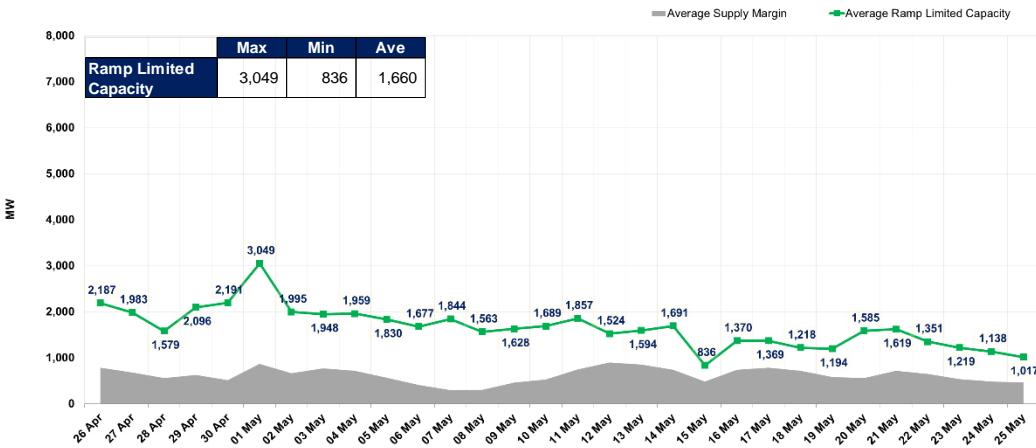
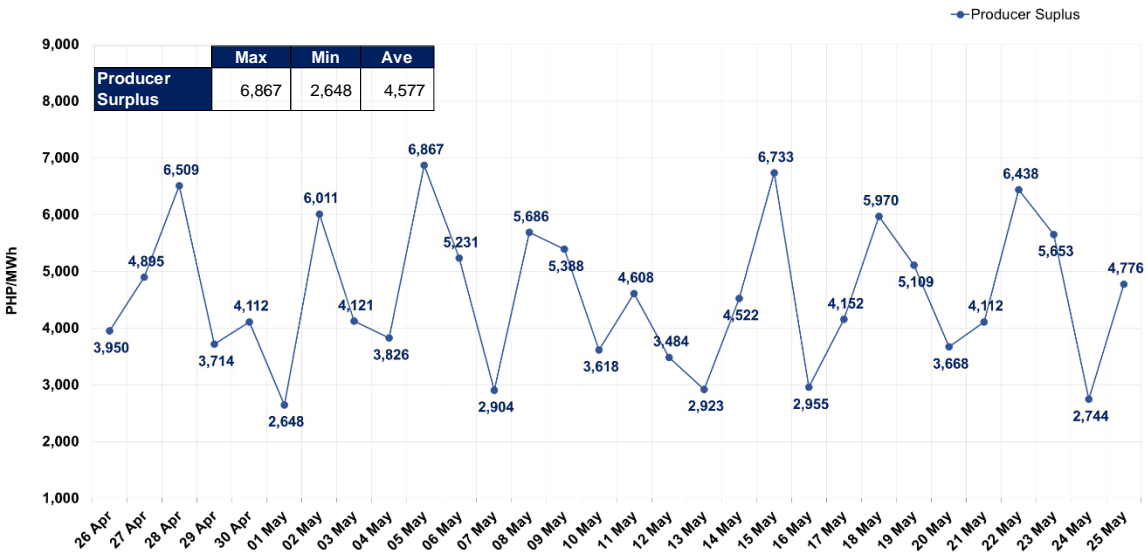


1,660
MW
(2,503MW in April 2023)

PRODUCER SURPLUS



4,577
PHP/MWh
(PHP4,393/MWh in April 2023)



Producer/generator surplus had a 4% increase as compared to April 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 May 2023, **ramp-limited capacities** decreased, on average, by 34%, in consideration of the submitted ramp rates from the generators which were subsequently utilized in the optimization of the market.

Interestingly, during the Holiday on 01 May 2023, 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

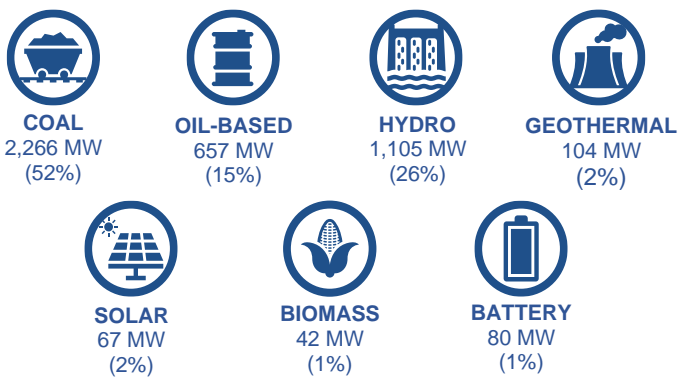
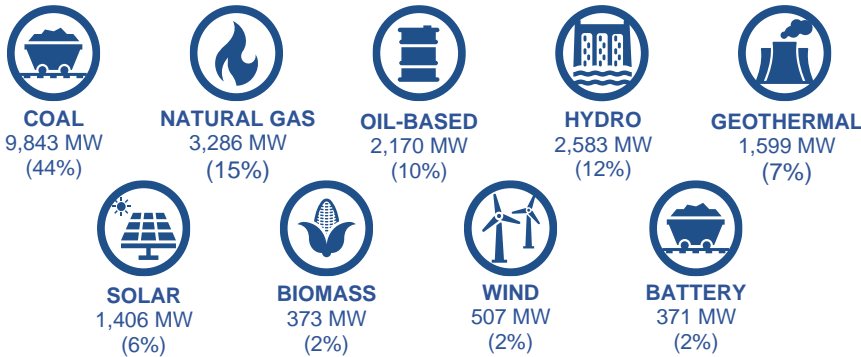
Luzon-Visayas					
Status	Market Participant Name	Market Trading Node	Plant Type	Pmax (MW)	Change (MW)
				New	
New	Bataan Solar Energy Inc.	01BTSOLEN_BAT	Battery	0.5	0.5
Decreased	Bac-Man Geothermal Inc.	03BACMAN_U03	Geothermal	19.2	(0.8)
Ceased	Panay Power Corporation	08PPC1_A	Oil-based	0	(31.5)
		08PPC1_B		0	(31.5)
TOTAL					(63.3)

LUZON-VISAYAS

The WESM's registered capacity in Luzon and Visayas recorded changes for the May 2023 billing period from 22,200.5 MW to 22,137.2 MW due to the entry of 1 Battery power plant and the decrease in the capacity of 1 Geothermal and cessation of 2 Oil-based power plants.

MINDANAO

The WESM's registered capacity in Mindanao for the May 2023 retained its level at 4,320.1 MW.

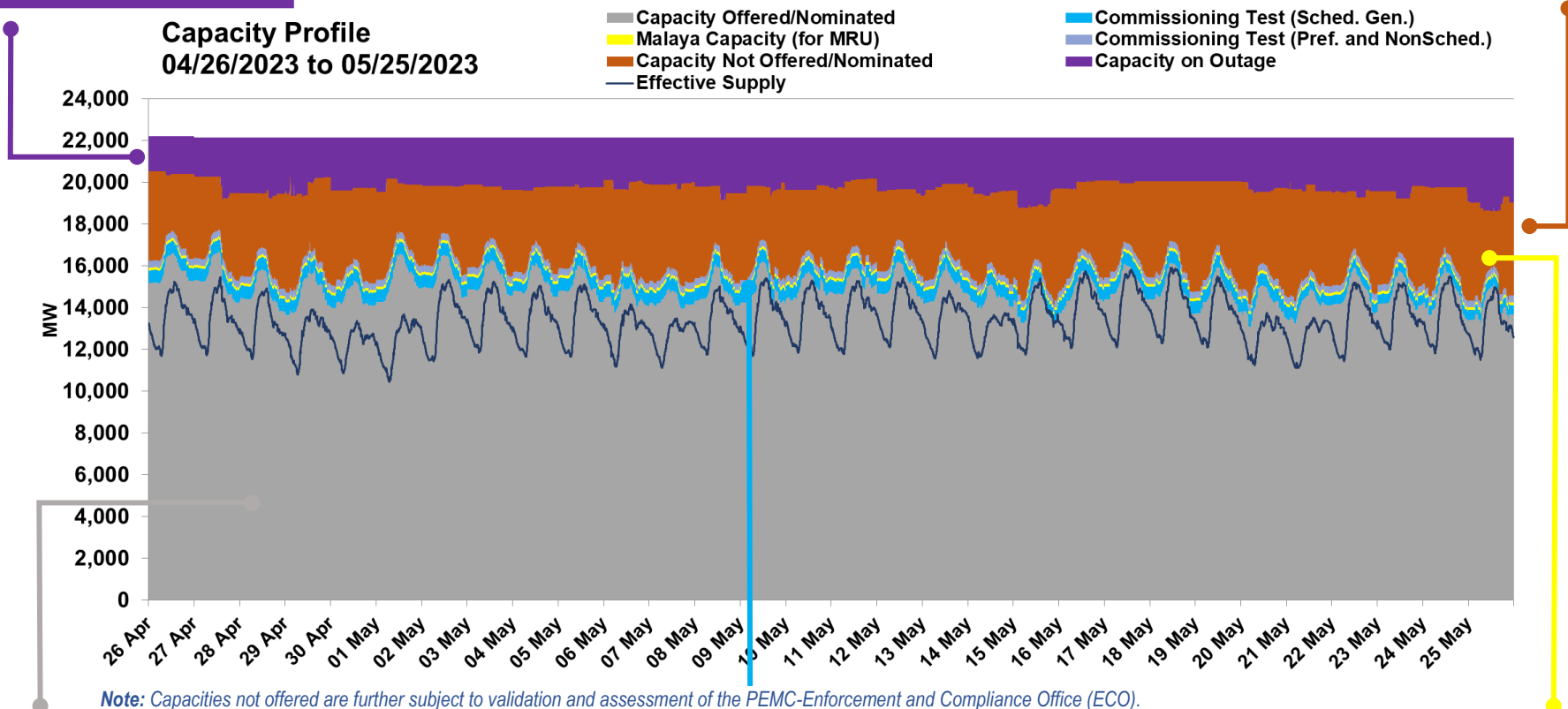


MONTHLY MARKET ASSESSMENT REPORT

Capacity on Outage (11% of Registered Capacity) increased by 6.5%, which was mostly due to the increase in outage levels of all plant types except Coal.

CAPACITY PROFILE: LUZON-VISAYAS

Capacity NOT Offered/Nominated (15% of Registered Capacity) decreased by 2.3% or from an average of 3,976 MW last billing period to 3,885 MW which is mostly attributable to resource constraints.



Capacities Offered/Nominated (67% of Registered Capacity) decreased by 0.9% or was noted at an average of 14,821 MW as compared to last billing period's 14,958 MW.

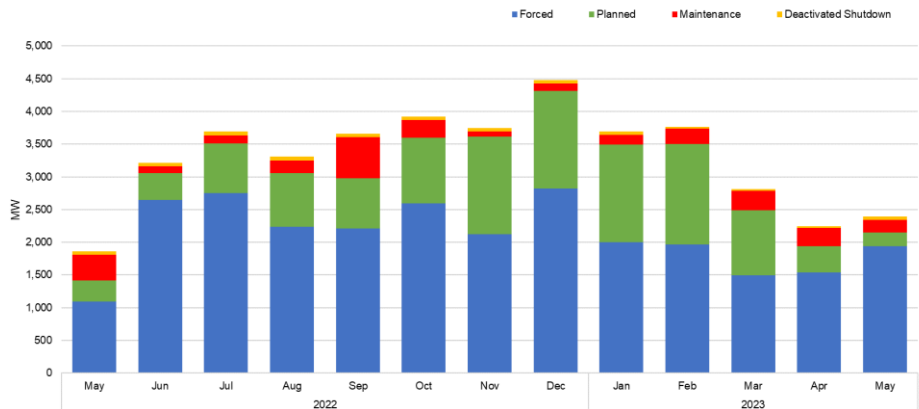
Capacities under Commissioning Test (3% of Registered Capacity) decreased from 934 MW to 907 MW this billing period. This period's test was due to the extended and continuing periods for testing.

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

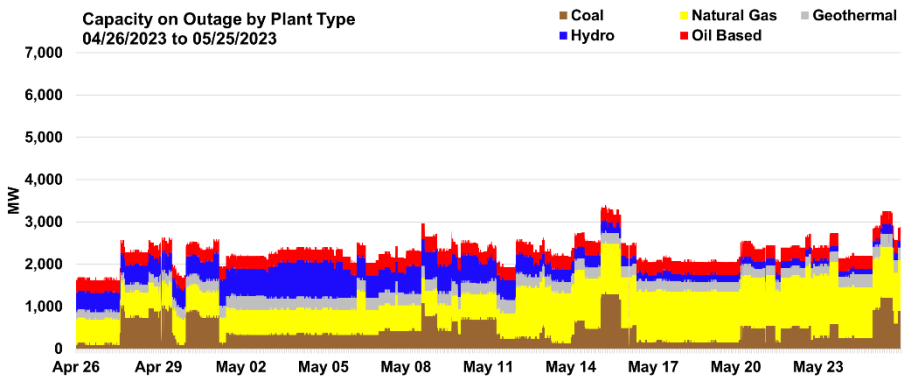
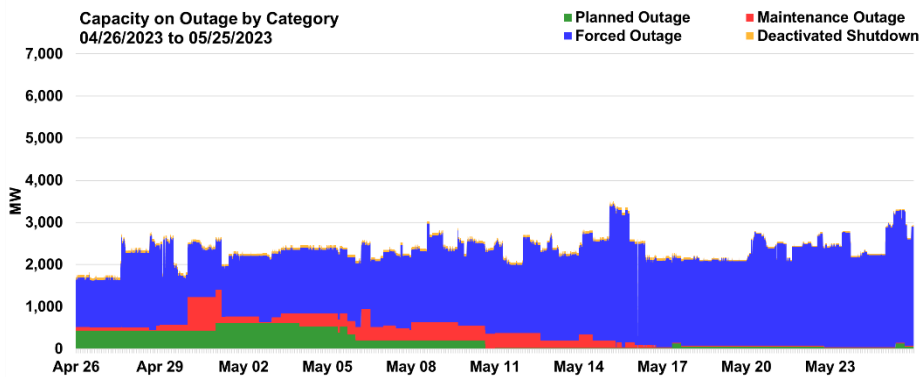
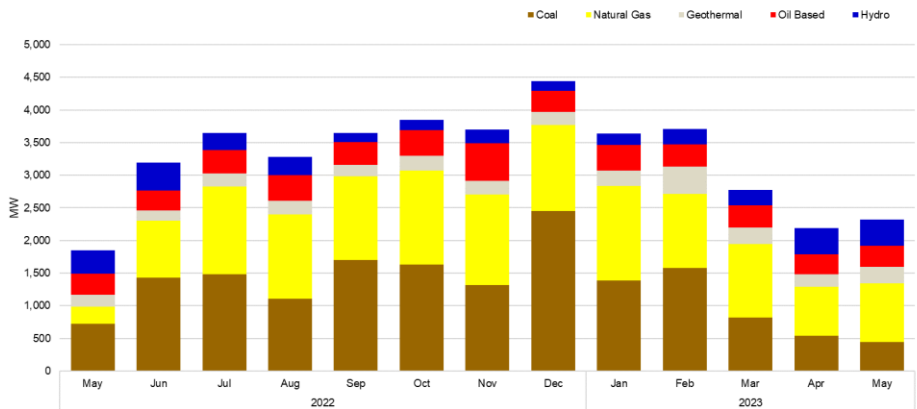
MONTHLY MARKET ASSESSMENT REPORT

CAPACITY PROFILE: LUZON-VISAYAS

CAPACITY ON OUTAGE BY CATEGORY



CAPACITY ON OUTAGE BY PLANT TYPE



The May 2023 billing period opened with an average level of capacities on outage at around 2,000MW. These levels eventually increased due to outages of large Coal and Natural gas power plants under forced outage category due to plants' technical limitations. As the month ended, the outage level was at an average of about 3,300 MW.

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

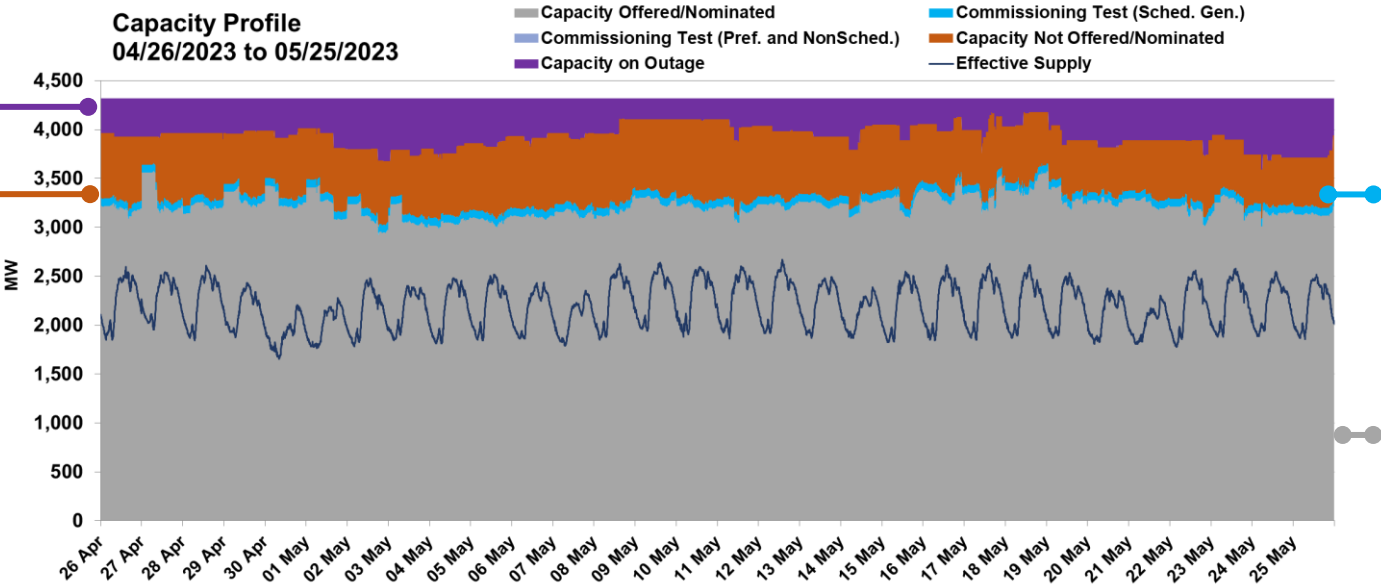
Note: The comprehensive information on plant outages in all categories is shown in Annex A, for convenience and reference.

MONTHLY MARKET ASSESSMENT REPORT

CAPACITY PROFILE: MINDANAO

Capacity on Outage (9% of Registered Capacity) decreased from an average of 485MW last month to 387MW this month due to the changes in the outage levels from Coal and Hydro power plants.

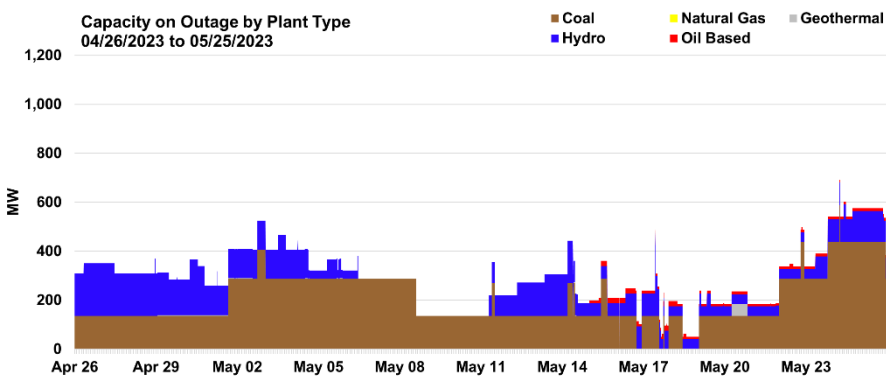
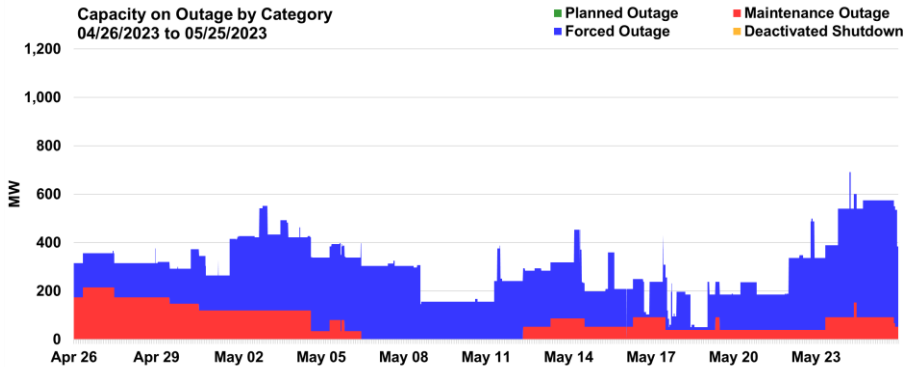
Capacity NOT Offered/Nominated (15% of Registered Capacity) increased by 10.8% or from an average of 574 MW last billing period to 636 MW which is mainly attributable to resource constraints.



Capacities under Commissioning Test (2% of Registered Capacity) retained its level to 80MW.

Capacities Offered/Nominated (74% of Registered Capacity) increased by 1.1% or was noted at an average of 3,217 MW as compared to last billing period's 3,181 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 May 2023 billing period opened with an average level of around 300MW due to the outages from Coal and Hydro power plants under forced outage category. This level eventually increased to an average of almost 600MW 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



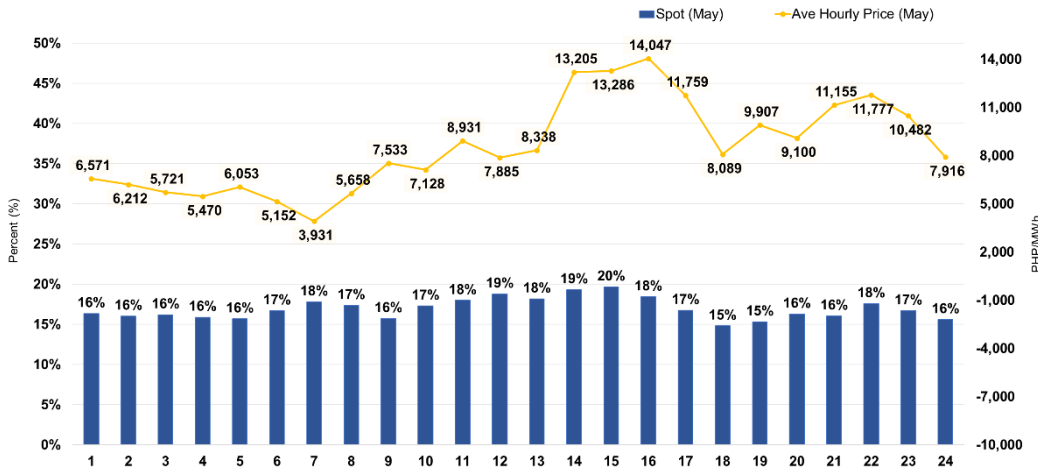
83%
(81.1% in April 2023)

SPOT EXPOSURES

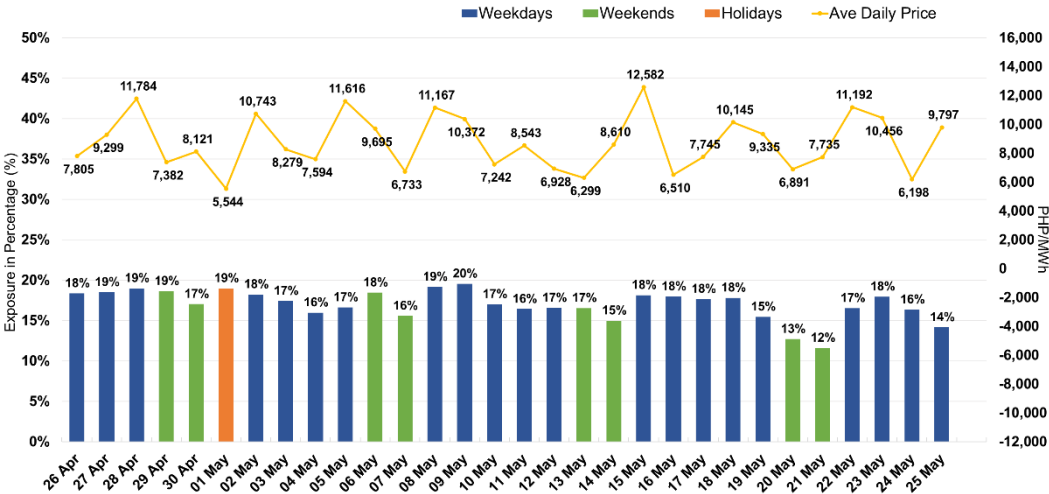


17%
(18.9% in April 2023)

HOURLY SPOT



DAILY SPOT

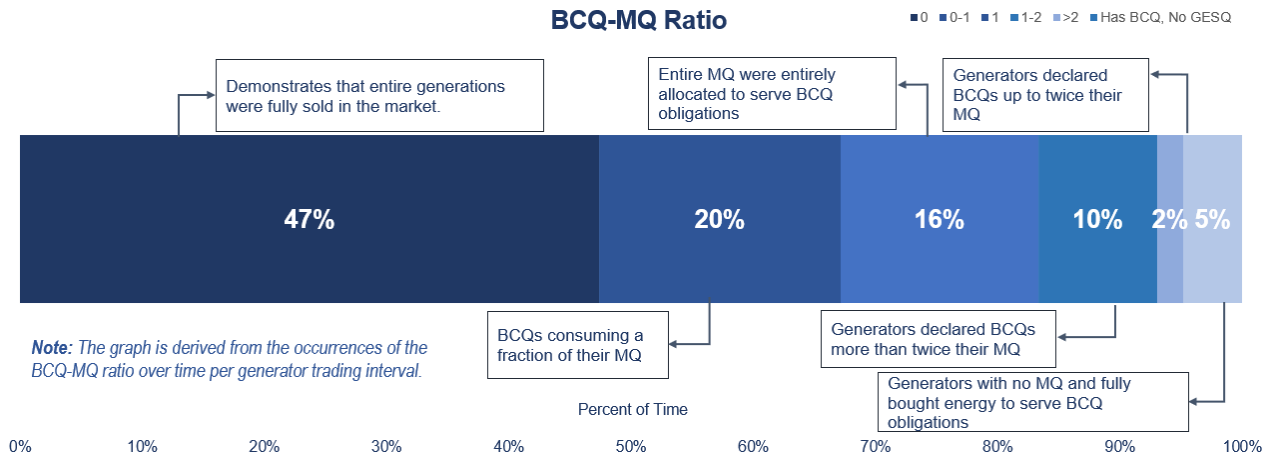


Total spot quantities of generator participants in the May billing period were at an average of 16.5% with an average price of PHP8,592/MWh during off-peak hours and 17.5% with an average price of PHP9,531/MWh during peak hours.

Spot exposures during weekdays averaged at 17.4% having an average price of PHP9,295/MWh while it was 15.7% during the weekends at an average price of PHP7,682/MWh.

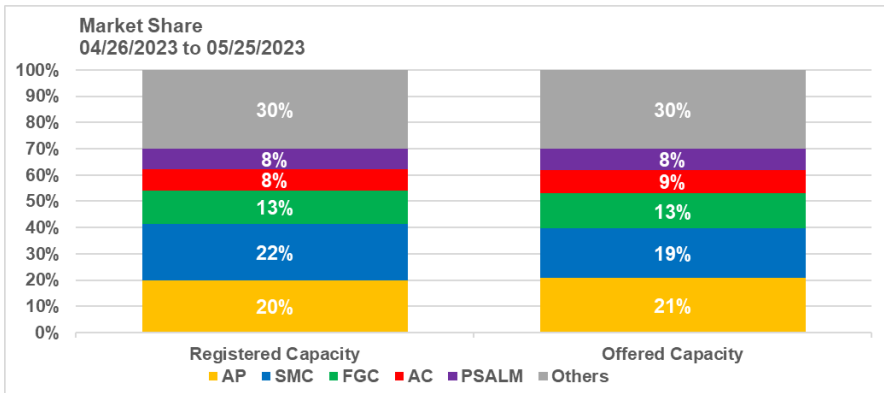
MONTHLY MARKET ASSESSMENT REPORT

MARKET TRANSACTIONS



SYSTEM STRUCTURAL COMPETITION INDICES

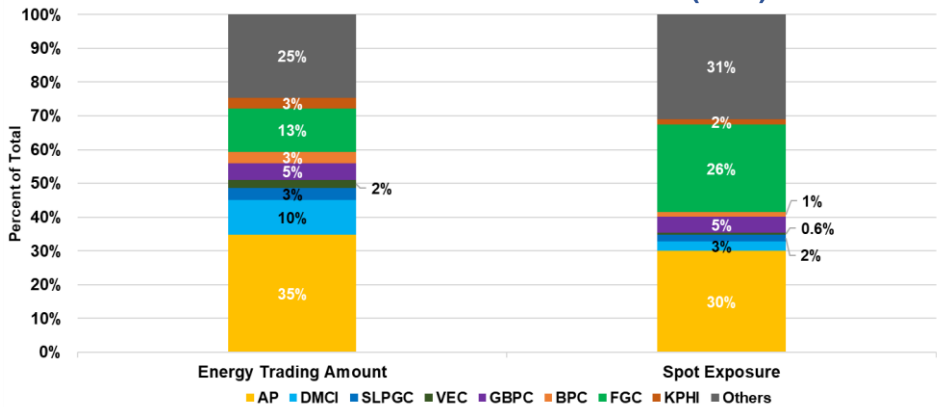
MARKET SHARE



Aboitiz Power (AP), San Miguel Corporation (SMC), First Gen Corporation (FGC), and Ayala Corporation (AC) dominated the market with their combined market shares comprising 62% of the total registered capacities in the WESM. The shares of the major participant remained similarly close to previous billing period.

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

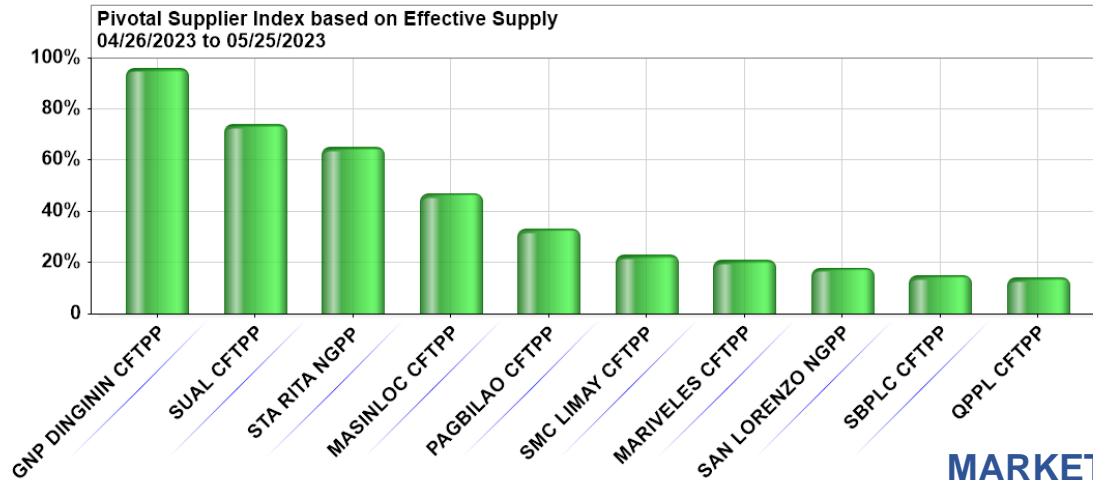
ENERGY TRADING AMOUNT (ETA)



The top 4 participants with highest shares in terms of ETA and spot exposure comprised about 63% of the total shares in both measures, which denotes a concentrated market in terms of C4 values.

MONTHLY MARKET ASSESSMENT REPORT

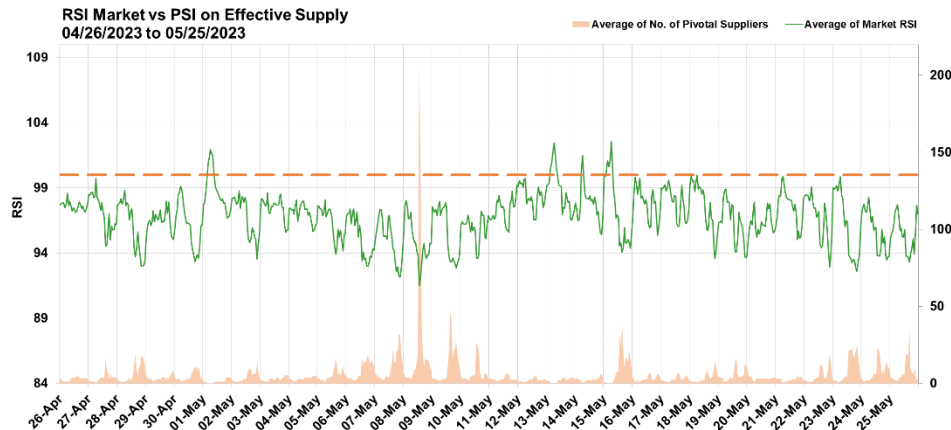
PIVOTAL PLANTS



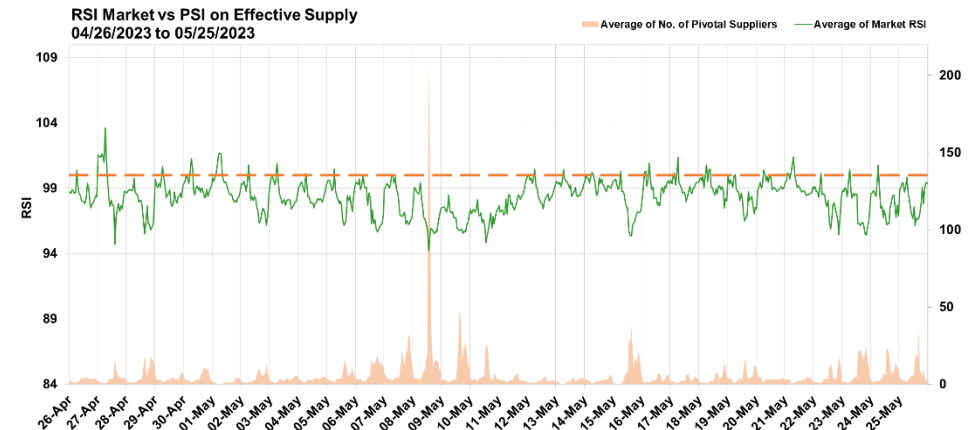
- A total of 261 power plants were pivotal during the period, with 50% or 131 plants coming from Luzon and 56 plants from Visayas.
- The noted increase in effective supply influenced the resulting RSI and the number of pivotal suppliers per dispatch interval.
- The Mindanao region has 74 out of 102 were pivotal suppliers for the period indicating lower RSI and high prices in the region.

MARKET RSI

LUZON-VISAYAS



MINDANAO

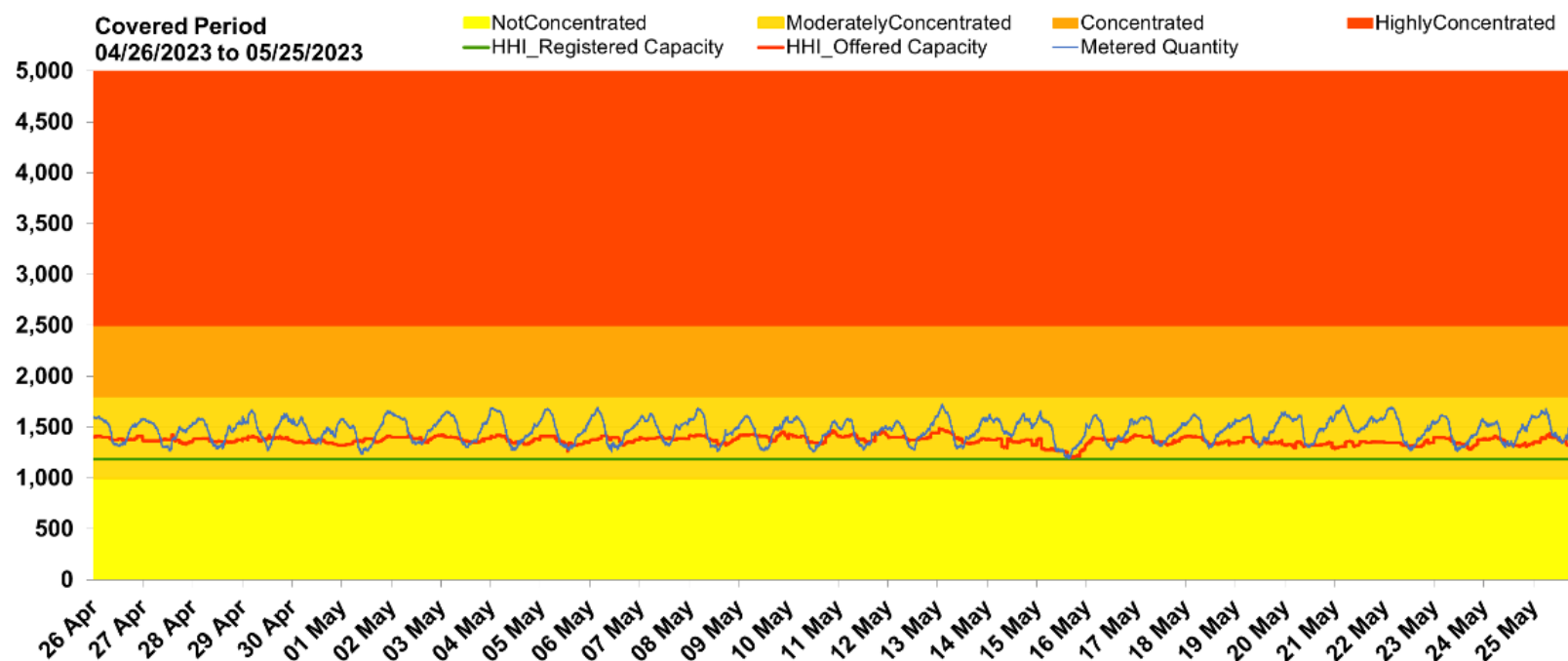


- The market Residual Supply Index (RSI) was below the 100% mark for about 96.6% of the time this billing period compared to 95.8% last billing period, signifying the presence of pivotal plants in Luzon and Visayas.
- During the period, the market resulted in RSIs ranging from 91.5% to 102.5% and averaged at 96.8%. The average market prices for intervals with RSI below 100% was PHP8,894/MWh, while those with RSIs above 100 was at PHP4,636/MWh.
- Meanwhile, the market RSI in the Mindanao region was below the 100% mark for about 90.9% of the time signifying relatively higher instances of pivotal plants' presence in the region.

MONTHLY MARKET ASSESSMENT REPORT

SYSTEM STRUCTURAL COMPETITION INDICES

MARKET HHI



Herfindahl-Hirschman Index (HHI) by major participant grouping

- Based on Offered Capacity, the market is **moderately concentrated** for 100% of the time (8,640 intervals).
 - o This was brought about by the effects of **changes in the availability of generators** which subsequently affected the resulting market shares.
- Based on Metered Quantities, the market is a **moderately concentrated market** 100% of the time (8,640 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 May 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 1	240	05/01/2023 10:52	05/13/2023 1:13	12	Forced Outage	Emergency shutdown due to boiler tube leak.
COAL	SLPGC 1	150	05/15/2023 2:20			Forced Outage	Emergency shutdown due to suspected tube leak at heat recovery area.
COAL	Petron Unit 1	140	04/26/2023 4:43	05/01/2023 5:50	5	Forced Outage	Tripped due to high furnace pressure.
COAL	MPGC U1	150	05/21/2023 8:05			Maintenance Outage	Conducted Load Rejection Test
COAL	SLTEC 2	124	05/12/2023 22:52	05/15/2023 18:07	3	Forced Outage	Boiler trip.
COAL	Masinloc 2	344	05/24/2023 23:27			Forced Outage	Boiler Tube Leak
GEO	Tiwi 1	60	11/30/2021 18:32			Forced Outage	Steam supply diverted to Unit 2.
GEO	Makban 6	30	04/11/2013 22:44			Deactivated Shutdown	Conducted Gas compressor test.
HYD	Ambuklao 3	37.5	05/25/2023 8:01			Planned Outage	Annual Preventive Maintenance
HYD	Angat M 3	50	11/02/2021 8:15			Forced Outage	Draw-out of Main Unit 3 generator breaker.
HYD	Maris 2	4.3	04/21/2023 20:14	04/30/2023 7:23	8	Forced Outage	Limited water allocation
HYD	Ambuklao 2	37.5	05/17/2023 8:01	05/22/2023 18:47	5	Planned Outage	Planned Outage
HYD	Binga 1	35	05/25/2023 12:00	05/29/2023 8:01	4	Forced Outage	Declared unavailable due to hydrological constraints.
HYD	Masiway	12	05/11/2023 0:00			Maintenance Outage	Maintenance Outage
HYD	Botocan 2	10	05/11/2023 0:01			Planned Outage	Planned outage until June 29 2023.
HYD	Kalayaan 2	180	05/08/2023 0:00	05/12/2023 15:10	5	Maintenance Outage	Maintenance outage until May 12 2023.
HYD	Ambuklao 3	37.5	05/03/2023 8:01	05/07/2023 10:43	4	Maintenance Outage	Planned Outage.
HYD	Ambuklao 2	37.5	05/03/2023 8:01	05/07/2023 10:43	4	Maintenance Outage	Planned Outage.
HYD	Ambuklao 1	37.5	05/03/2023 8:01	05/15/2023 7:31	12	Maintenance Outage	Planned Outage.
HYD	Pantabangan 2	60	05/02/2023 0:01	05/16/2023 19:40	15	Maintenance Outage	Planned Outage.
HYD	Kalayaan 1	180	05/01/2023 0:00	05/05/2023 16:51	5	Planned Outage	Maintenance Outage until May 5 2023
HYD	Pantabangan 1	60	04/27/2023 0:01	05/15/2023 21:18	19	Maintenance Outage	Planned Outage.
HYD	San Roque 3	145	04/24/2023 0:00	05/06/2023 00:01	12	Planned Outage	Planned outage as per GOP.
HYD	Magat 4	97	04/11/2023 7:01	05/10/2023 15:24	29	Planned Outage	Planned outage until May 10 2023.
HYD	Magat 3	97	04/11/2023 7:01	05/10/2023 15:50	29	Planned Outage	Planned outage until May 10 2023.
HYD	Angat M 4	50	02/14/2022 0:00			Planned Outage	Planned outage.
HYD	Angat A 1	6	08/22/2022 8:01			Planned Outage	Planned Outage until April 21 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.
NATG	Ilijan B3	220	06/05/2022 0:00			Forced Outage	Under (c) of 1.1.2.2.1.5 of Article II Section 1(Unit State Classification) of ERC Resolution 17 s2013
NATG	Ilijan B2	190	06/05/2022 0:00			Forced Outage	Under (c) of 1.1.2.2.1.5 of Article II Section 1(Unit State Classification) of ERC Resolution 17 s2013.
NATG	Ilijan B1	190	05/02/2022 20:08			Forced Outage	Under (c) of 1.1.2.2.1.5 of Article II Section 1(Unit State Classification) of ERC Resolution 17 s2013.
NATG	Ilijan A3	220	02/13/2023 21:53			Forced Outage	Under (c) of 1.1.2.2.1.5 of Article II Section 1(Unit State Classification) of ERC Resolution 17 s2013
NATG	Ilijan A2	190	02/13/2023 21:56			Forced Outage	Under (c) of 1.1.2.2.1.5 of Article II Section 1(Unit State Classification) of ERC Resolution 17 s2013
NATG	Ilijan A1	190	02/11/2023 3:37			Forced Outage	Under (c) of 1.1.2.2.1.5 of Article II Section 1(Unit State Classification) of ERC Resolution 17 s2013.
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	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
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	Republic 2	5.5	05/13/2023 13:03			Forced Outage	Excessive lube oil leak at lube oil cooler.
OIL	BPPC 7	10	05/06/2023 21:15	05/09/2023 17:23	3	Forced Outage	Tripped due to burnout cable on MV breaker Phase A.
OIL	BPPC 6	10	05/06/2023 21:15	05/09/2023 17:23	3	Forced Outage	Tripped due to burnout cable on MV breaker Phase A.
OIL	BPPC 5	10	05/06/2023 21:15	05/09/2023 17:23	3	Forced Outage	Tripped due to burnout cable on MV breaker Phase A.
OIL	BPPC 4	10	05/06/2023 21:15	05/09/2023 17:23	3	Forced Outage	Tripped due to burnout cable on MV breaker Phase A.
OIL	BPPC 3	10	05/06/2023 21:15	05/09/2023 17:23	3	Forced Outage	Tripped due to burnout cable on MV breaker Phase A.
OIL	BPPC 2	10	05/06/2023 21:15	05/09/2023 17:23	3	Forced Outage	Tripped due to burnout cable on MV breaker Phase A.
OIL	BPPC 1	10	05/06/2023 21:15	05/09/2023 17:23	3	Forced Outage	Tripped due to burnout cable on MV breaker Phase A.
Visayas							
BAT	Kabankalan Bat	20	04/19/2023 15:26			Forced Outage	Auto-tripped due to Damaged 13.8kV PCB
BIOF	South Negros	25	12/12/2022 17:41			Forced Outage	Offline due to unavailability of bagasse.
BIOF	CAB1	23.5	05/16/2023 1:19			Maintenance Outage	Offline end of milling.
BIOF	SCBE	7.4	03/31/2023 10:35			Maintenance Outage	Offline ongoing plant testing.
BIOF	FFHC	9	04/23/2023 13:03	04/26/2023 11:45	3	Maintenance Outage	Offline due to weekly maintenance.
COAL	Keppo Salcon 2	103	05/06/2023 20:06	05/11/2023 10:19	5	Forced Outage	MANUALLY SHUTDOWN DUE TO BOILER TUBE LEAK
COAL	PALM 1	135	02/20/2023 11:07	04/30/2023 11:49	69	Forced Outage	Affected by a Grid disturbance at 1106H
COAL	Keppo Salcon 2	103	05/22/2023 19:17			Forced Outage	suspected boiler tube leak
COAL	PEDC 1	83.7	02/20/2023 11:07	04/27/2023 13:51	66	Forced Outage	Affected by a Grid disturbance at 1106H
COAL	TPC-Sangi 3	40.36	07/19/2022 5:40			Forced Outage	MANUALLY CUT-OUT TPC SANGI TG4 DUE TO INSUFFICIENT STEAM SUPPLY AFTER SYNCHRONIZATION OF TG5 AT 1510H
COAL	TPC-Sangi 2	20.38	07/19/2022 5:40			Forced Outage	MANUALLY CUT-OUT TPC SANGI TG4 DUE TO INSUFFICIENT STEAM SUPPLY AFTER SYNCHRONIZATION OF TG5 AT 1510H
COAL	PEDC 2	83.7	04/21/2023 1:06	05/09/2023 16:13	19	Maintenance Outage	Under PMS
GEO	Mahanagdong A1	5	05/05/2023 12:34			Forced Outage	Due to over frequency
GEO	Mahanagdong B1	5	05/02/2023 13:06	05/09/2023 9:44	7	Forced Outage	Emergency shutdown to troubleshoot burn smell emanating from their electrical room.
GEO	Malitbog BC	14	05/05/2023 12:34	05/10/2023 13:26	5	Forced Outage	Due to over frequency
GEO	Upper Mahiao 2	32	04/28/2023 20:57			Maintenance Outage	Due to reverse power
GEO	Malitbog 2	72	01/21/2023 0:13			Maintenance Outage	CUT OUT
HYD	THC	15.9	05/18/2023 14:45	05/21/2023 23:57	3	Maintenance Outage	Per RTD
OIL	TPM1	6.7	12/06/2022 21:54			Forced Outage	Heavy water leak
OIL	PDPPI Unit 3	5	04/29/2023 8:54	05/02/2023 11:17	3	Forced Outage	Affected by system disturbance in Panay Grid
OIL	TPM1 5	6.8	05/02/2023 13:41	05/05/2023 13:40	3	Forced Outage	EMERGENCY CUT-OUT DUE TO LOAD FLUCTUATION
OIL	CENPRI 4	6.7	04/19/2023 16:19	04/28/2023 16:30	9	Forced Outage	Offline due to overheating of right bank cylinders.
OIL	CENPRI 5	6.7	05/12/2023 20:27	05/15/2023 10:01	3	Forced Outage	Isolated due to tripping of 69kV Bacolod-San Enrique Sub TL.
OIL	CENPRI 4	6.7	05/12/2023 20:27	05/15/2023 10:01	3	Forced Outage	Isolated due to tripping of 69kV Bacolod-San Enrique Sub TL.
WIND	PWInd	36.7	04/29/2023 8:54			Forced Outage	Affected by system disturbance in Panay Grid
Mindanao							
OIL	WMPC Unit 4	10.7	05/01/2023 21:59			Forced Outage	Tripped due to generator earth fault. Unplanned Outage. ETC July 24 2023.
HYD	AG4 U3	52.7	05/23/2023 8:07			Maintenance Outage	PMS(GOMP). ETC June 7 2023.
COAL	DCPP Unit 1	151.4	05/01/2023 15:42	05/08/2023 14:32	7	Forced Outage	Tripped due to boiler tube leak with gross generation of 80MW. No ETI.
COAL	DCPP Unit 1	151.4	05/19/2023 8:51	05/25/2023 22:51	7	Forced Outage	Emergency Shutdown due to Boiler Tube Leak. Forced Outage.
HYD	MN2 U4	6.8	05/07/2023 19:19	05/13/2023 7:00	5	Forced Outage	Shutdown due to insufficient water supply.
OIL	WMPC Unit 8	10.7	05/08/2023 14:50	05/11/2023 20:00	3	Forced Outage	Forced outage due to Turbo Charger Vibration Alarm B-bank.
HYD	PG4 U2	75	05/11/2023 7:04	05/14/2023 10:04	3	Forced Outage	Shutdown due to low forebay elevation (283.35 masl).
HYD	AG6 U4	25	05/16/2023 8:02	05/25/2023 20:00	9	Maintenance Outage	PMS(GOMP). ETC May 25 2023
HYD	MN1 U3	15.45	05/13/2023 7:47	05/15/2023 20:47	3	Maintenance Outage	PMS (Non-GOMP). ETC May 14 2023 2359H
HYD	AG4 U2	52.7	05/12/2023 8:05	05/17/2023 12:33	5	Maintenance Outage	PMS (GOMP). ETC May 20 2023.
HYD	AG4 U1	52.7	05/01/2023 8:04	05/05/2023 15:28	4	Planned Outage	PMS(GOMP).
HYD	PG4 U1	75	03/23/2023 7:03	05/04/2023 15:06	42	Maintenance Outage	APMS(GOMP). ETC 05/06/2023 at 0759H.
HYD	AG5 U2	27.5	04/21/2023 8:05	04/30/2023 13:13	9	Maintenance Outage	PMS (GOMP). ETC May 01 2023 0800H.
HYD	AG5 U1	27.5	04/21/2023 8:05	04/29/2023 11:33	8	Maintenance Outage	PMS (GOMP). ETC May 01 2023 0800H.

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.