MONTHLY MARKET ASSESSMENT HIGHLIGHTS

26 June to 25 July 2023

SUMMARY OF OBSERVATION

- Activation of **Automatic Load Dropping (ALD)** due to the tripping of San Lorenzo Modules 50 and 60 on 11 July 2023.
  - **Luzon Grid** was placed under **yellow alert** on 11 July 2023 from 1400h to 1600h due to generation inadequacy.
  - Tripping of large generation facilities resulted in the activation of **Automatic Load Dropping (ALD)** in the Luzon Grid.
- Some notable congestions were as follows:
  - Maasin-Ubay line 1 was congested for 4,284 intervals, or equivalent to 50% of the time, brought about by the frequent maximization of the line's capacity limit due to tight supply situation in the area, noting the insufficiency of power plant capacity in the said area.
  - Mexico-Hermosa lines 1&2 were congested for 49 and 175 intervals, or equivalent to 1% and 2% of the time, respectively.

AT A GLANCE

Total registered capacity

26,500 MW

— 0% from 26,500 MW last June 2023

Capacity on Outage

2,348 MW

▼ 3.6% from 2,437 MW last June 2023

Capacity Not Offered/Nominated

5,135 MW

▲ 13% from 4,540 MW last June 2023

Capacity of Plants on Commissioning

907 MW

▼ 0.7% from 913 MW last June 2023

Malaya Capacity (for MRU)

130 MW

Which are essential in grid security.

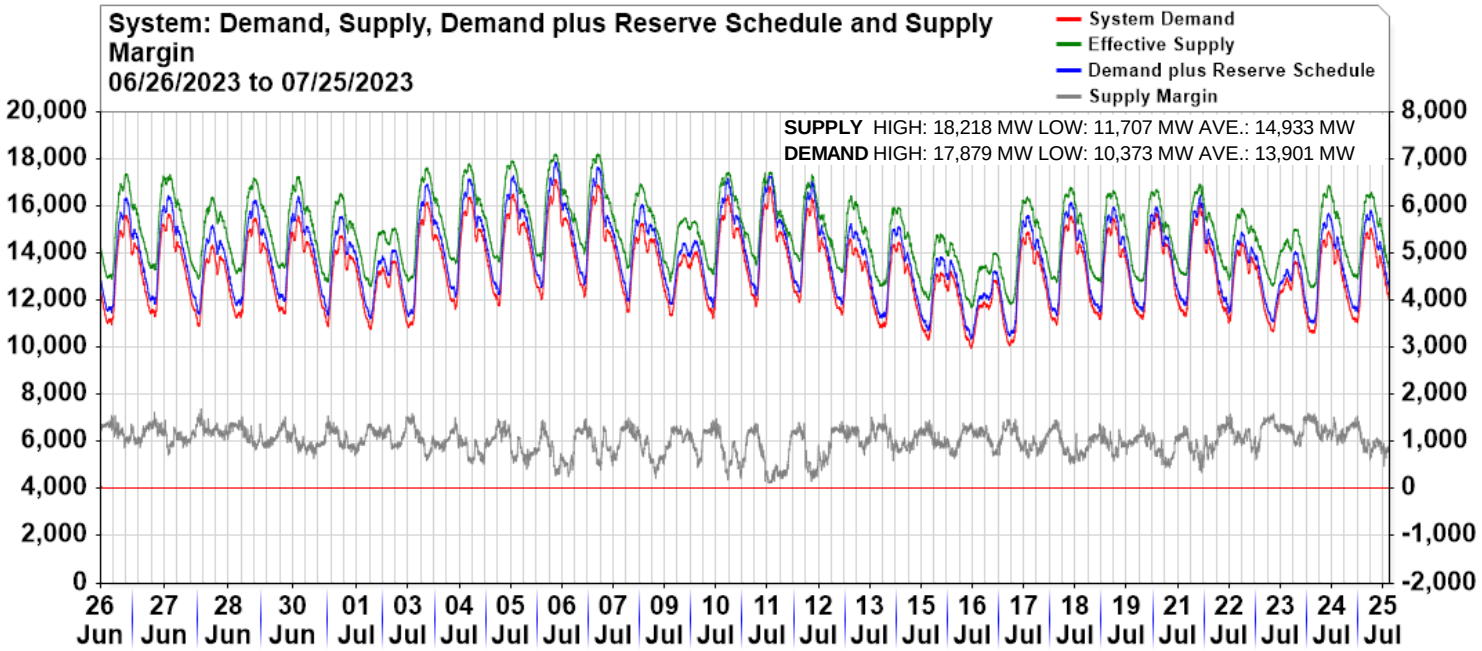
Capacity Offered/Nominated

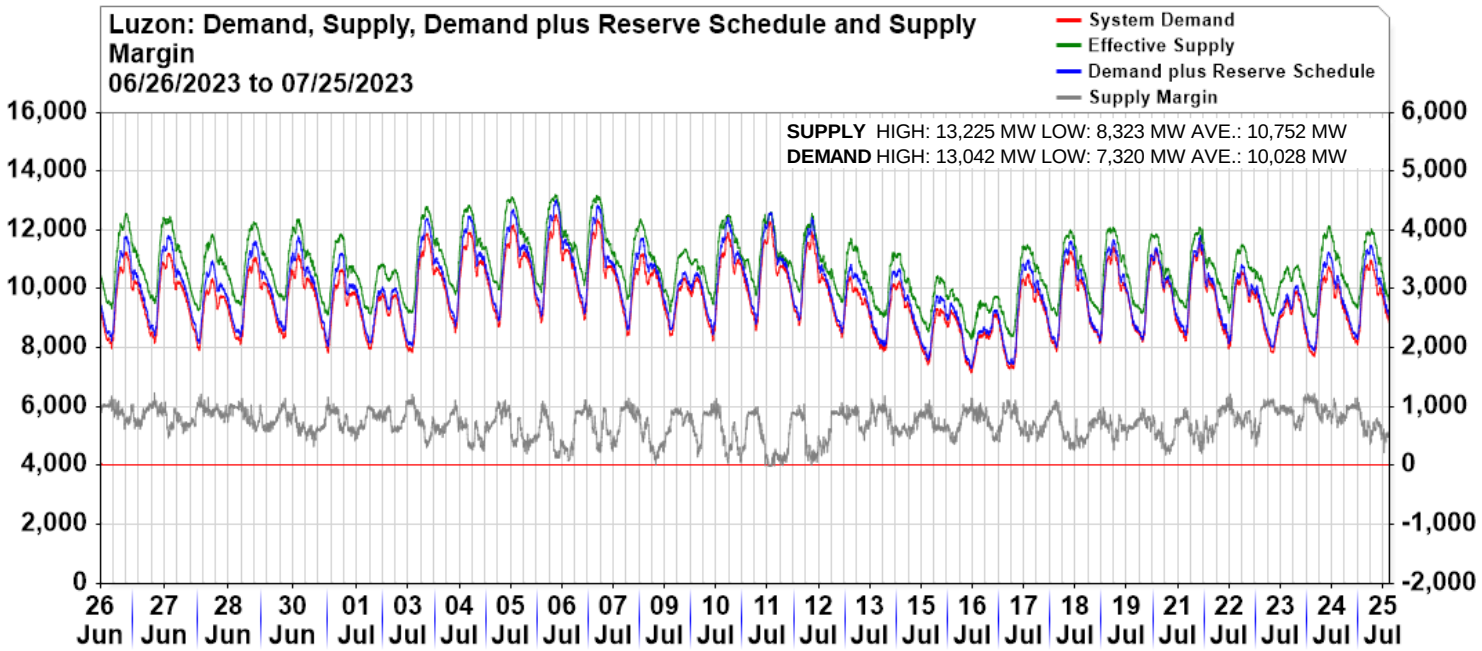
17,996 MW

▼ 2.4% from 18,446 MW last June 2023

MARKET OUTCOME

SUPPLY AND DEMAND

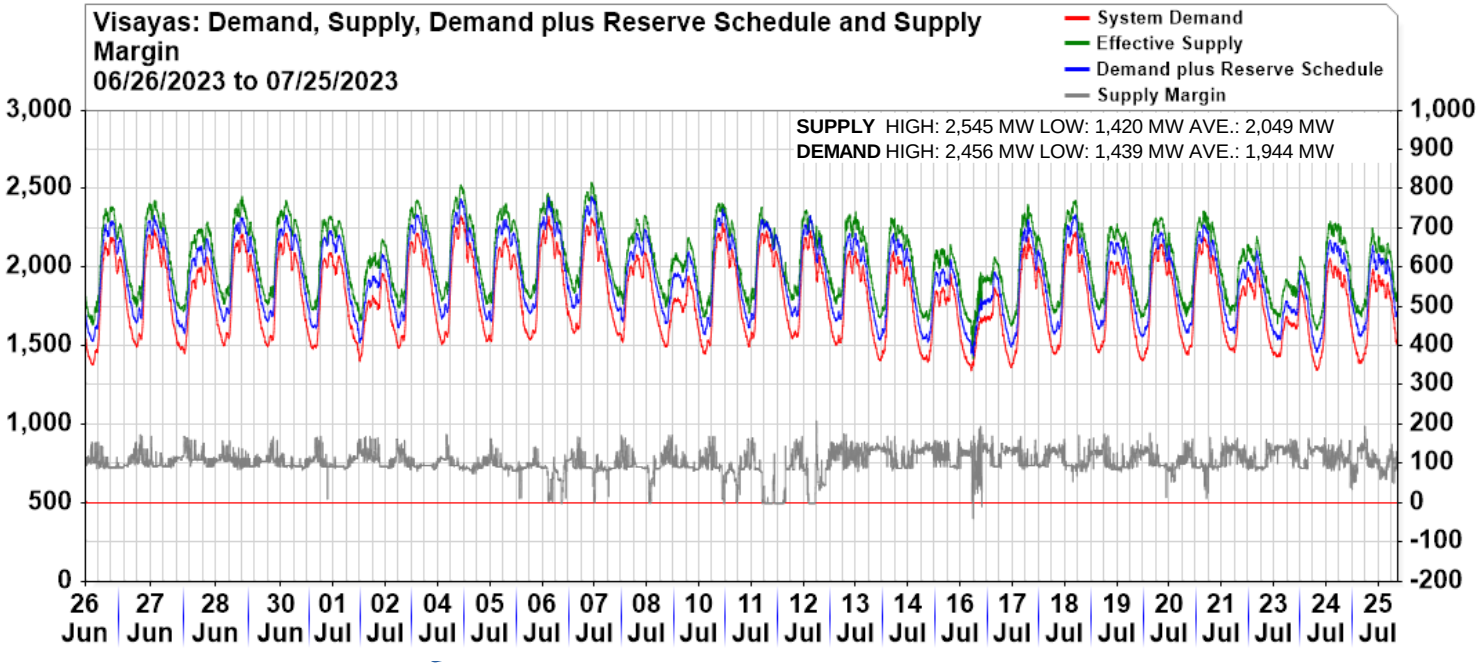


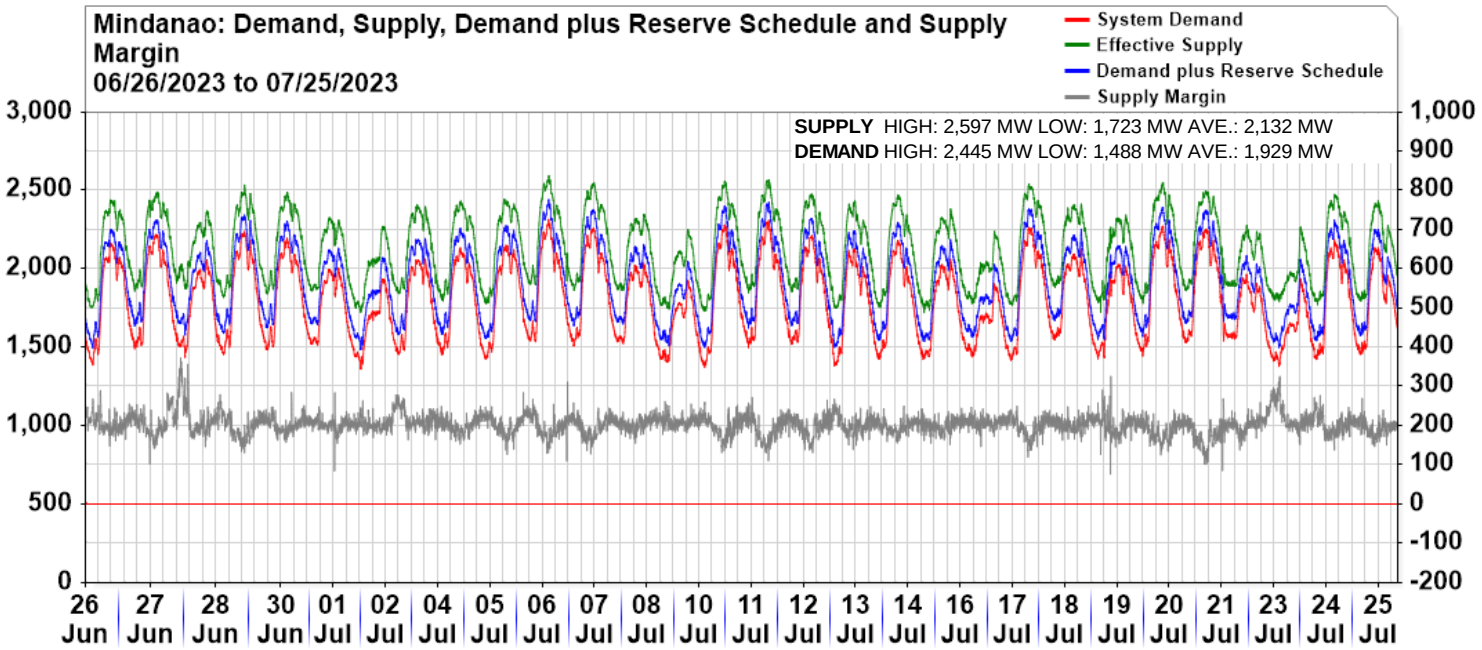


Supply Margin improved due to lower levels of outages and ample level of effective supply in Luzon and Visayas. However, noted increase in the outage level in the Mindanao region caused the supply margin to plunge.

MARKET OUTCOME

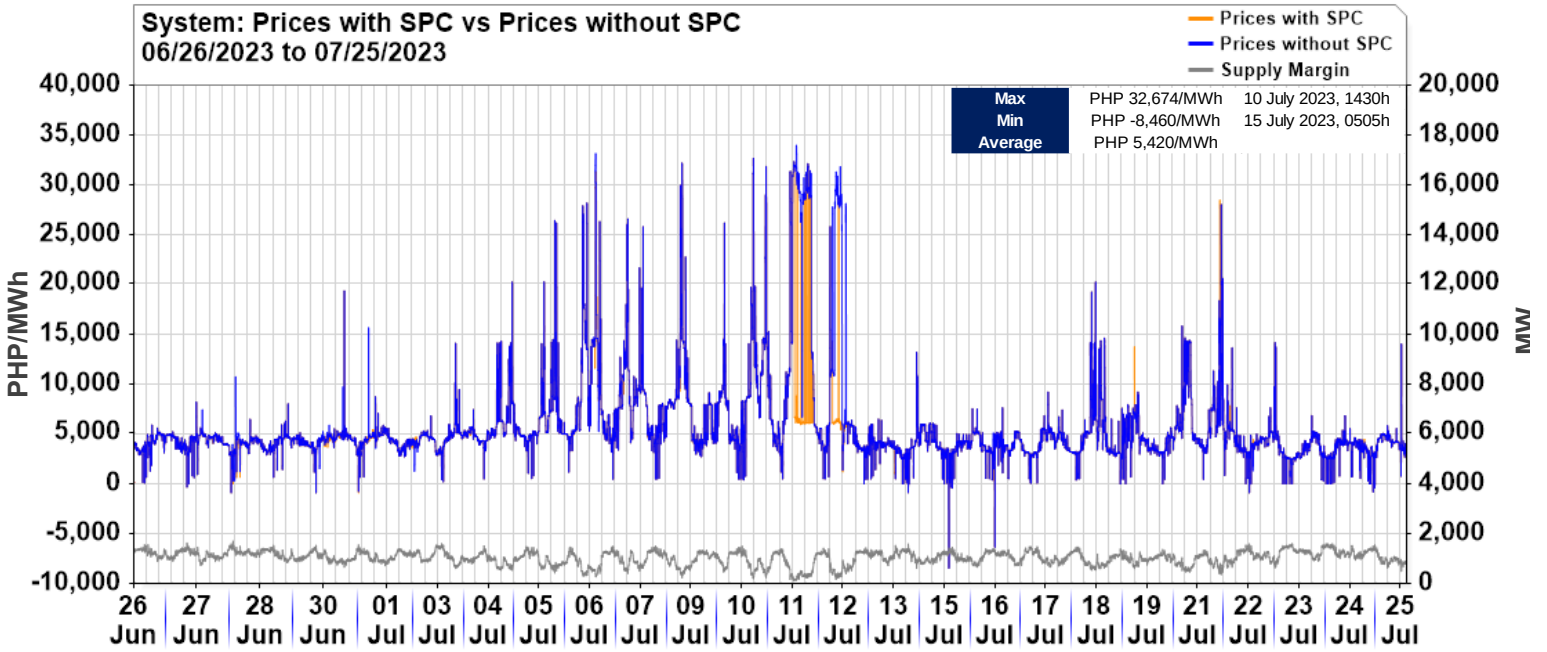
SUPPLY AND DEMAND

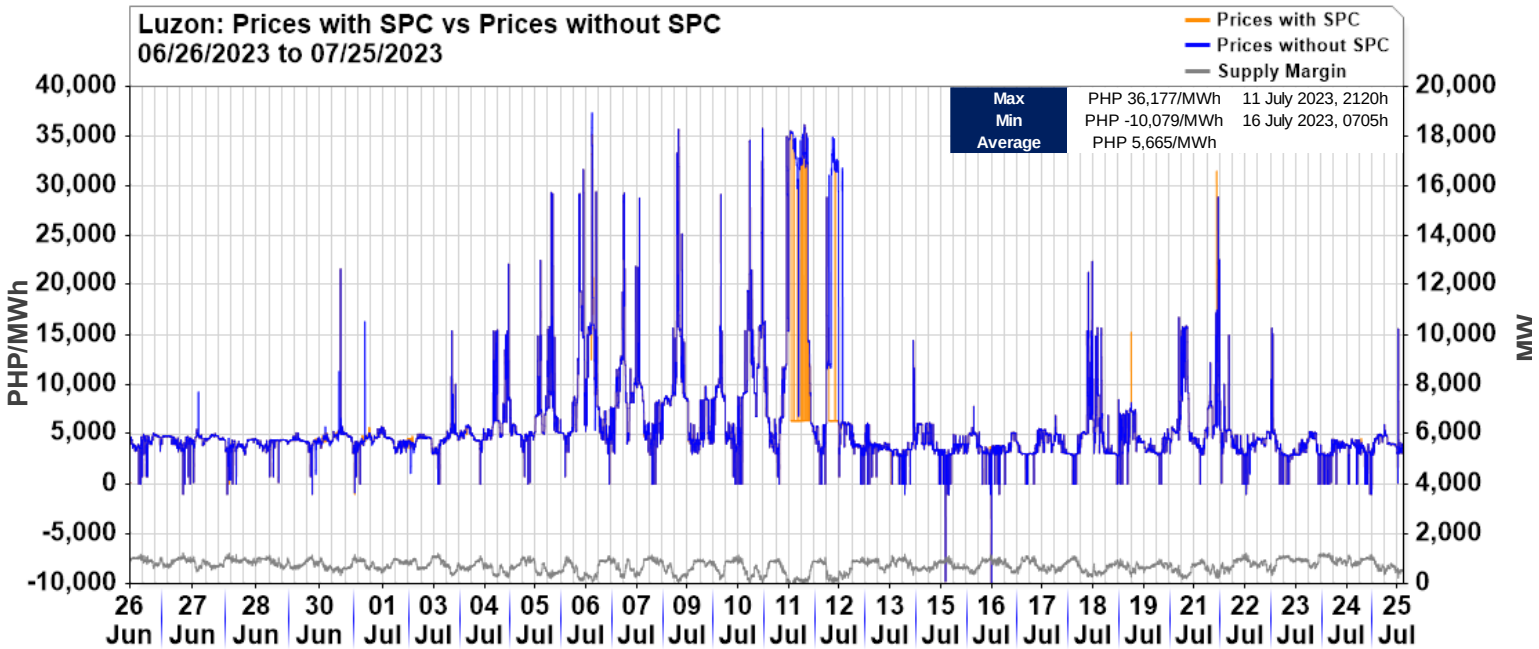




MARKET OUTCOME

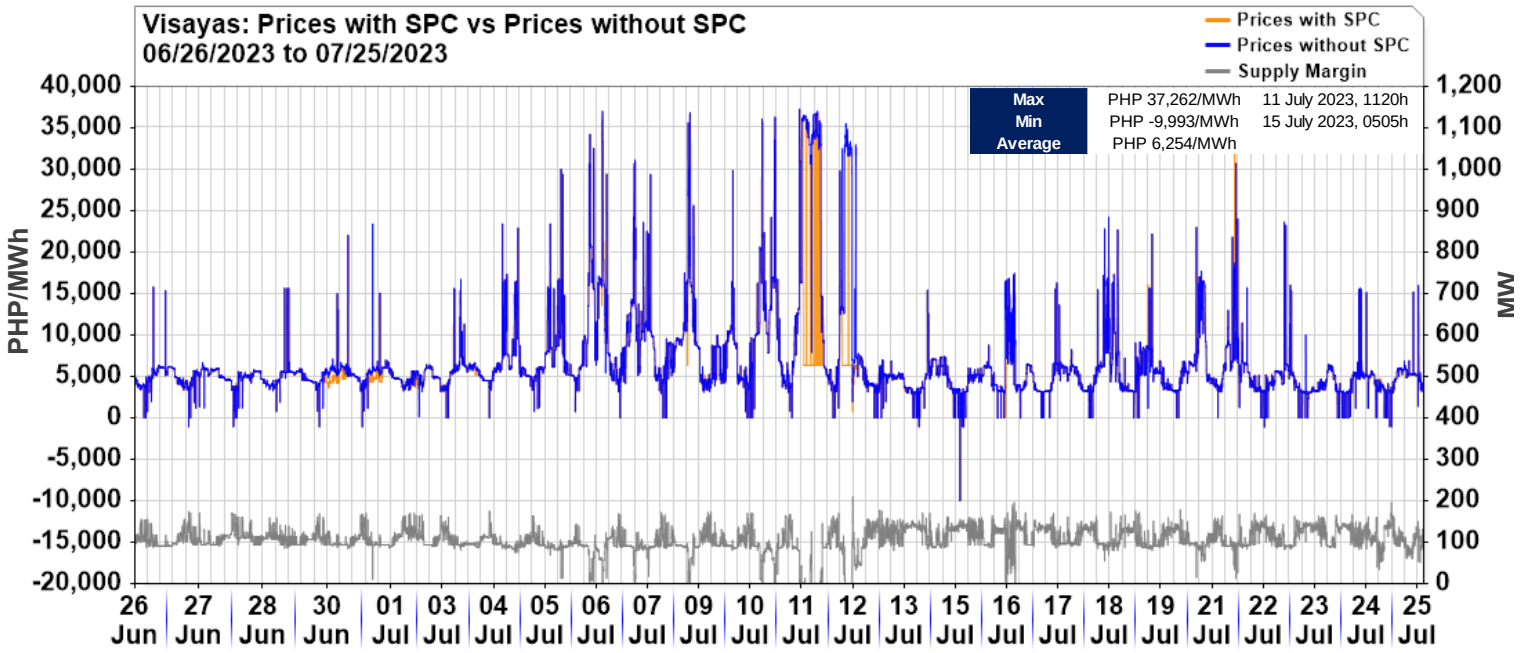
MARKET PRICES

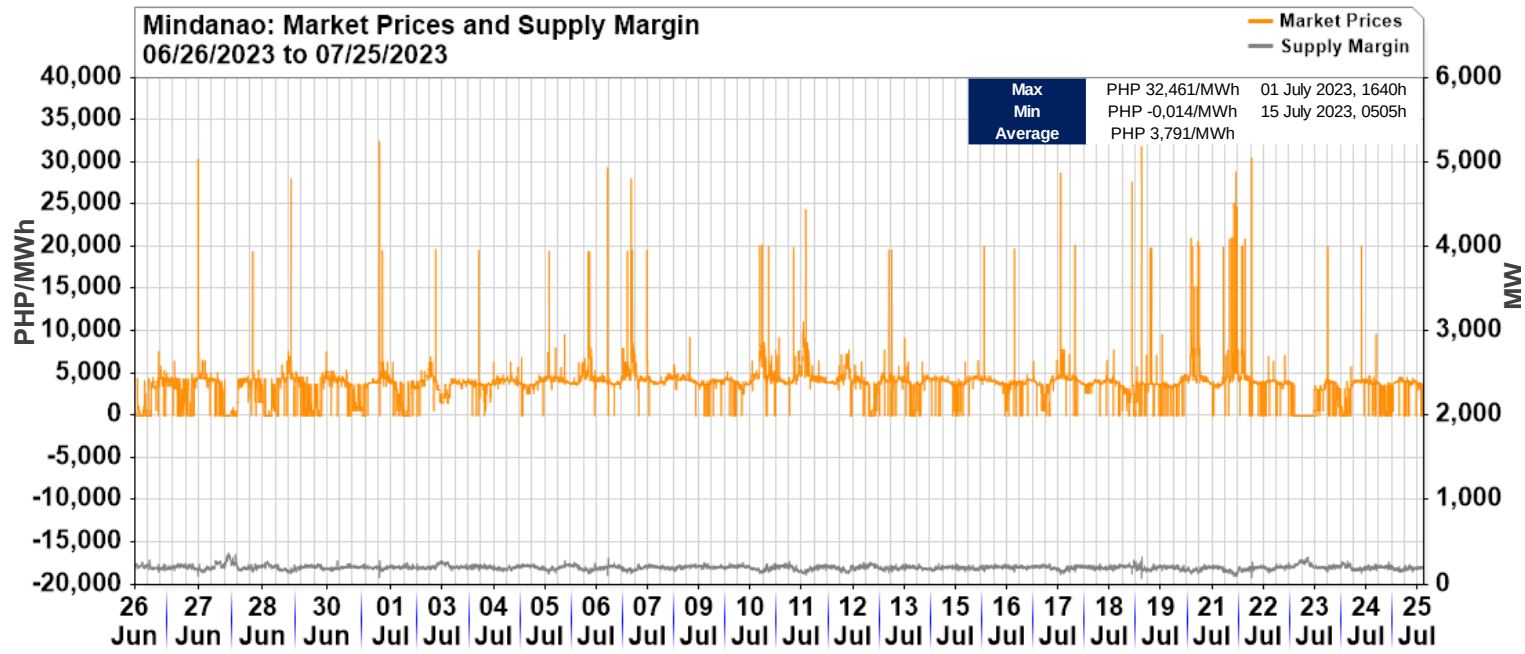




MARKET OUTCOME

MARKET PRICES

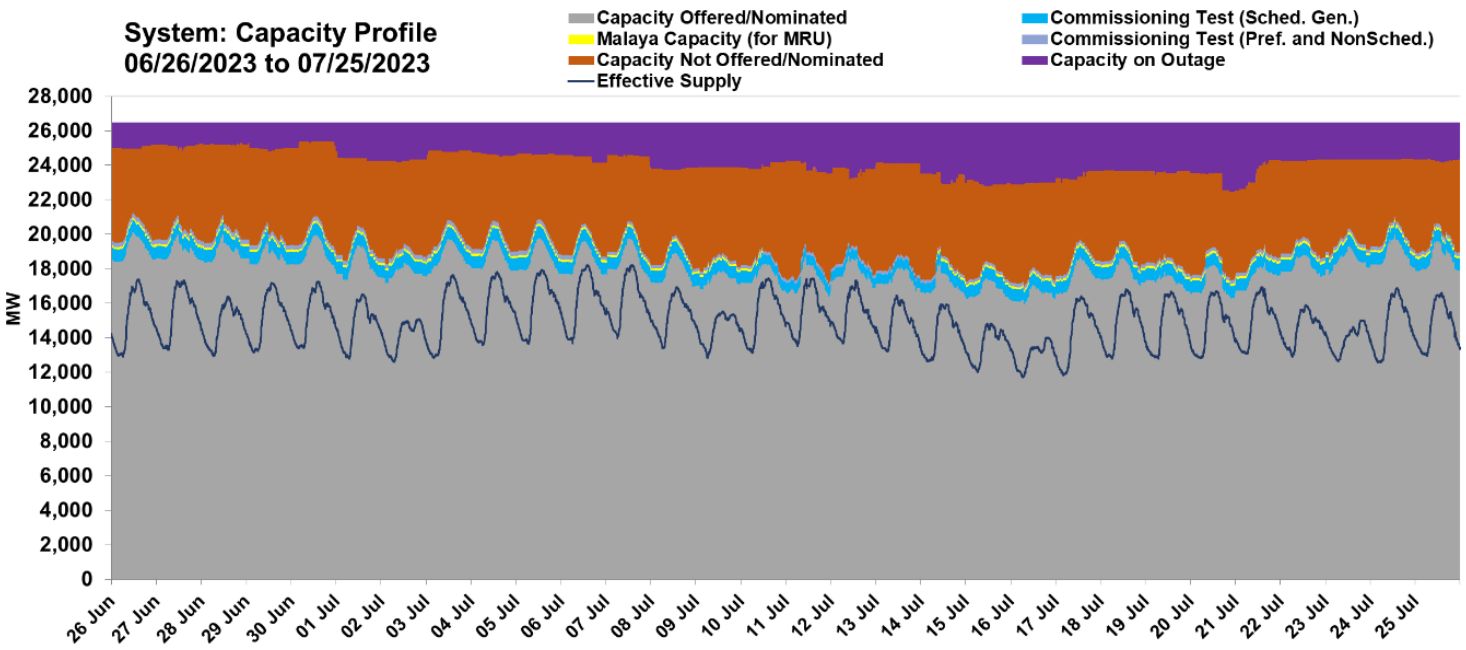


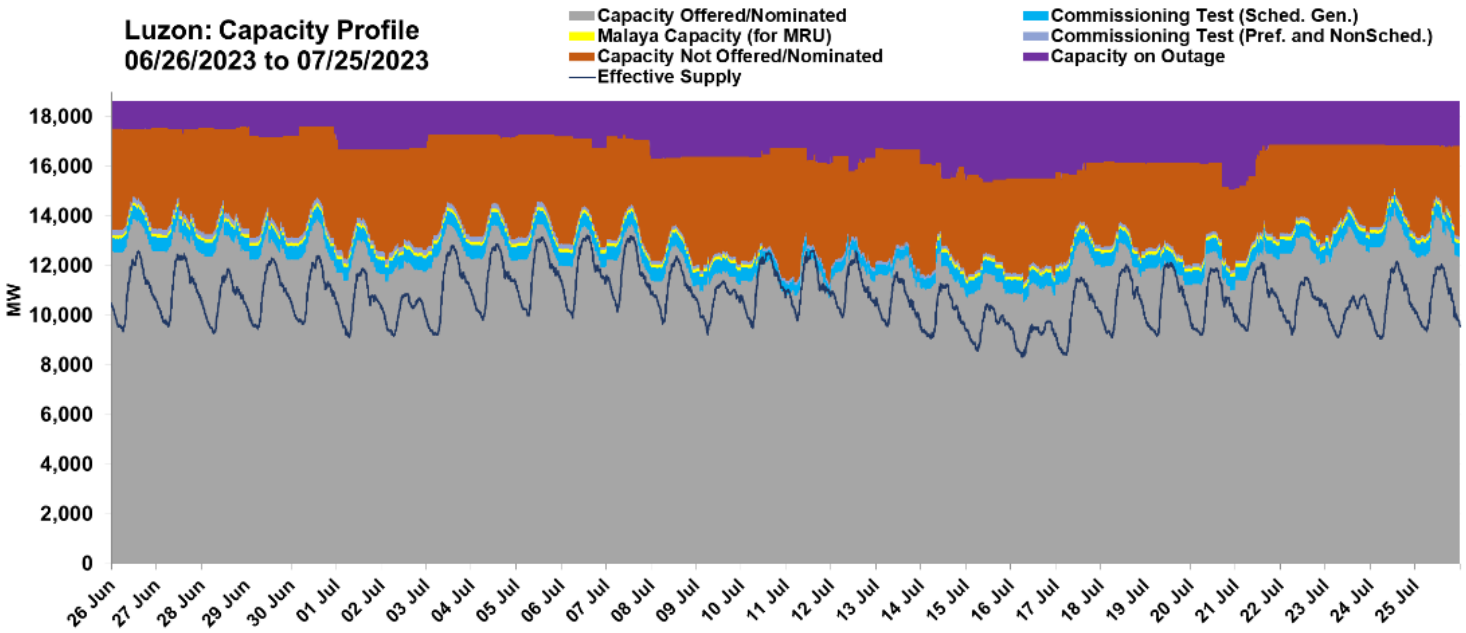


There were instances of sustained high prices in Luzon and Visayas brought about by the dynamics of supply and demand which subsequently caused the issuances of secondary price cap (SPC) for 208 intervals. It was however noted that there were no SPC issuances for the Mindanao region.

MARKET OUTCOME

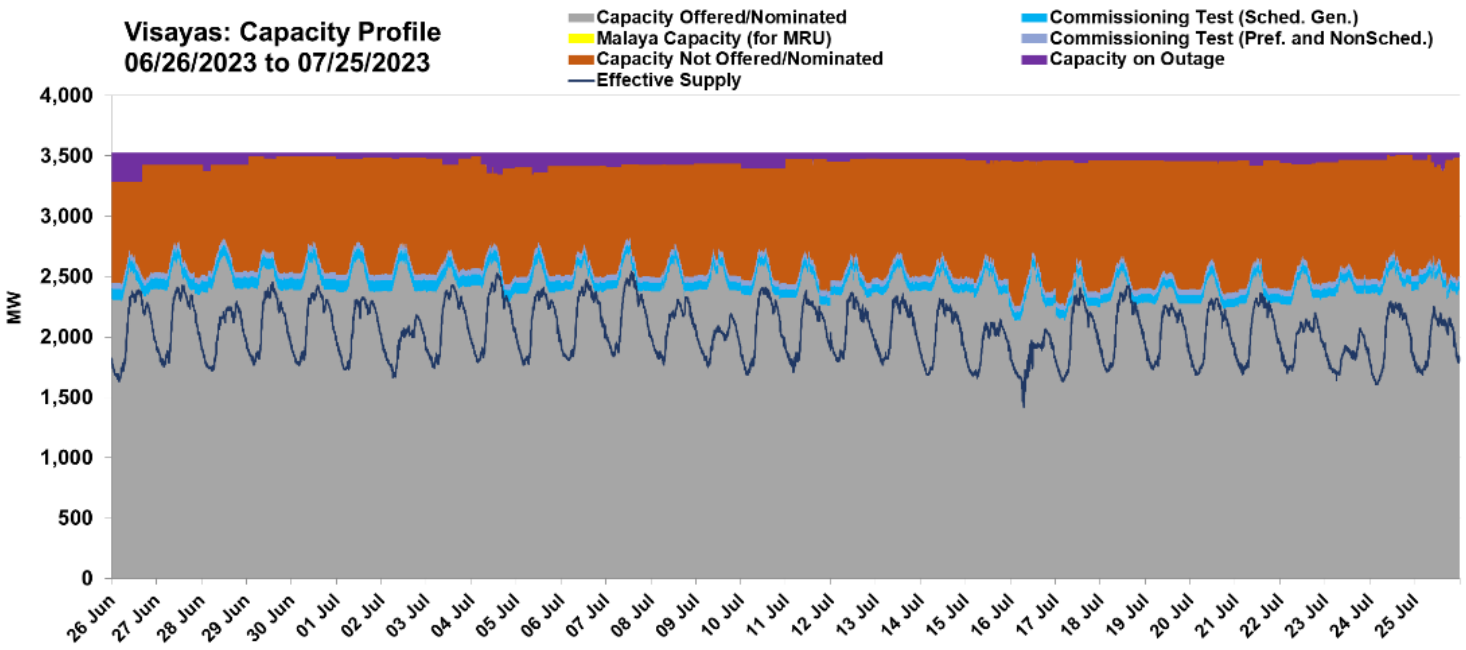
CAPACITY PROFILE

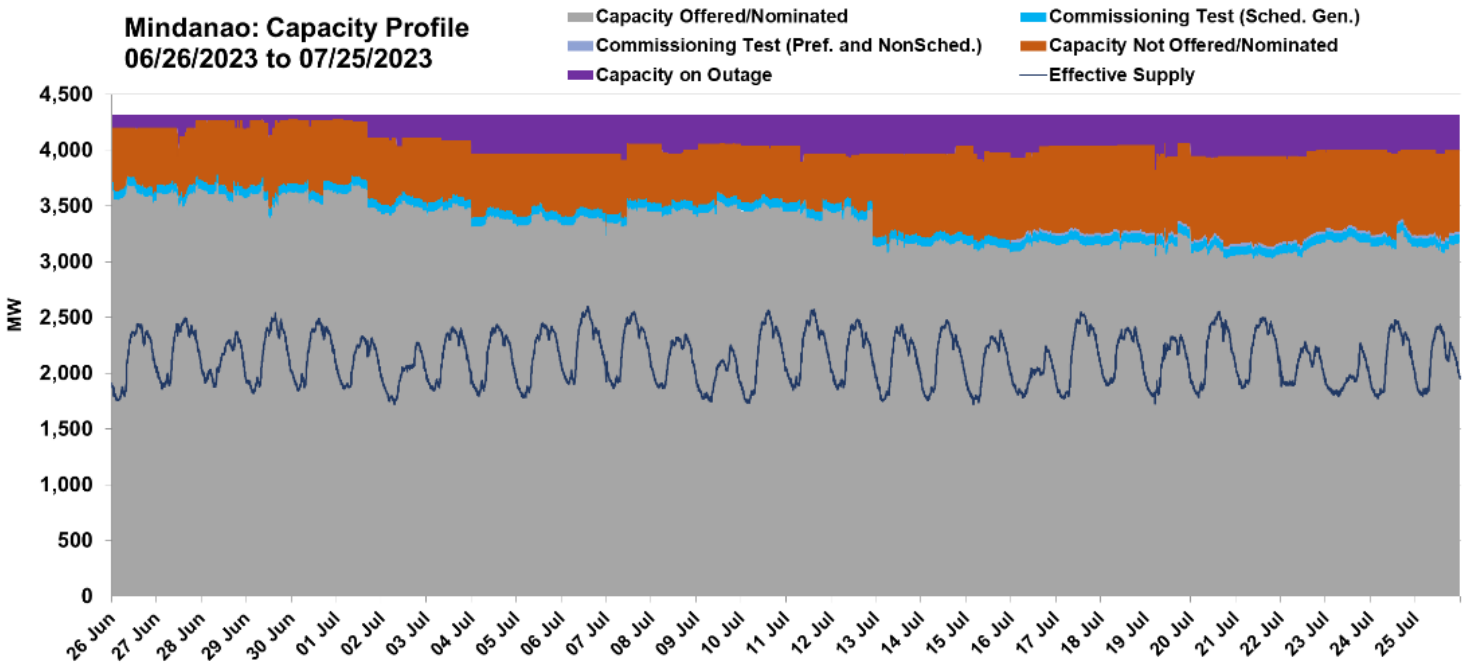




MARKET OUTCOME

CAPACITY PROFILE



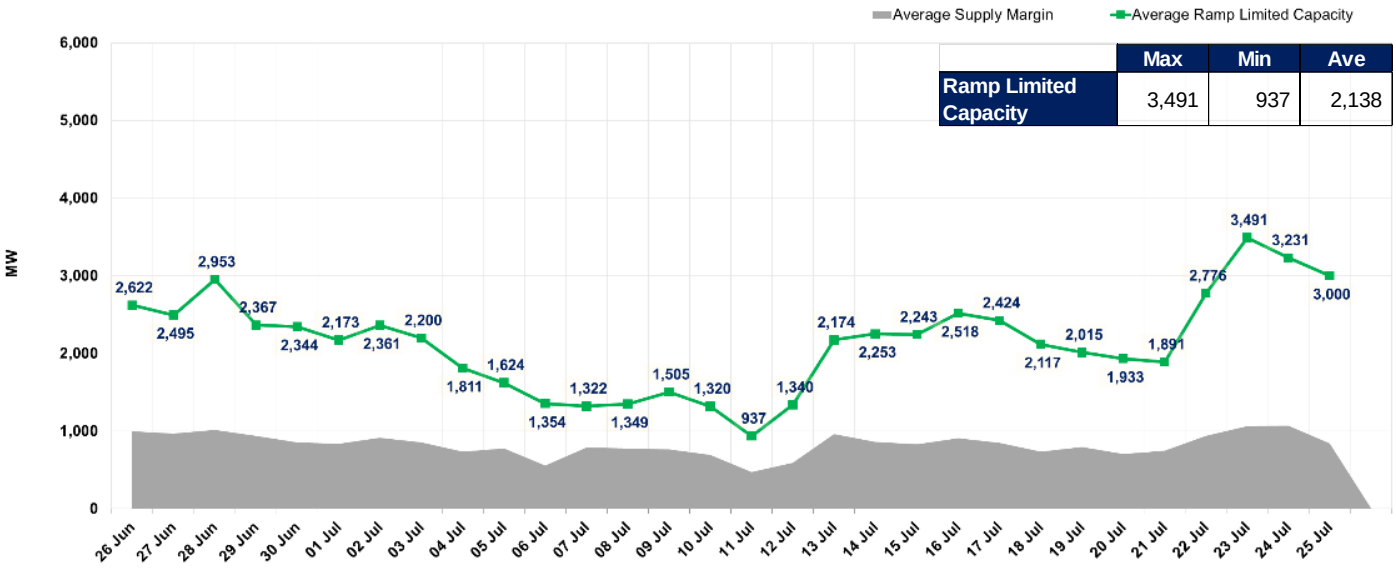


A total registered capacity of 26,500 MW was noted for all regions during the billing period in review. Capacity Not Offered/Nominated in all regions increased, which was mostly attributable to resource constraints.

MARKET OUTCOME

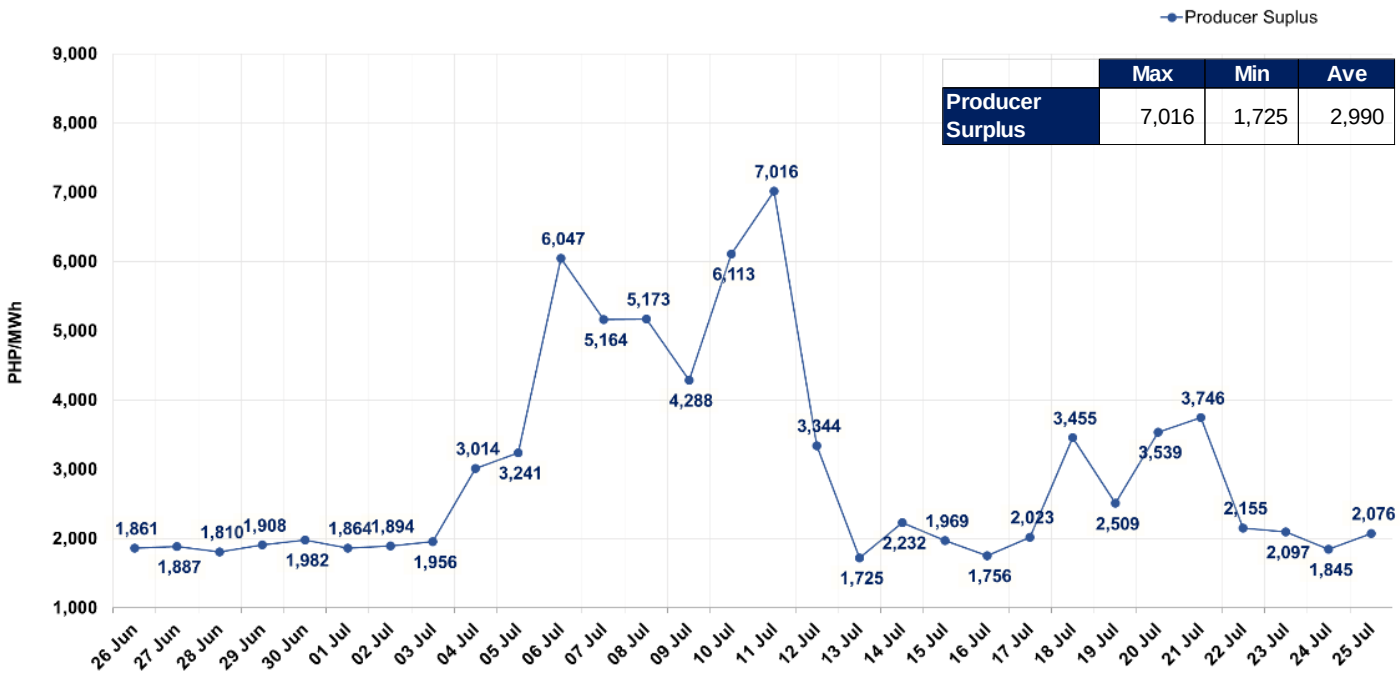
GENERATOR RAMPING AND SURPLUS

RAMP LIMITED CAPACITY



	Max	Min	Ave
Ramp Limited Capacity	3,491	937	2,138

PRODUCER SURPLUS

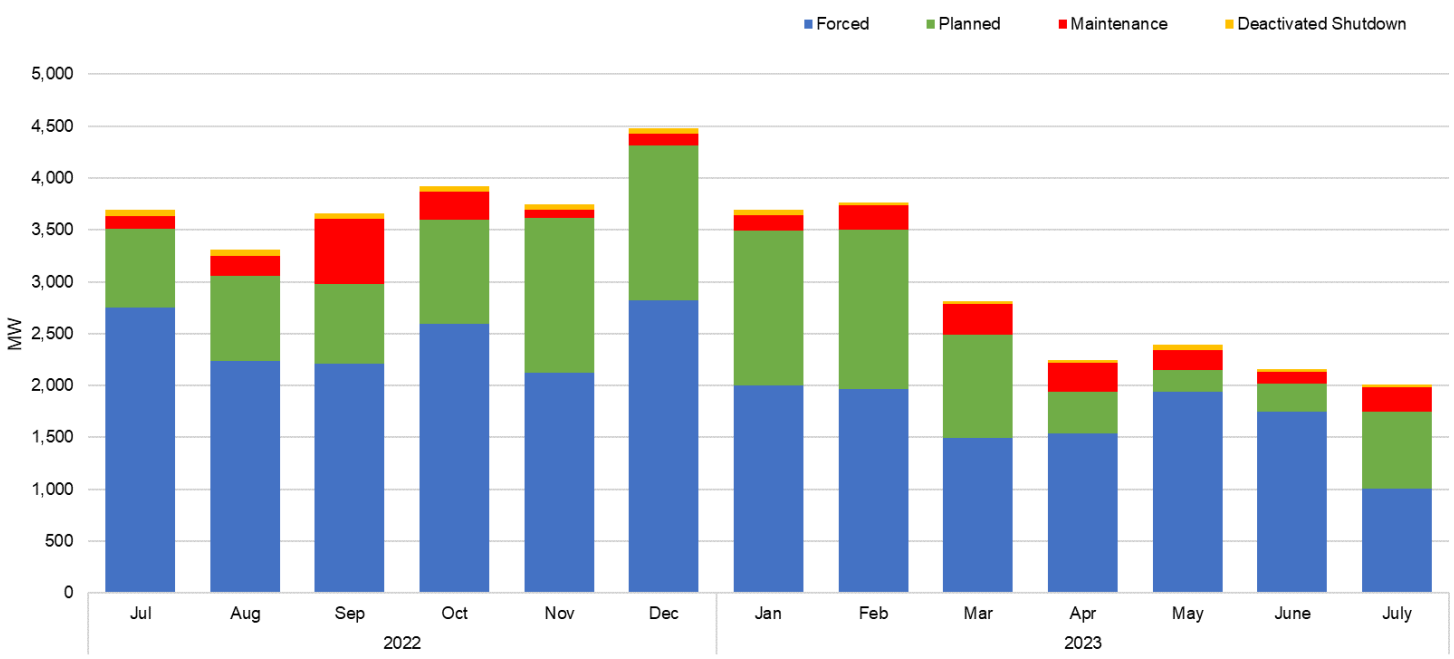


	Max	Min	Ave
Producer Surplus	7,016	1,725	2,990

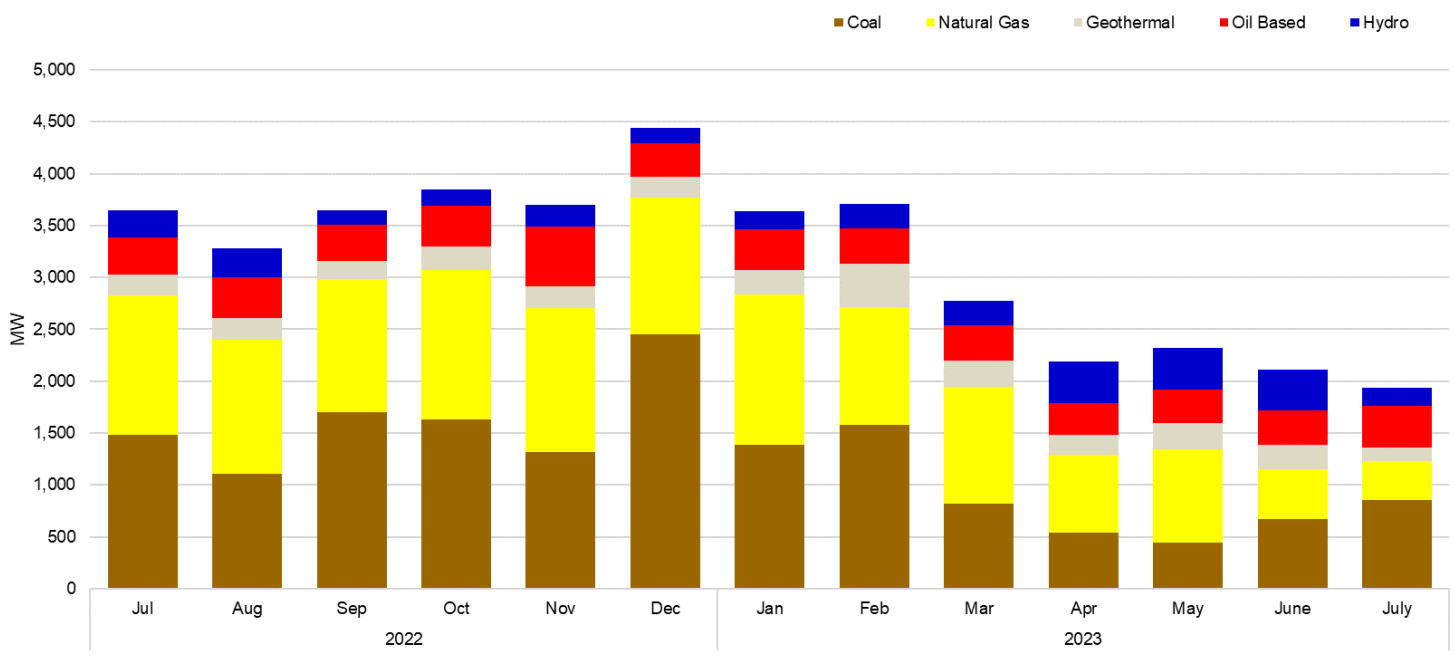
MARKET OUTCOME

OUTAGES

CAPACITY ON OUTAGE BY CATEGORY

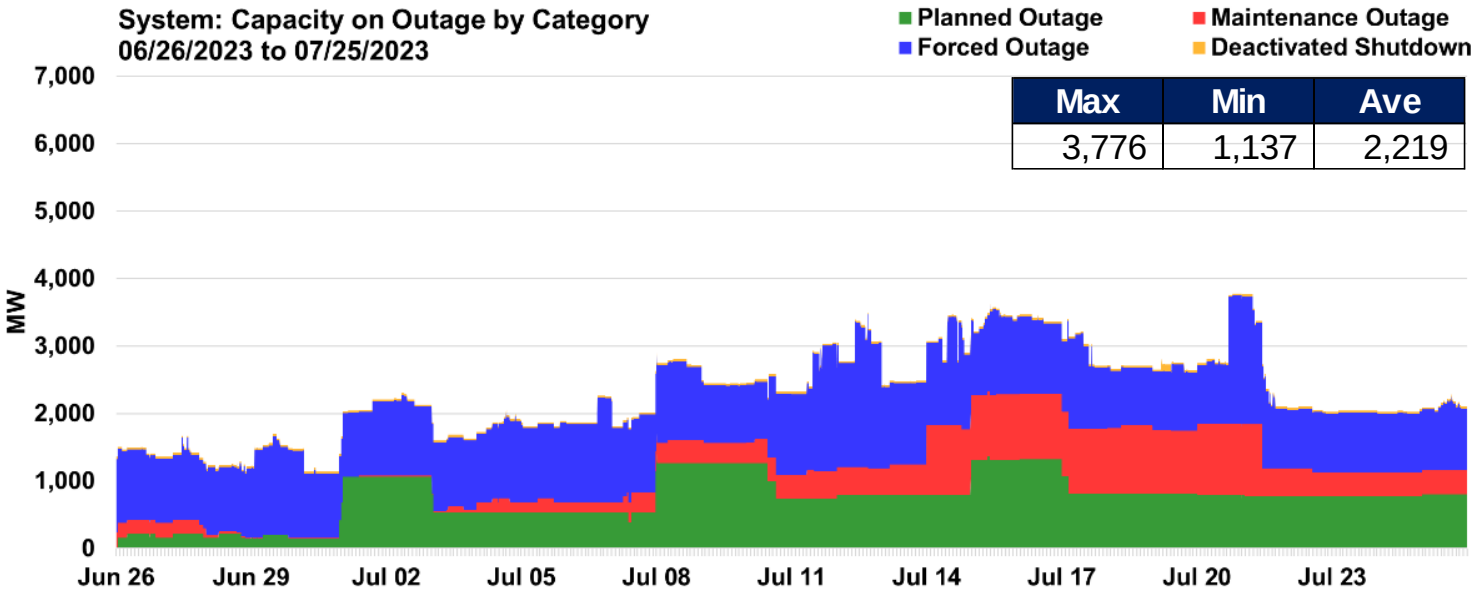


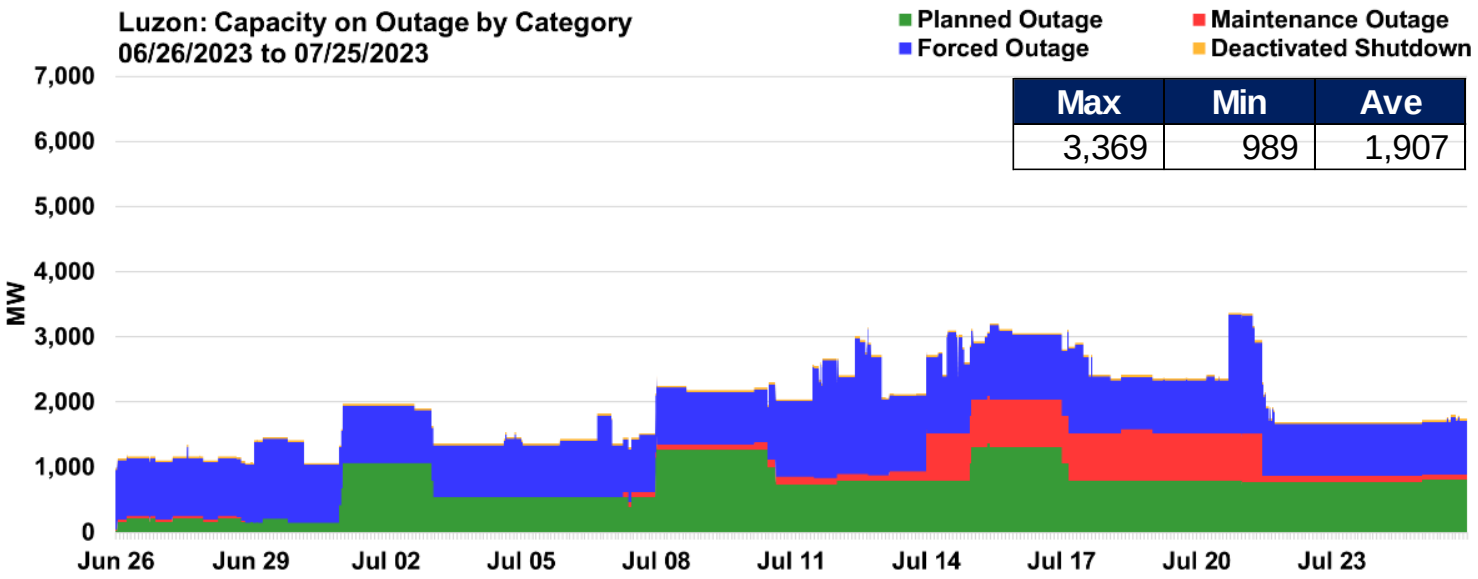
CAPACITY ON OUTAGE BY PLANT TYPE



MARKET OUTCOME

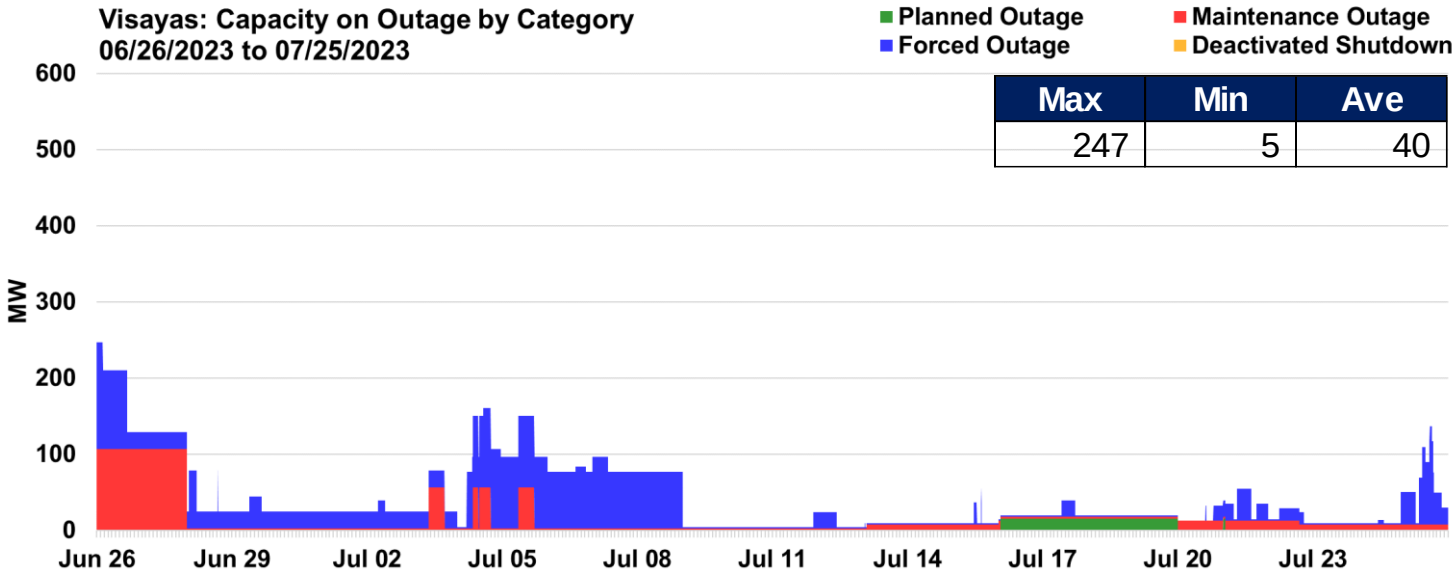
OUTAGES

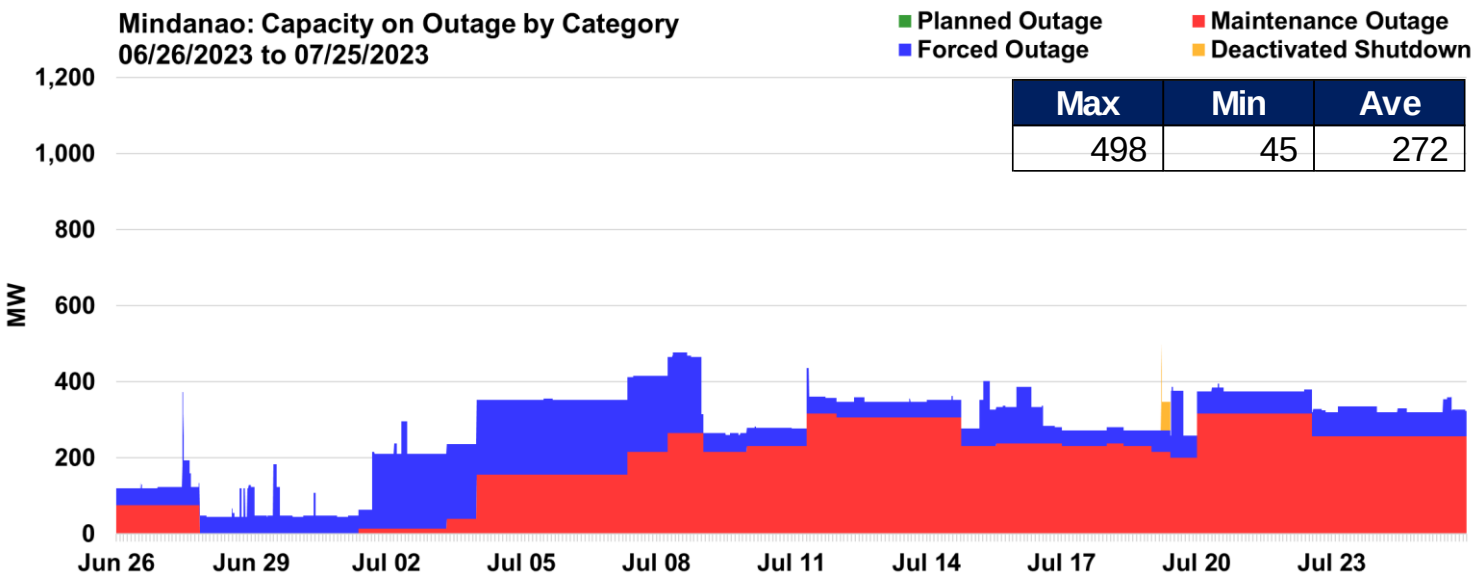




MARKET OUTCOME

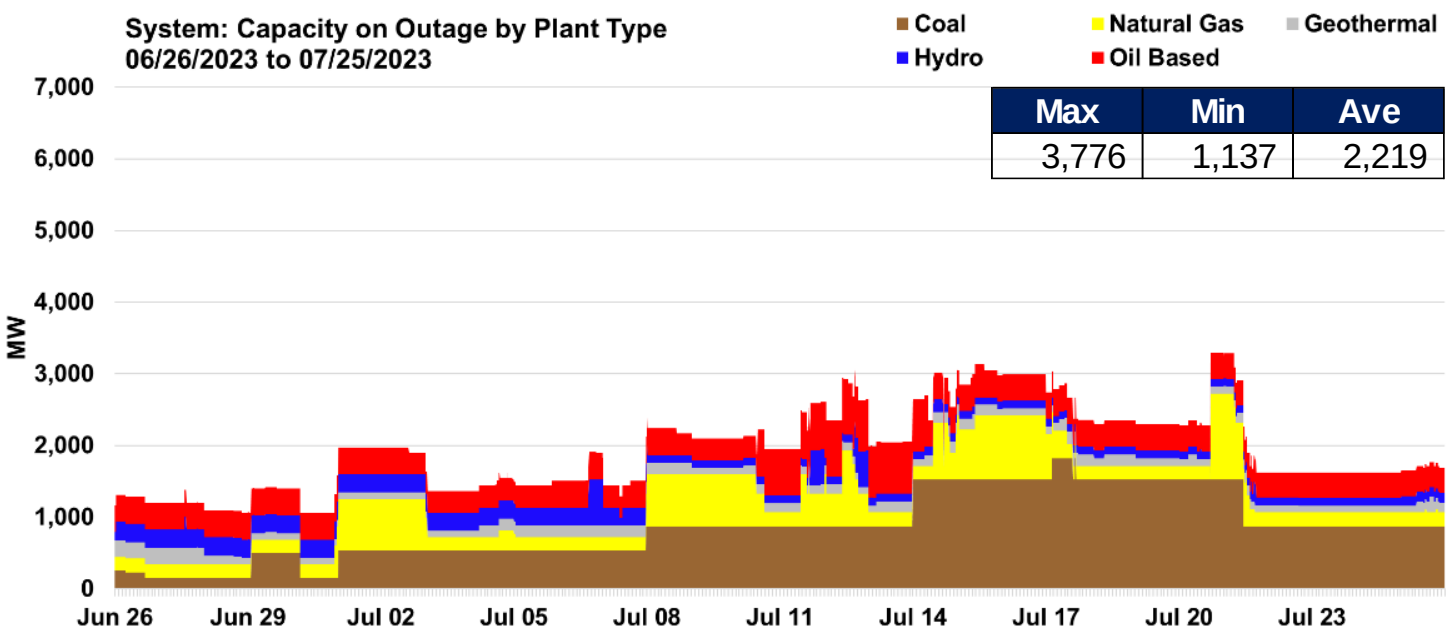
OUTAGES

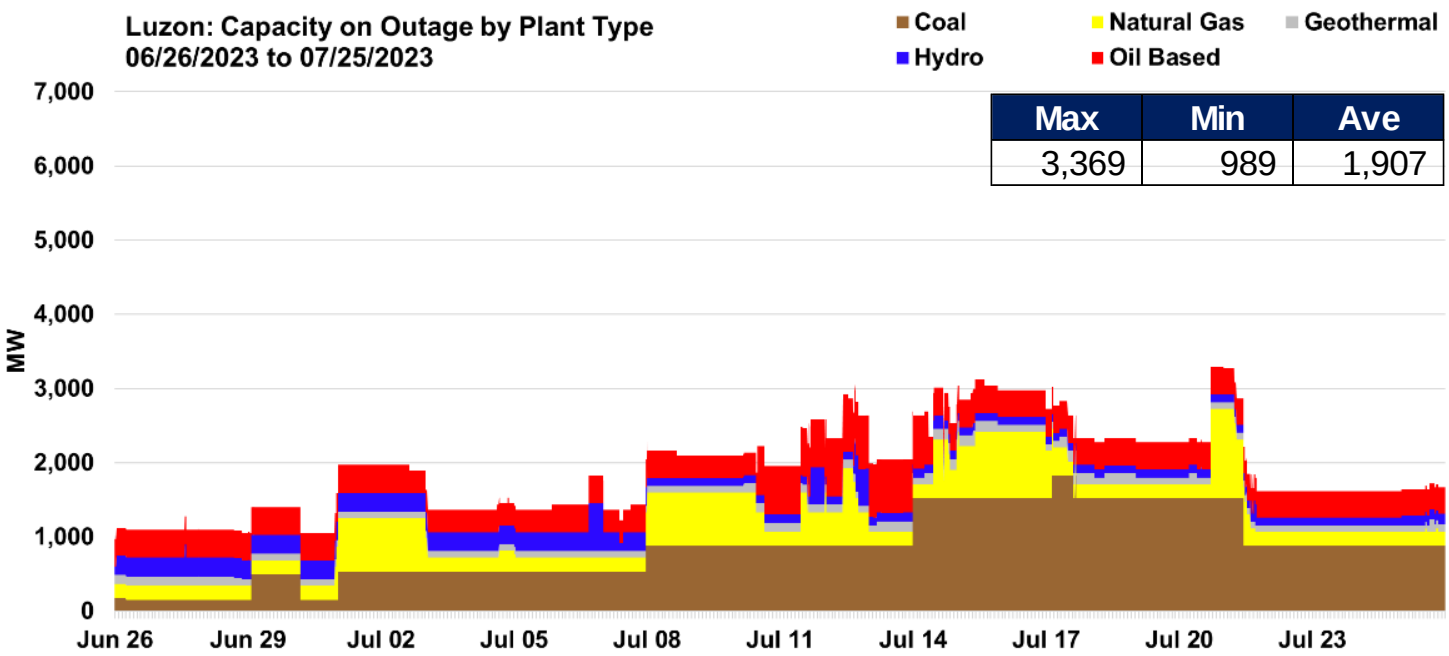




MARKET OUTCOME

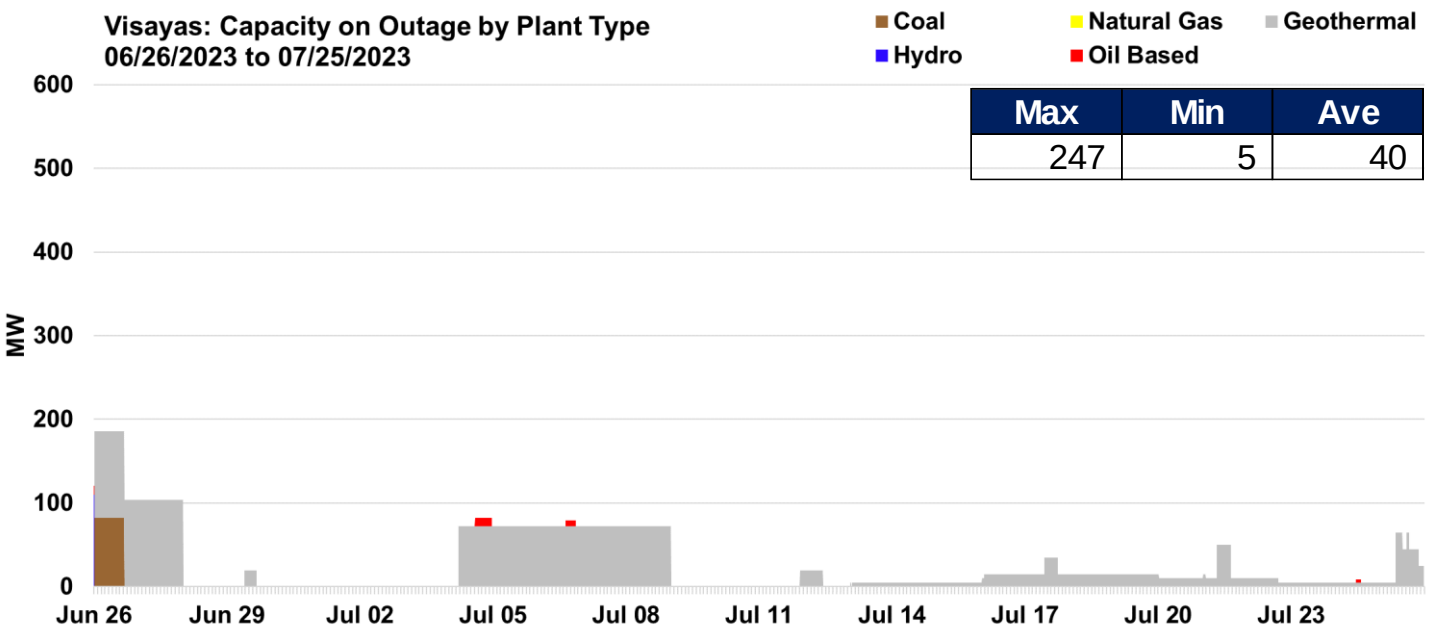
OUTAGES

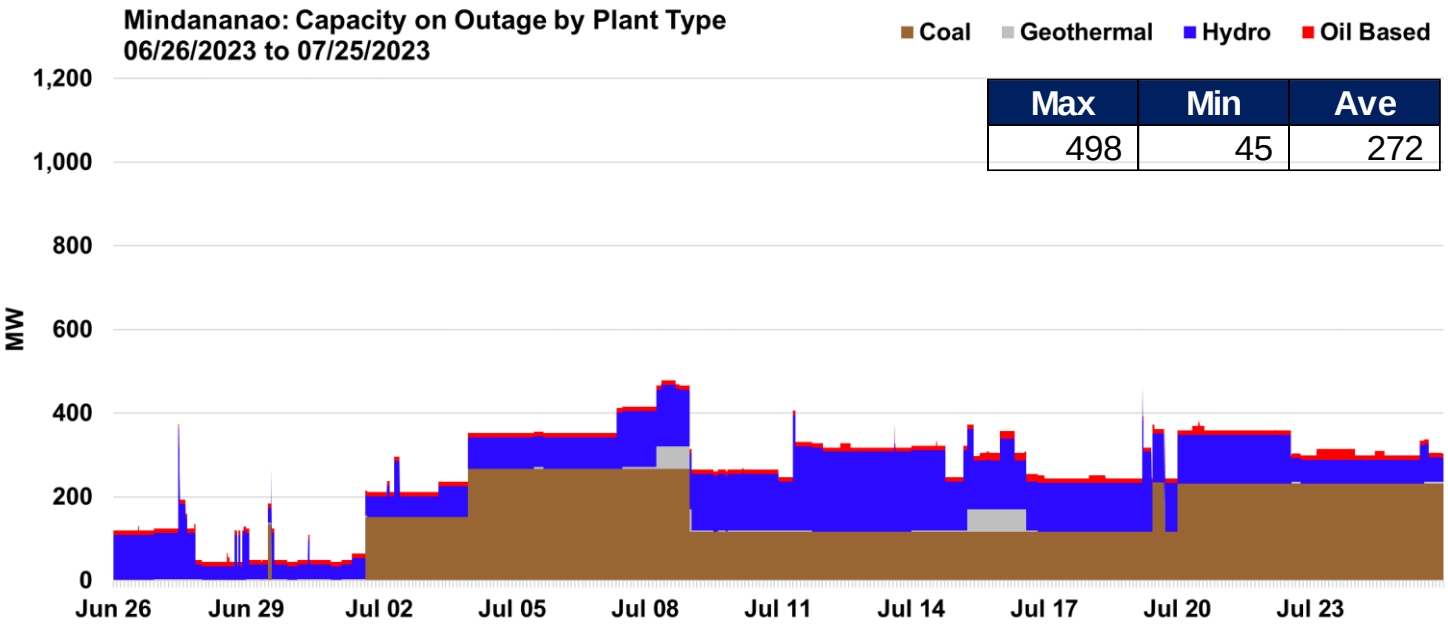




MARKET OUTCOME

OUTAGES





Most of the plants that were on outage were from Coal and Natural gas for Luzon and Visayas while it was the baseload power plants, such as Coal and Hydro power plants, for Mindanao region. These plant outages fall under forced and planned outage categories.

MARKET OUTCOME

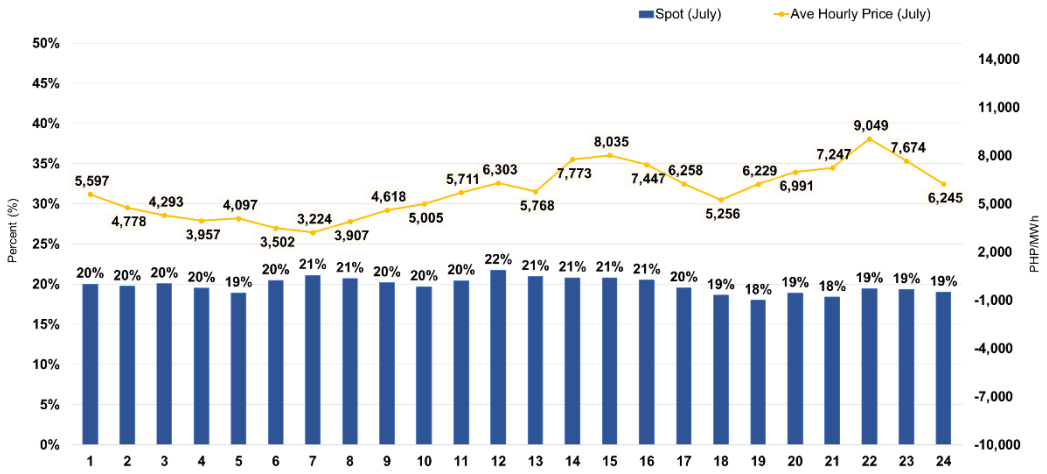
CAPACITY PROFILE

Plant Type	June 2023				July 2023			
	System	Luzon	Visayas	Mindanao	System	Luzon	Visayas	Mindanao
	Capacity				Capacity			
BAT	475	295	100	80	475	295	100	80
BIOF	415	182	191	42	415	182	191	42
COAL	12,108	8,458	1,385	2,266	12,108	8,458	1,385	2,266
GEO	1,703	751	848	104	1,703	751	848	104
HYD	3,695	2,537	53	1,105	3,695	2,537	53	1,105
NATG	3,286	3,286			3,286	3,286		
OIL	2,838	1,741	441	657	2,838	1,741	441	657
SOLR	1,474	990	416	67	1,474	990	416	67
WIND	507	417	91		507	417	91	

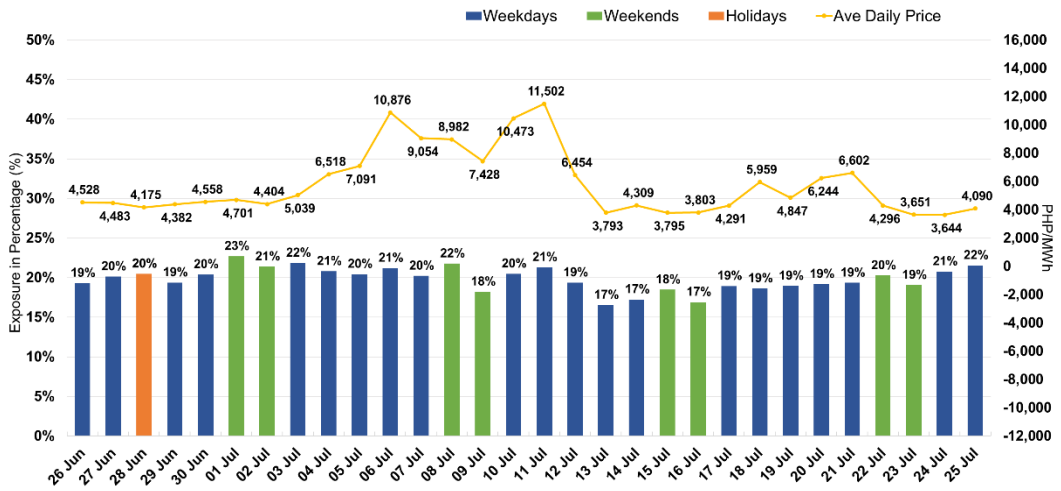
MARKET OUTCOME

SPOT EXPOSURE

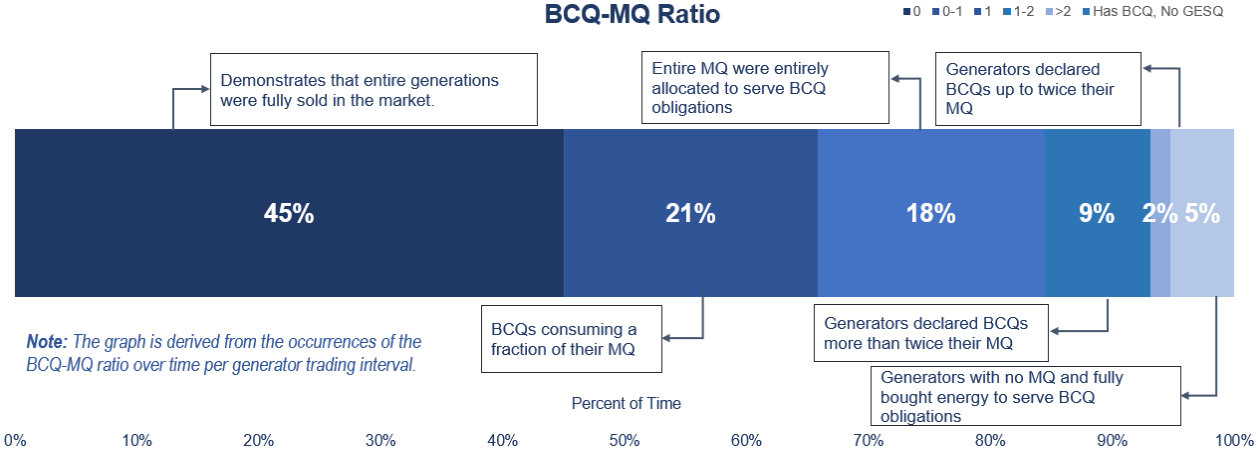
HOURLY SPOT



DAILY SPOT



BCQ-MQ Ratio



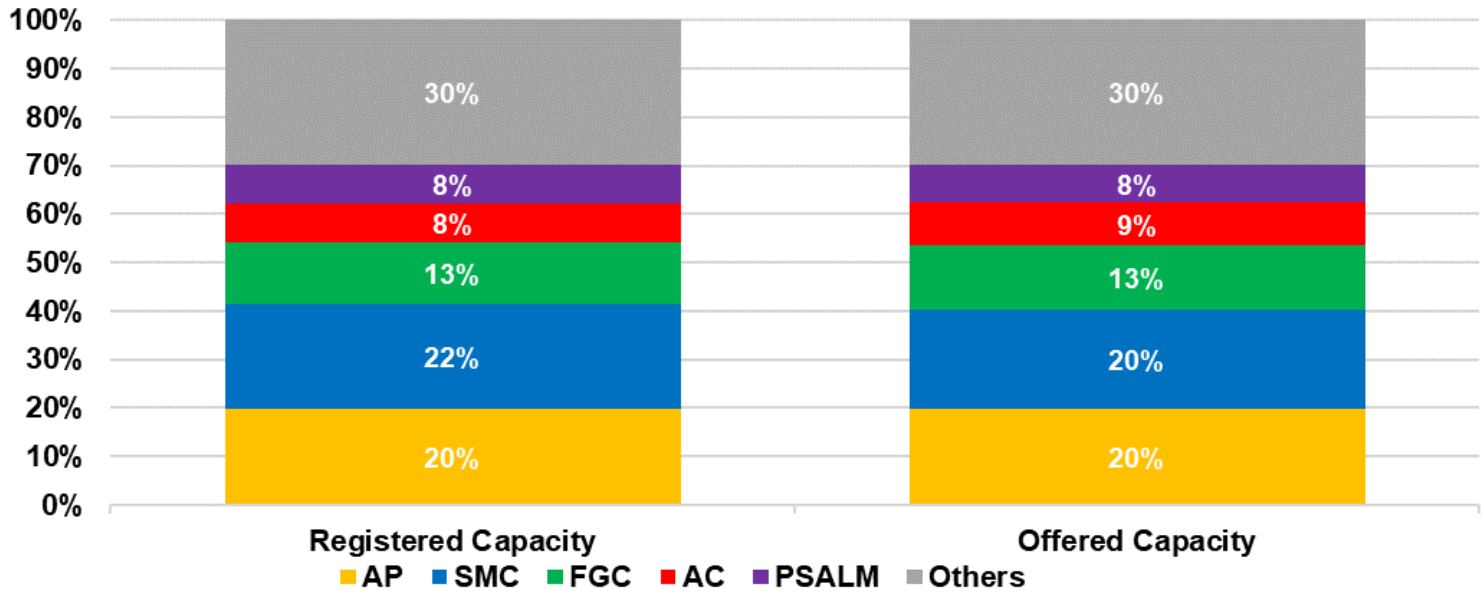
Note: *The graph is derived from the occurrences of the BCQ-MQ ratio over time per generator trading interval.*

Total spot quantities of generator participants in the July billing period were at an average of 19.9% with an average price of PHP5,090/MWh during off-peak hours and PHP6,810/MWh during peak hours. In addition, spot exposures during weekdays and weekends averaged at 19.9% respectively with an average price of PHP6,218/MWh for weekdays and PHP5,217/MWh for the weekends.

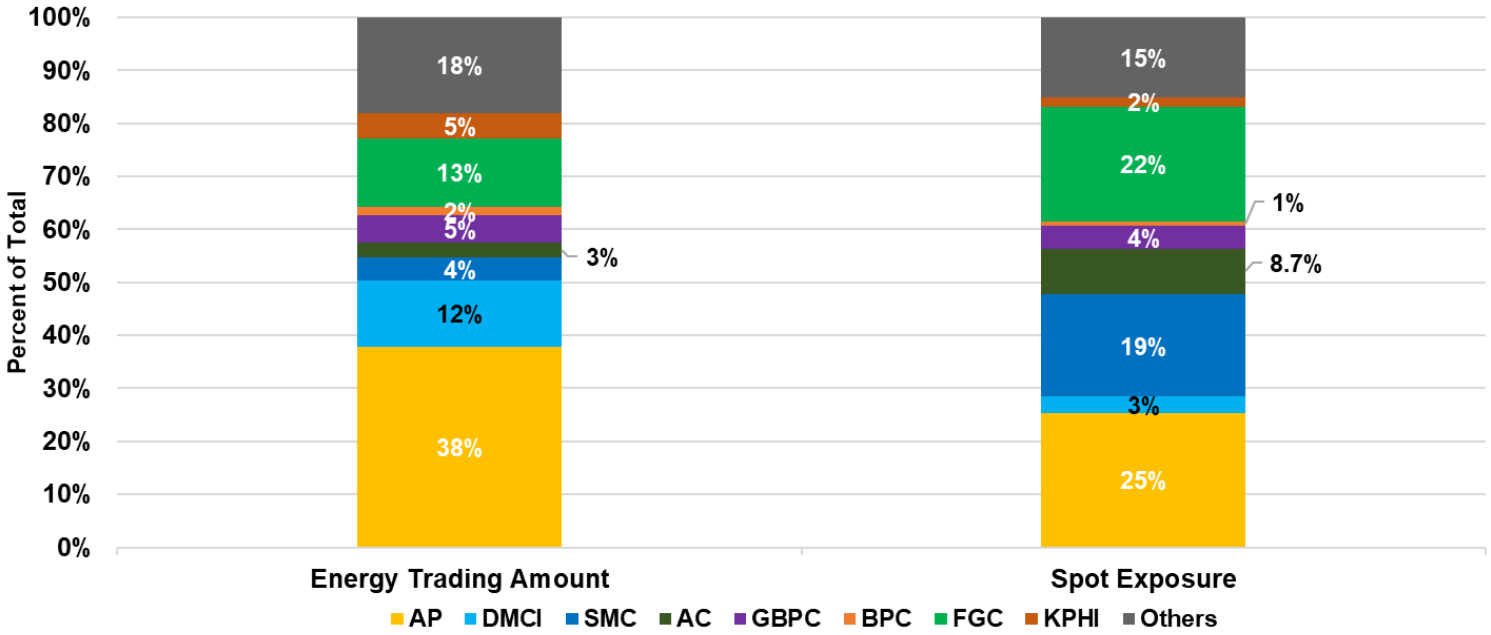
MARKET OUTCOME

STRUCTURAL COMPETITION INDICES

SYSTEM MARKET SHARES



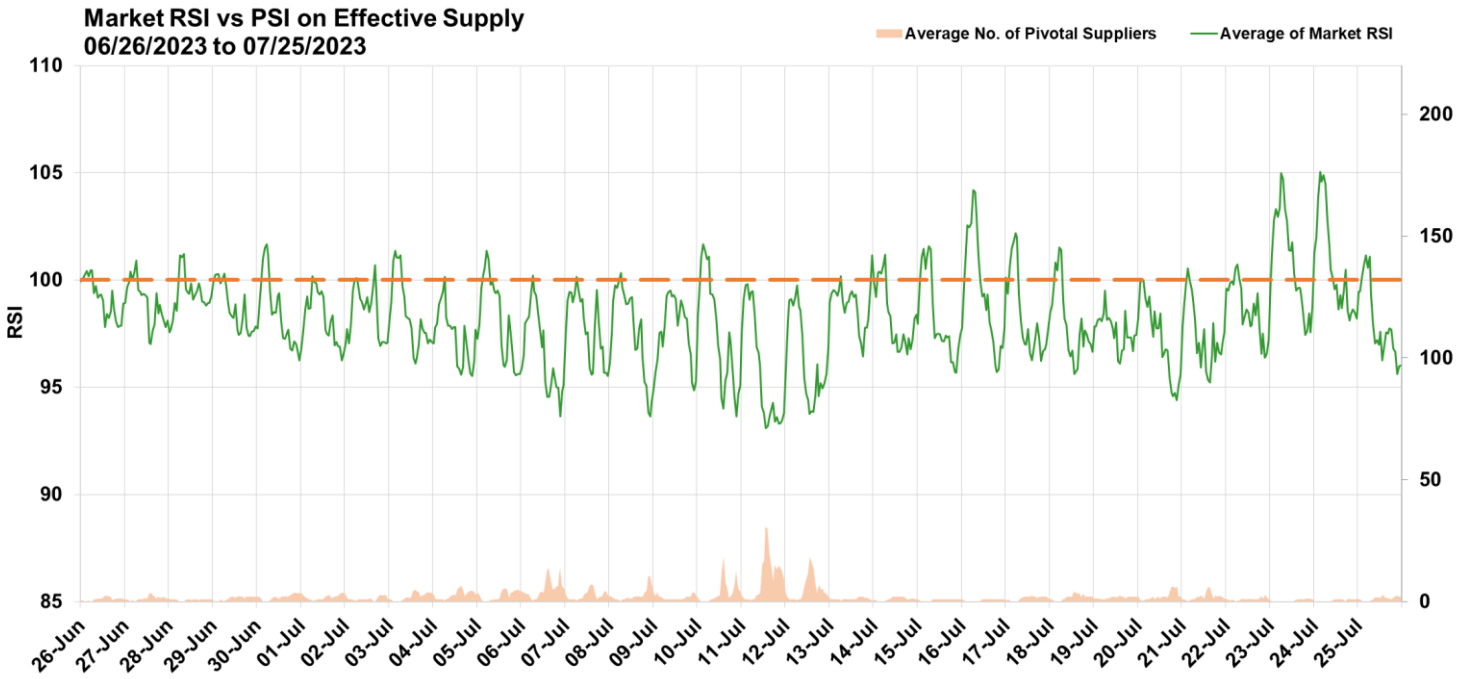
ENERGY TRADING AMOUNT (ETA)



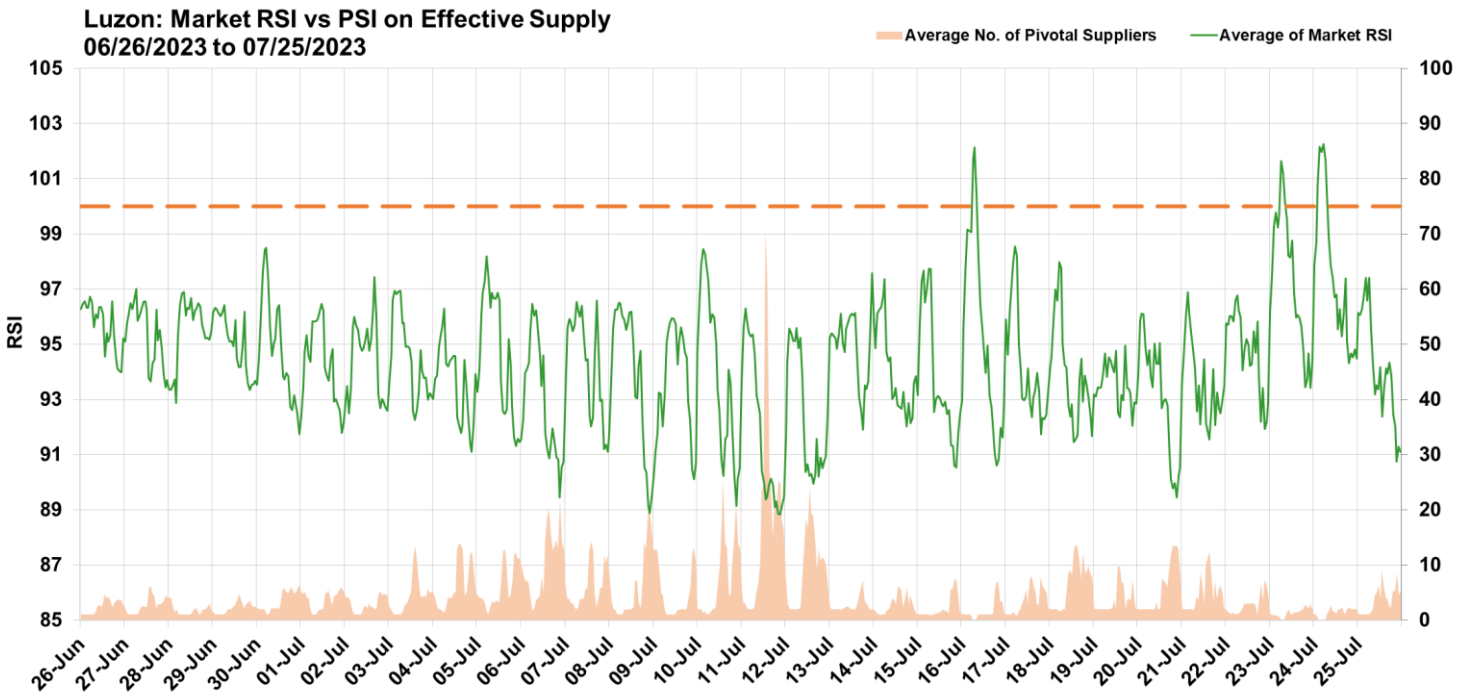
MARKET OUTCOME

STRUCTURAL COMPETITION

SYSTEM RSI



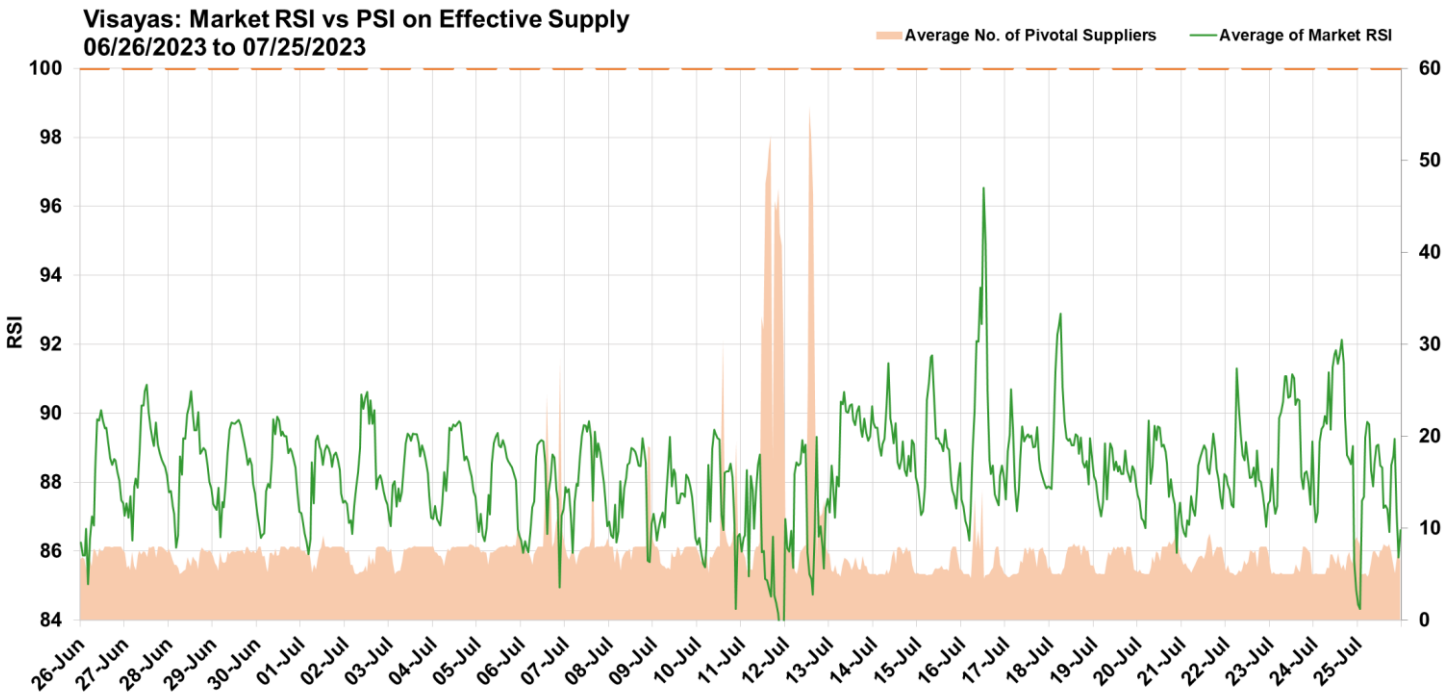
LUZON RSI



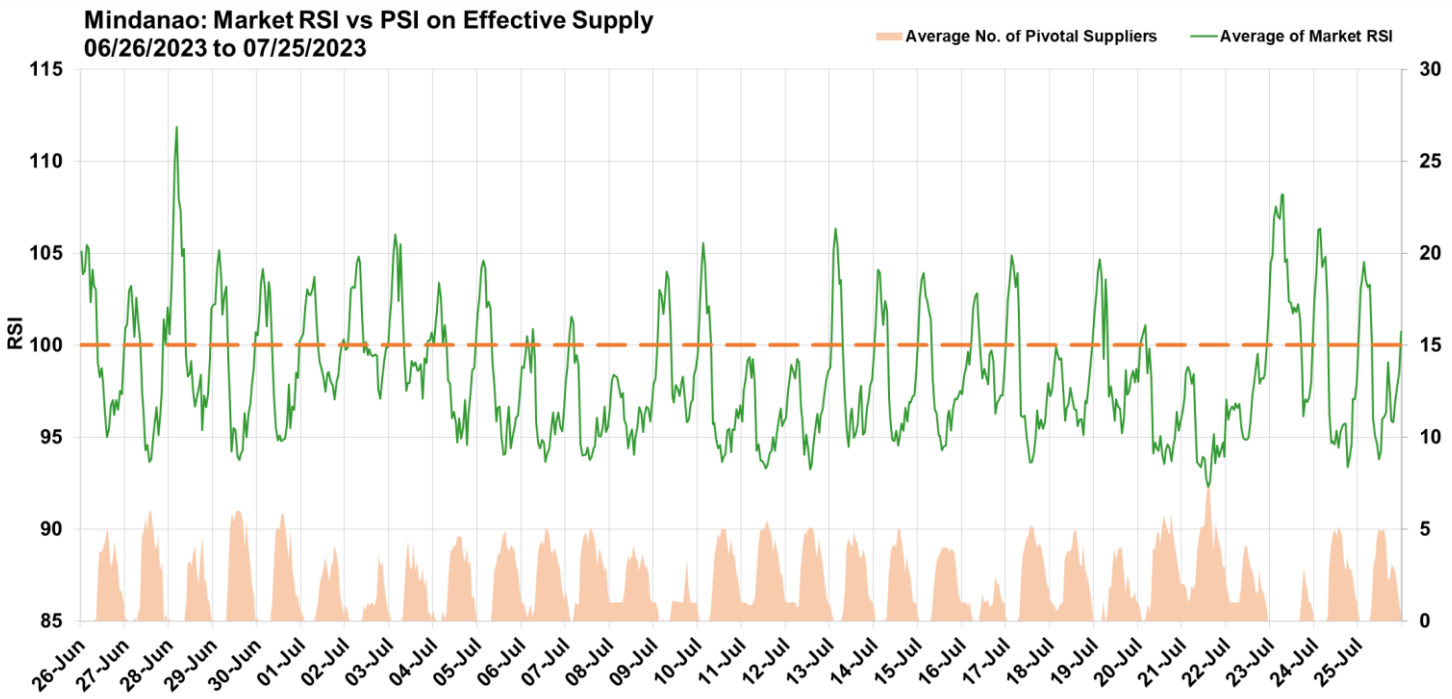
MARKET OUTCOME

STRUCTURAL COMPETITION

VISAYAS RSI



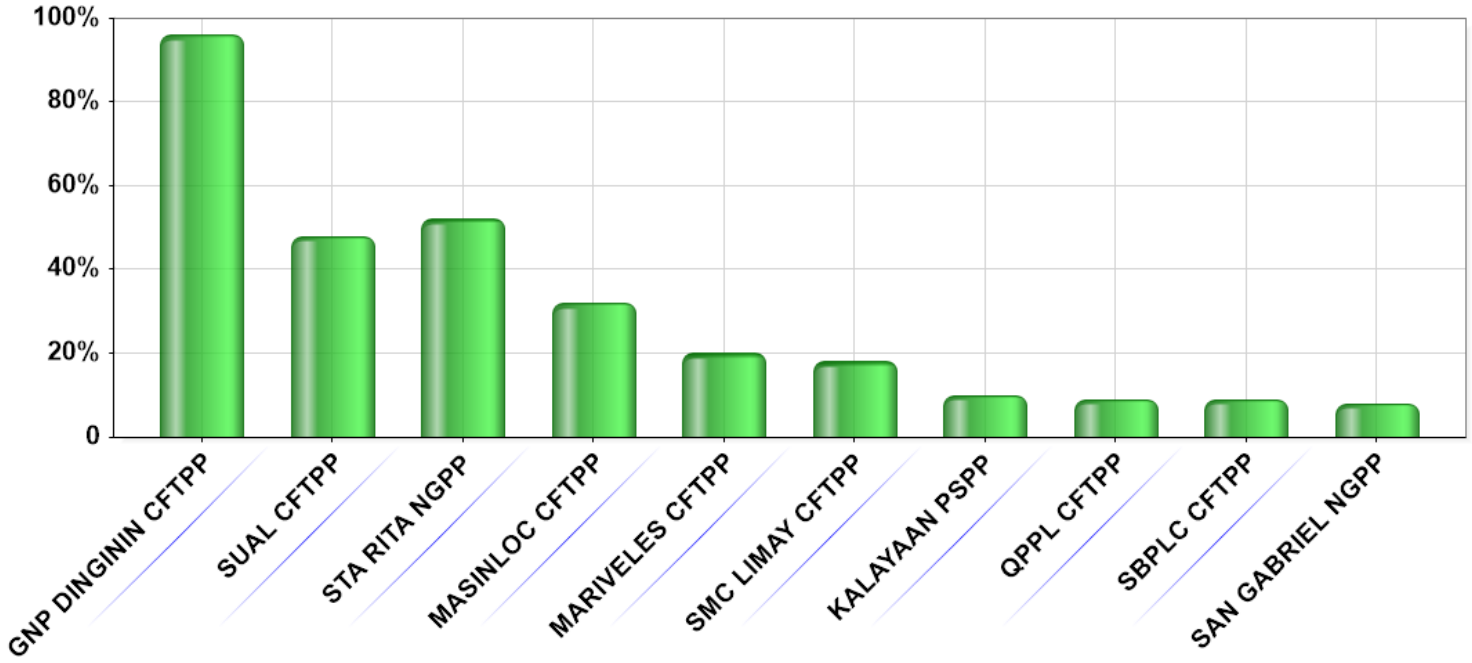
MINDANAO RSI



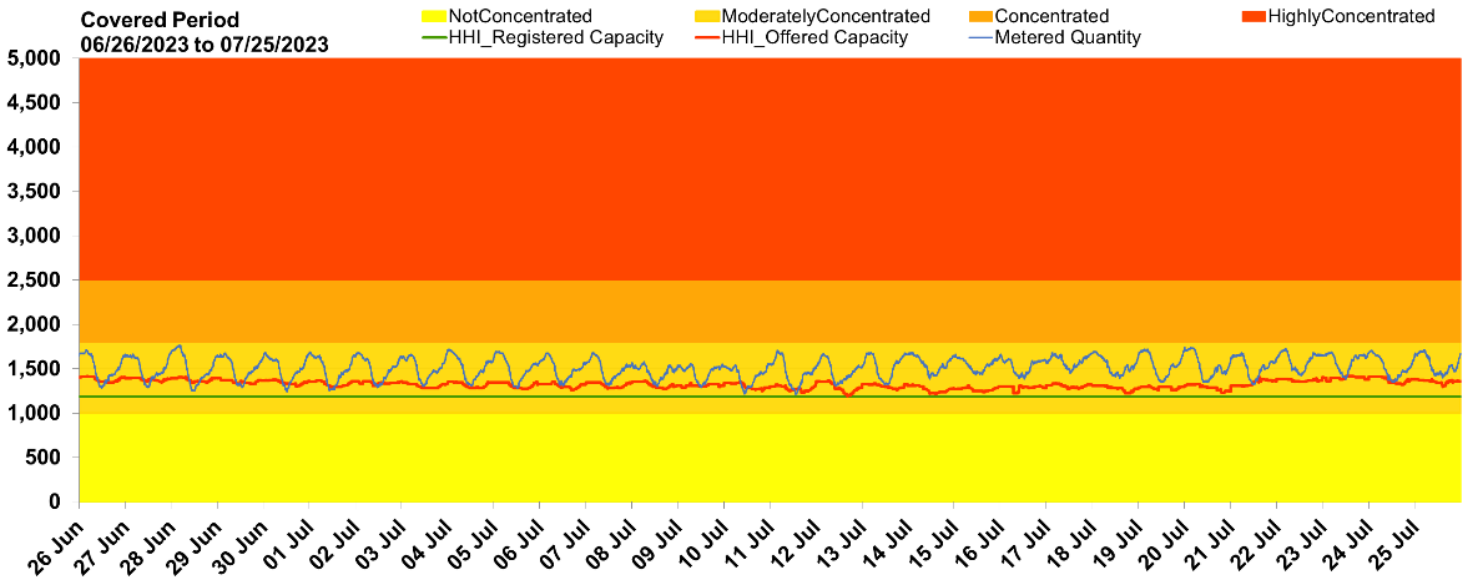
MARKET OUTCOME

STRUCTURAL COMPETITION

SYSTEM PIVOTAL SUPPLIERS

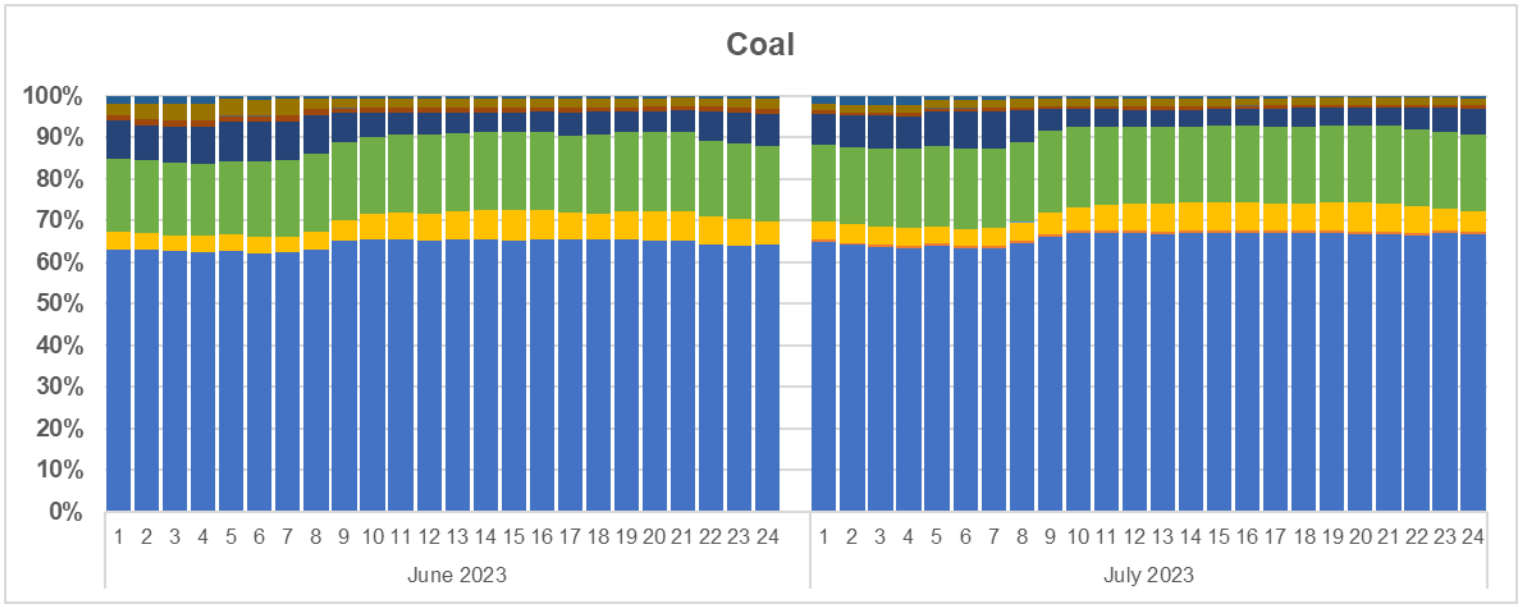


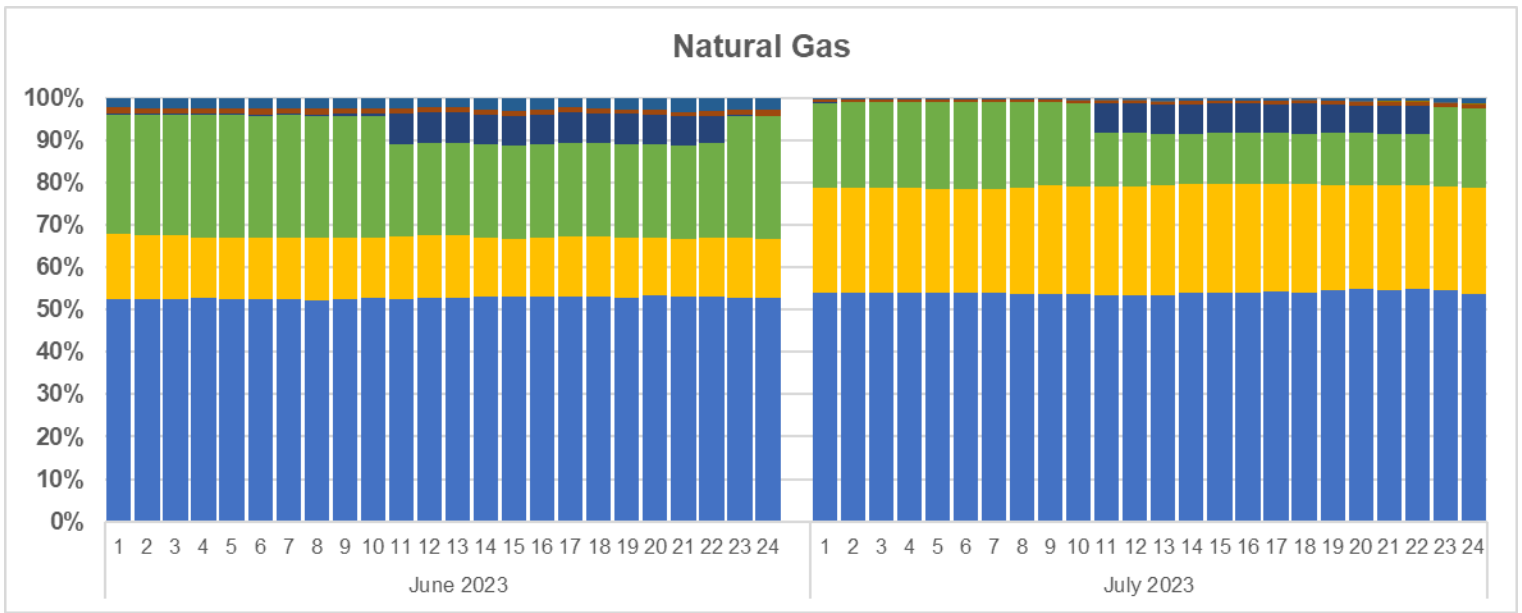
SYSTEM HHI

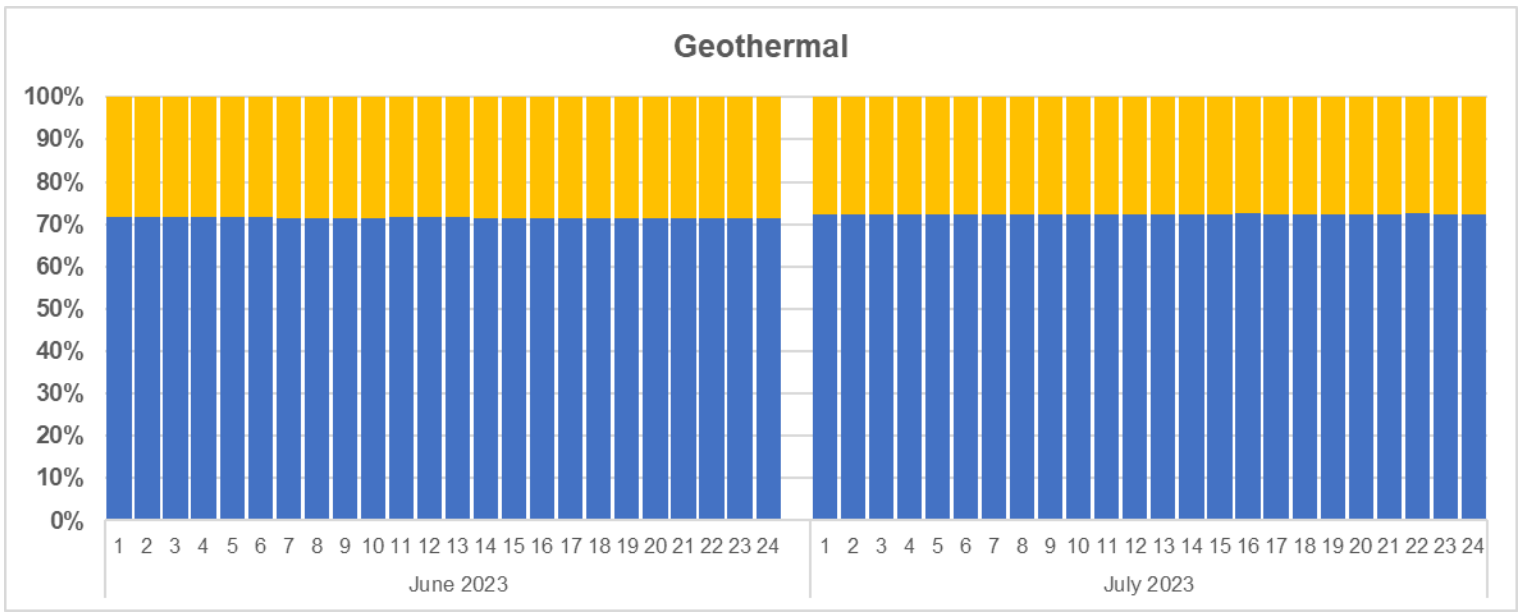


MARKET OUTCOME

BEHAVIORAL INDICES







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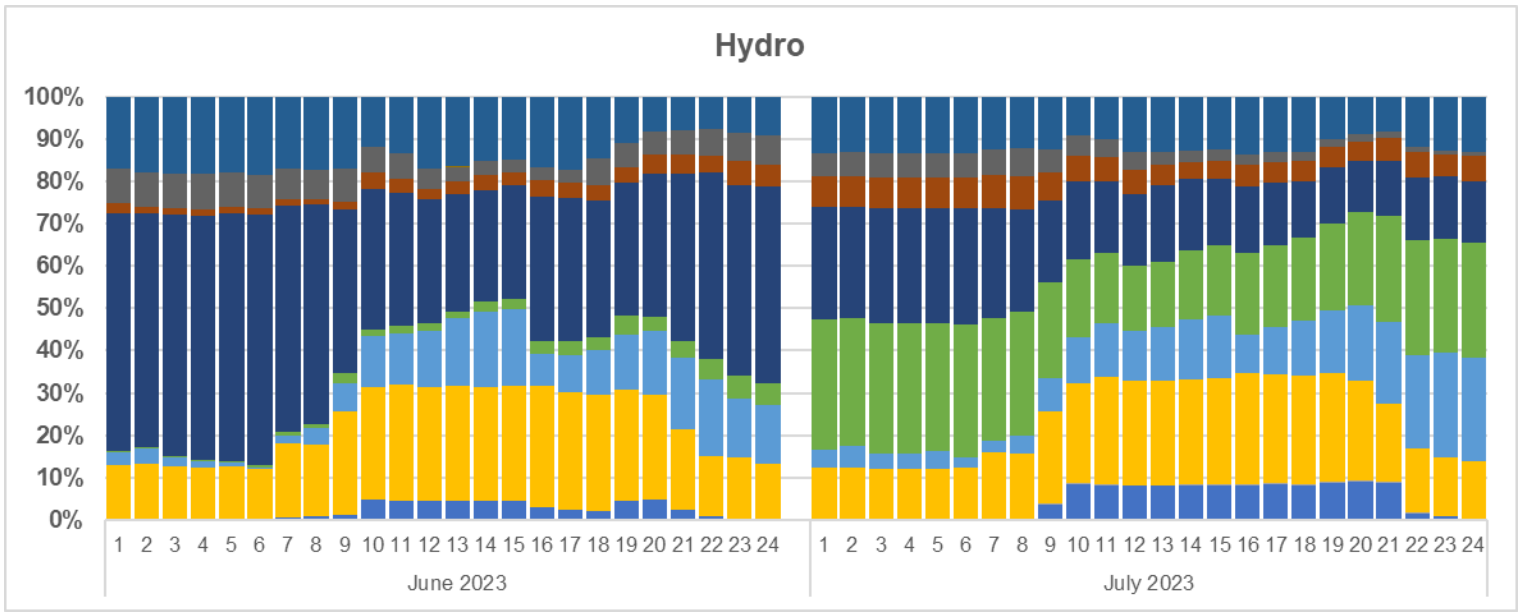

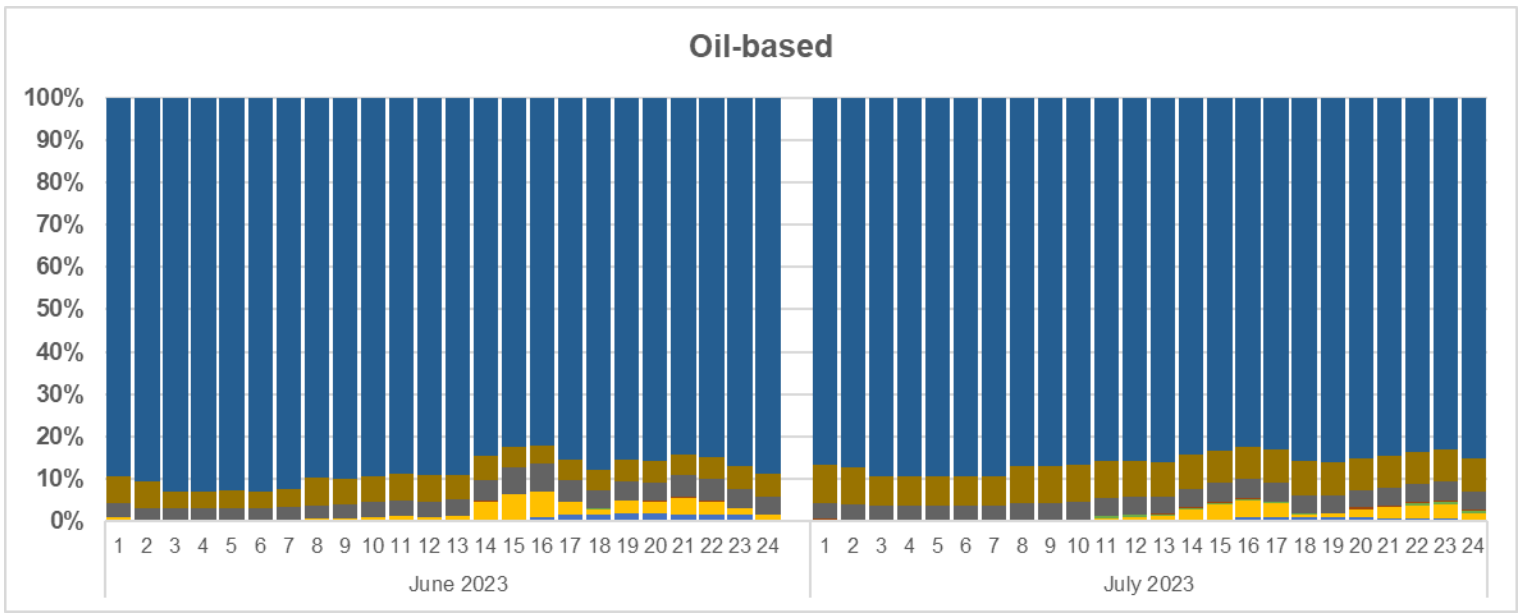

Baseload power plants, such as Coal and Natural gas power plants, had the lowest offered prices. Meanwhile, despite the higher offered prices of Hydro and Oil-based power plants, it was observed to decrease during the July billing period as compared to June 2023.

ANNEX
Definitions

- **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.

ANNEX

List of Major Plant Outages

Plant Type	Plant/ Unit Name	Capacity (MW)	Date Out	Date In	Duration (Days)	Outage Type	Remarks
Luzon							
BIOF	IPower 2	10.8	07/05/2023 19:31			Forced Outage	Unplanned shutdown due to ash system problem.
BIOF	IPower 2	10.8	06/25/2023 16:01	07/04/2023 8:27	9	Forced Outage	To repair main de-ashing screw conveyor.
BIOF	IPower 1	10.8	06/25/2023 16:01	07/04/2023 8:27	9	Forced Outage	To repair main de-ashing screw conveyor
COAL	Sual 1	647	07/13/2023 23:33	07/21/2023 10:54	7	Maintenance Outage	On maintenance outage until July 22 2023.
COAL	Masinloc 2	344	07/07/2023 23:24			Planned Outage	Planned Outage until July 28 2023.
COAL	Pagbilao 1	382	07/01/2023 0:42			Planned Outage	On Planned Outage until July 30 2023.
COAL	SLPGC 1	150	06/17/2023 12:03			Forced Outage	Tripped from 90MW load. Turbine trip due to axial displacement high.
GEO	Bacman 3	19.2	07/25/2023 15:16			Forced Outage	Affected by the outage of Bacman 230kV Bus 2.
GEO	Tiwi 1	60	11/30/2021 18:32			Forced Outage	Steam supply diverted to Unit 2.
GEO	MGPP 2	12	06/23/2023 8:01	06/28/2023 16:18	5	Maintenance Outage	Relocation of MGI s TL and stub poles affected by SLEX-TR4 construction.
GEO	MGPP 1	20	06/23/2023 8:01	06/28/2023 20:45	6	Maintenance Outage	Relocation of MGI s TL and stub poles affected by SLEX-TR4 construction.
GEO	Makban 6	30	04/11/2013 22:44			Deactivated Shutdown	Conducted Gas compressor test.
HYD	Caliraya 2	14	07/24/2023 8:00			Planned Outage	Planned outage until July 28 2023.
HYD	Caliraya 1	14	07/24/2023 8:00			Planned Outage	Planned outage until July 28 2023.
HYD	San Roque 2	145	06/26/2023 0:41	07/08/2023 0:01	12	Planned Outage	Planned Outage until July 26 2023.
HYD	Botocan 2	10	05/11/2023 0:01	06/29/2023 3:11	49	Planned Outage	Planned outage until June 29 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	Ilijan B1	190	07/15/2023 9:26			Forced Outage	Tripped by Generator earth fault protection
NATG	Sta. Rita 1	257.3	07/14/2023 23:15	07/17/2023 3:44	2	Planned Outage	Planned outage until July 16 2023.
NATG	Sta. Rita 4	264	07/07/2023 23:48	07/10/2023 15:28	3	Planned Outage	Planned Outage until July 9 2023.
NATG	Sta. Rita 3	265.5	07/07/2023 23:26	07/10/2023 11:03	2	Planned Outage	Planned Outage until July 9 2023.
NATG	San Lorenzo 2	265	06/30/2023 23:51	07/03/2023 0:11	2	Planned Outage	On Planned Outage until July 2 2023.
NATG	San Lorenzo 1	265	06/30/2023 22:45	07/03/2023 1:02	2	Planned Outage	Planned outage until July 2 2023.
NATG	Ilijan A2	190	06/08/2023 14:40	07/17/2023 11:26	39	Forced Outage	Emergency shutdown due to Blade Path Temperature auto stop.
OIL	TMO Unit 2	51.5	07/19/2023 0:01			Planned Outage	Annual Switchyard PMS until July 26 2023
OIL	TMO Unit 1	63.8	07/12/2023 0:01	07/21/2023 0:00	9	Planned Outage	Planned outage until 2359H of July 20 2023.
OIL	Malaya 2	130	07/10/2023 11:32	07/14/2023 8:11	4	Forced Outage	The unit tripped from 307MW load.
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	BPPC 7	10	06/16/2023 23:10	07/02/2023 15:01	16	Forced Outage	Differential trip/Earth Fault
OIL	BPPC 6	10	06/16/2023 23:10	07/02/2023 15:01	16	Forced Outage	Differential trip/Earth Fault
OIL	BPPC 5	10	06/16/2023 23:10	07/02/2023 15:01	16	Forced Outage	Differential trip/Earth Fault
OIL	BPPC 4	10	06/16/2023 23:10	07/02/2023 15:01	16	Forced Outage	Differential trip/Earth Fault
OIL	BPPC 3	10	06/16/2023 23:10	07/02/2023 15:01	16	Forced Outage	Differential trip/Earth Fault
OIL	BPPC 2	10	06/16/2023 23:10	07/02/2023 15:01	16	Forced Outage	Differential trip/Earth Fault
OIL	BPPC 1	10	06/16/2023 23:10	07/02/2023 15:01	16	Forced Outage	Differential trip/Earth Fault
WIND	Caparispisan 1	81	07/07/2023 6:17			Maintenance Outage	Affected by the planned outage of Laoag-Pagudpud(NLREC) Wind Farm 115kV line.
WIND	BWPC	80	07/06/2023 6:04			Maintenance Outage	Maintenance until July 30 2023
WIND	AWOC 1	53.6	06/26/2023 5:42	06/30/2023 9:33	4	Planned Outage	APMT.
Visayas							
BAT	Kabankalan Bat	20	04/19/2023 15:26	07/07/2023 8:15	79	Forced Outage	Auto-tripped due to Damaged 13.8kV PCB
COAL	TPC-Sangi 1	82	06/24/2023 0:03	06/26/2023 16:09	3	Forced Outage	Cut-out to facilitate boiler tube leak problem
GEO	Mahanagdong A1	5	07/16/2023 1:29	07/21/2023 1:23	5	Planned Outage	Annual PMS ETC July 18 2023
GEO	Mahanagdong B1	5	07/16/2023 0:18	07/22/2023 16:46	7	Planned Outage	Annual PMS ETC July 18 2023
GEO	Mahanagdong A2	5	07/13/2023 2:04			Maintenance Outage	PMS
GEO	Malitbog 1	72	07/04/2023 5:03	07/10/2023 23:48	7	Forced Outage	Control Valve Deviation Problem

ANNEX

List of Major Plant Outages

Plant Type	Plant/ Unit Name	Capacity (MW)	Date Out	Date In	Duration (Days)	Outage Type	Remarks
Visayas							
GEO	Malitbog 2	72	01/21/2023 0:13	06/29/2023 1:09	159	Maintenance Outage	CUT OUT
GEO	Mahanagdong A1	5	05/05/2023 12:34	07/08/2023 5:59	64	Forced Outage	Due to over frequency
HYD	THC	15.9	07/16/2023 15:15	07/19/2023 8:20	3	Forced Outage	Auto-shutdown due to temperature winding very high.
HYD	THC	15.9	07/11/2023 4:34	07/13/2023 7:47	2	Forced Outage	Auto-shutdown due to very high temperature winding Change over to Unit 3.
OIL	PB104 Unit 1	7	07/07/2023 0:05	07/11/2023 0:00	4	Maintenance Outage	6000 RH PMS
WIND	SLWind	54	07/05/2023 8:18			Maintenance Outage	Conducted preventive maintenance
Mindanao							
BIOF	LSK U1	15	07/10/2023 0:01			Forced Outage	Shutdown-OMC.ETC August 9 2023.
BIOF	LSK U1	15	07/10/2023 0:01			Maintenance Outage	PMS (GOMP).ETC July 17 2023.
COAL	STE U2	116	07/20/2023 0:00			Maintenance Outage	For PMS(GOMP). ETC August 6 2023
COAL	STE U1	116	07/04/2023 0:00			Maintenance Outage	PMS(GOMP) ETC July 31 2023.
COAL	GNPK U3	151.3	07/01/2023 16:22	07/07/2023 10:55	6	Forced Outage	Forced Outage. Indication Boiler tube leak. ETC July 7 2023.
HYD	PG4 U2	75	07/11/2023 8:00	07/14/2023 18:29	3	Maintenance Outage	PMS (Non-GOMP). ETC July 15 2023.
HYD	AG2 U3	60	07/07/2023 8:21	07/22/2023 13:27	15	Maintenance Outage	Planned Outage PMS-GOMP. ETC July 23 2023.
HYD	AG6 U4	25	07/03/2023 8:01			Maintenance Outage	Planned Outage. PMS(Non -GOMP). ETC August 1 2023.
HYD	AG7 U2	15	07/01/2023 9:08	07/19/2023 9:57	18	Maintenance Outage	PMS(GOMP). ETC July 20 2023.
HYD	PG4 U3	75	06/24/2023 8:00	06/27/2023 20:31	4	Maintenance Outage	PMS(Non-GOMP) starting 06/24/2023 0800H unit was on forced outage prior. ETC 06/28/2023.
HYD	AG6 U1	31.5	05/24/2023 16:50			Forced Outage	Emergency shutdown due to governor oil pump failure. Unplanned Outage
OIL	KET U1	7.8	07/15/2023 13:00	07/18/2023 9:00	3	Maintenance Outage	Planned outage to facilitate replacement of unit?s smokestack. ETC July 17 2023.
OIL	WMPC Unit 4	10.7	05/01/2023 21:59			Forced Outage	Tripped due to generator earth fault. Unplanned Outage. ETC October 20 2023.

Philippine Electricity Market Corporation

Connect with PEMC

pemc_info@wesm.ph

+63 2 8631 8734

18F Robinson Equitable Tower,
ADB Avenue Ortigas Center,
Pasig City 1600, Philippines

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