



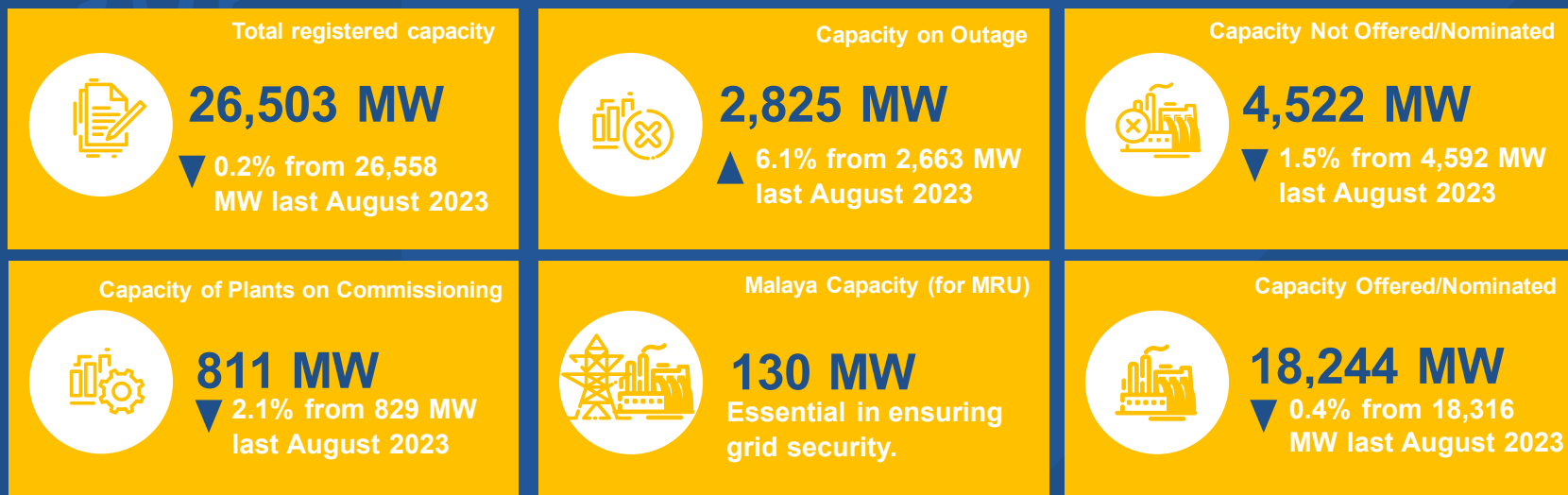
MONTHLY MARKET ASSESSMENT HIGHLIGHTS

26 August to 25 September 2023

SUMMARY OF OBSERVATIONS

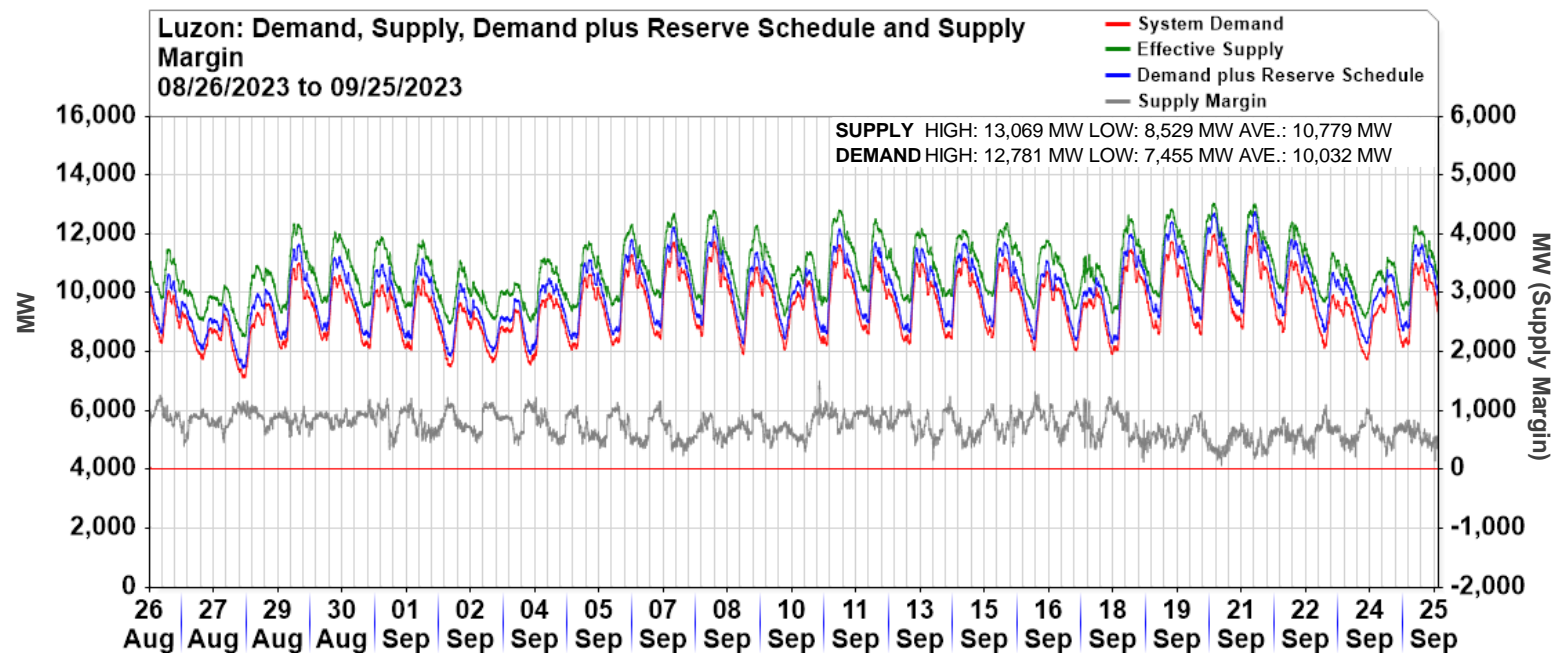
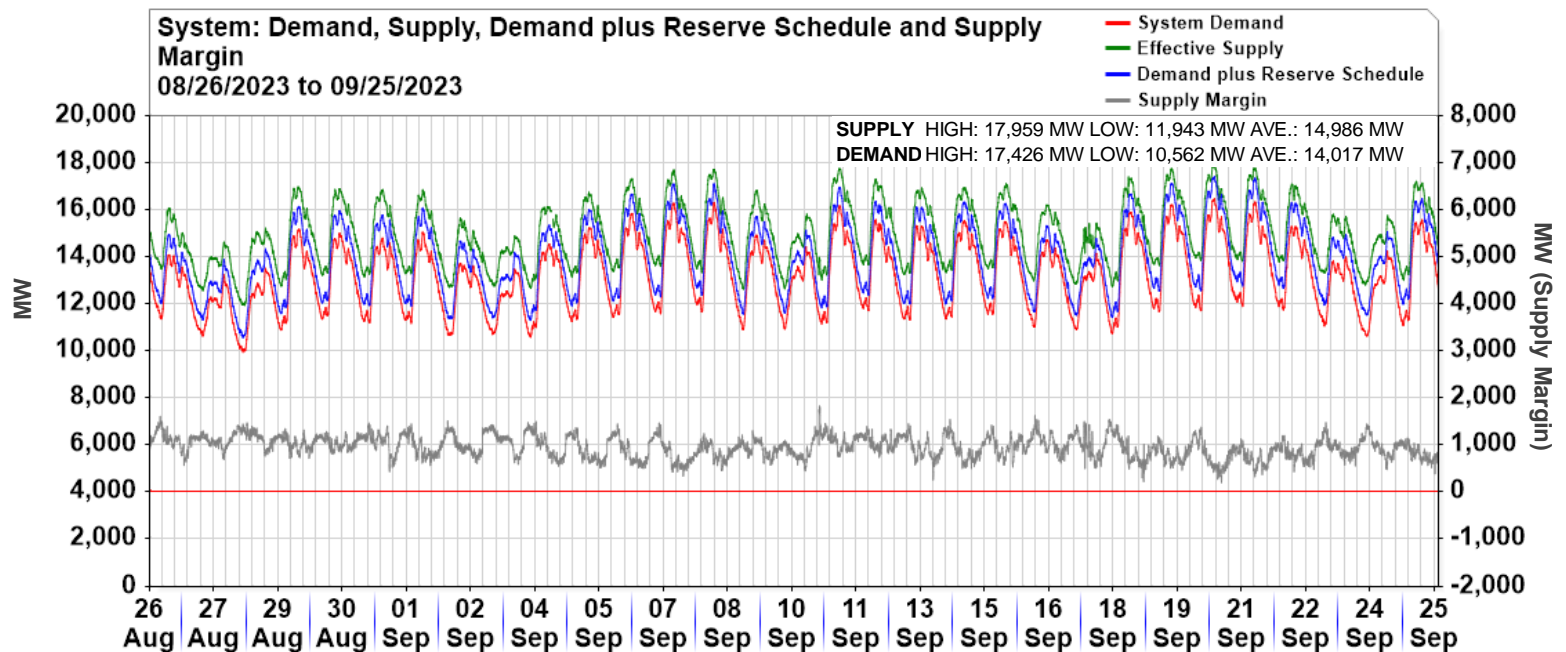
- Regional **SPC** issuance in Visayas and Mindanao, while there were no SPC issuance in Luzon region for the subject billing period.
- Some notable congestions were as follows:
 - Maasin-Ubay line 1 (Leyte-Bohol submarine cable) was congested for 3,273 intervals, or equivalent to 37% of the time, brought about by the frequent maximization of the line's capacity limit due to the tight supply situation in Bohol, noting the insufficiency of power plant capacity in the said area.
 - Mexico-Hermosa line 2 was congested for 20 intervals, or equivalent to 0.2% of the time, thereby affecting the resulting market prices.

AT A GLANCE



MARKET OUTCOME

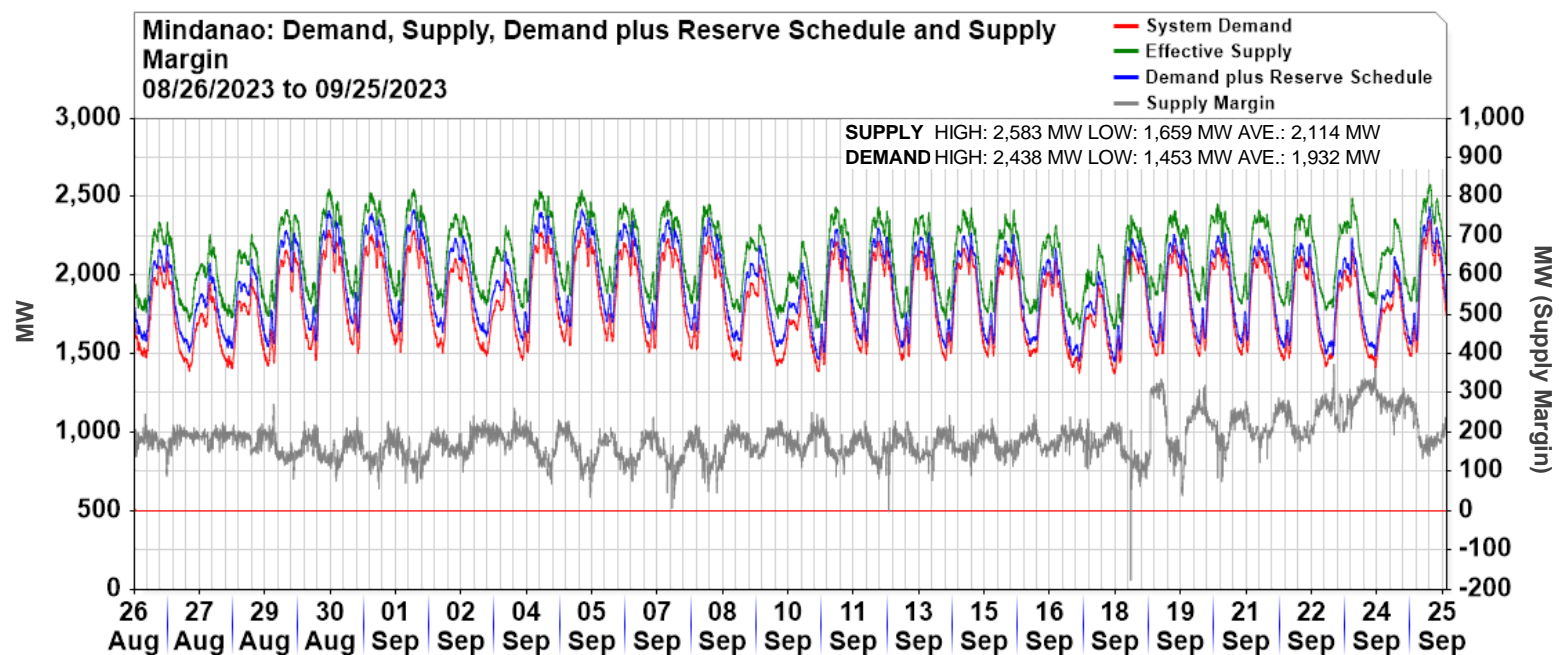
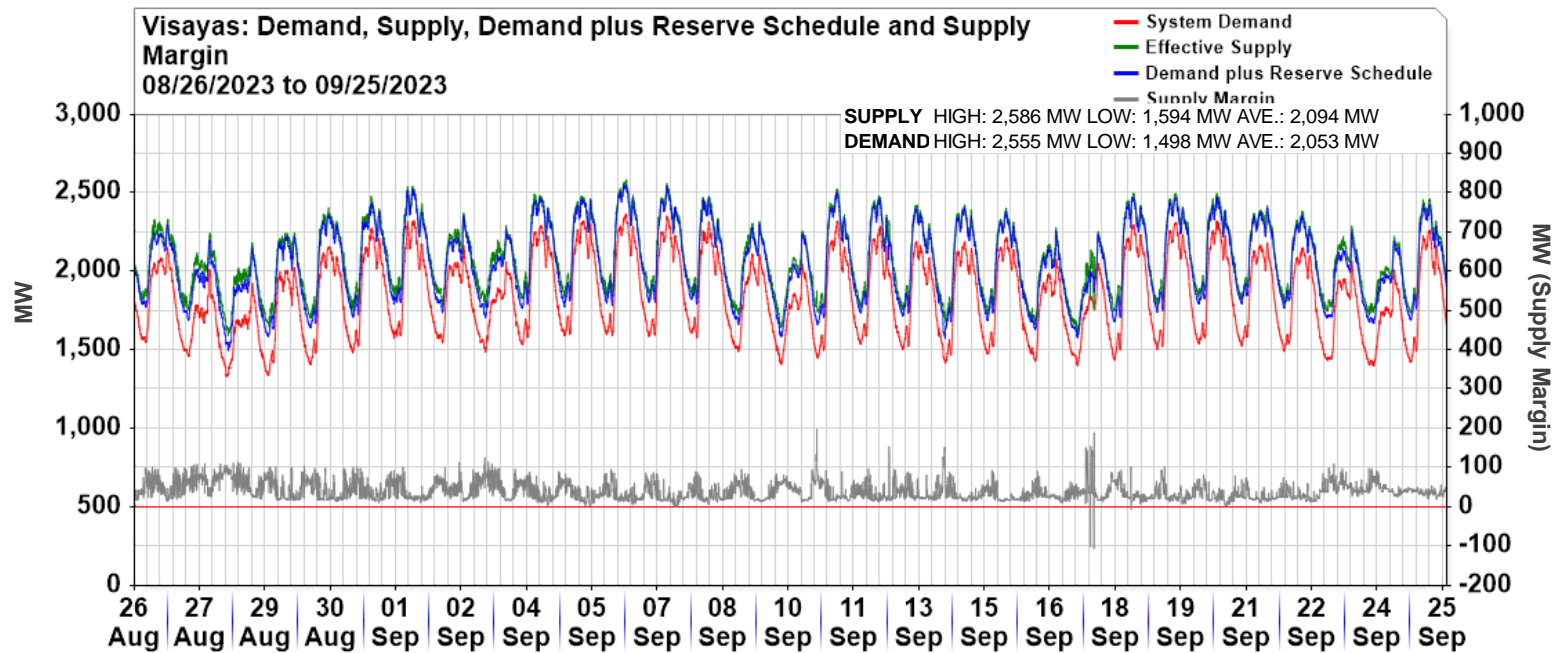
SUPPLY AND DEMAND



While there were noted increase in the level of system demand, supply margin improved this month due to the increase in the level of effective supply mainly attributed to the dip in the level of ramp limited capacities.

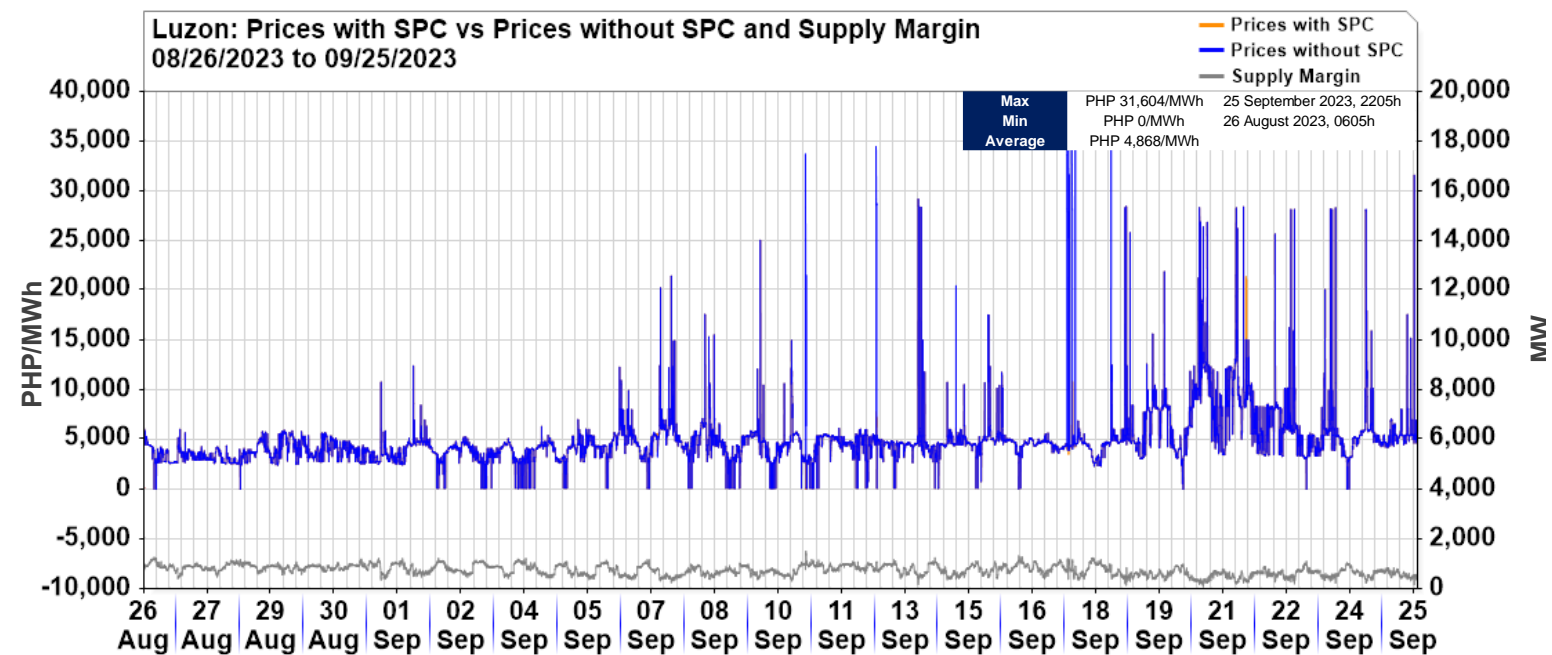
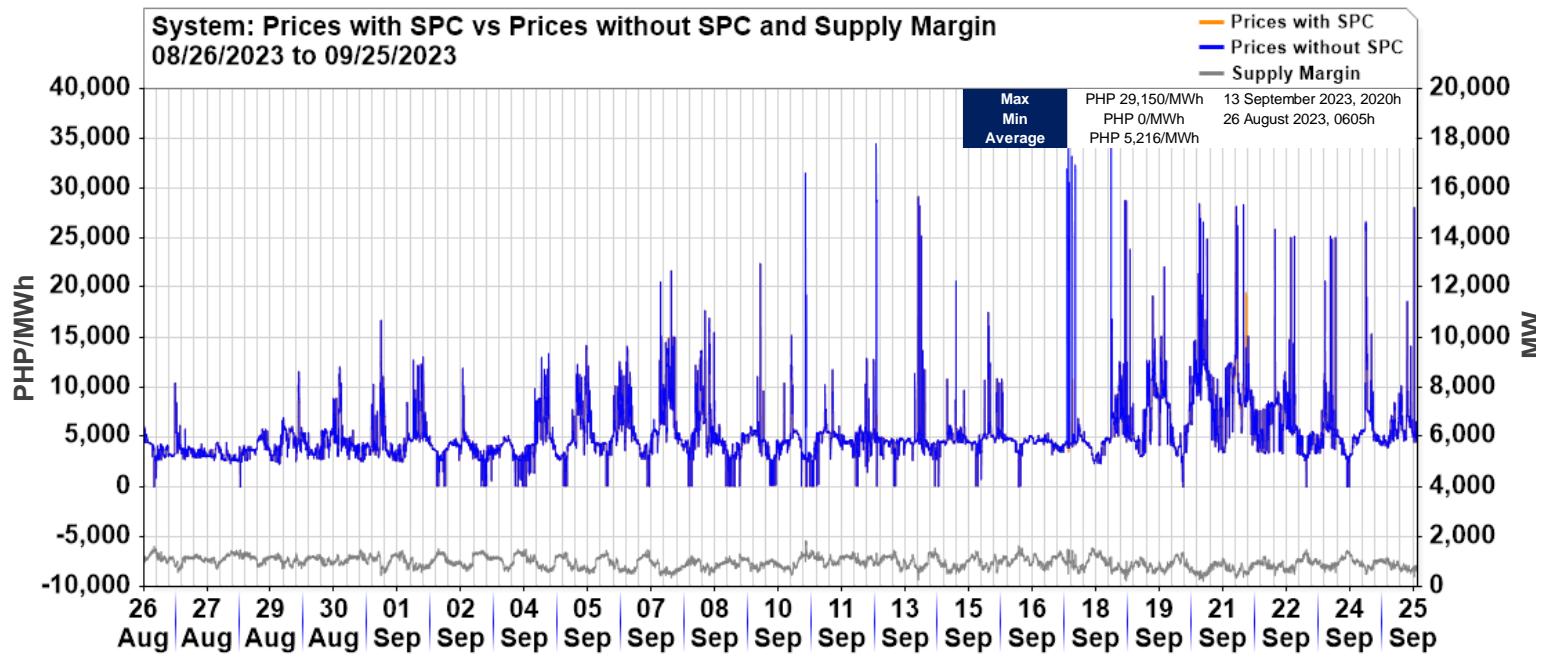
MARKET OUTCOME

SUPPLY AND DEMAND



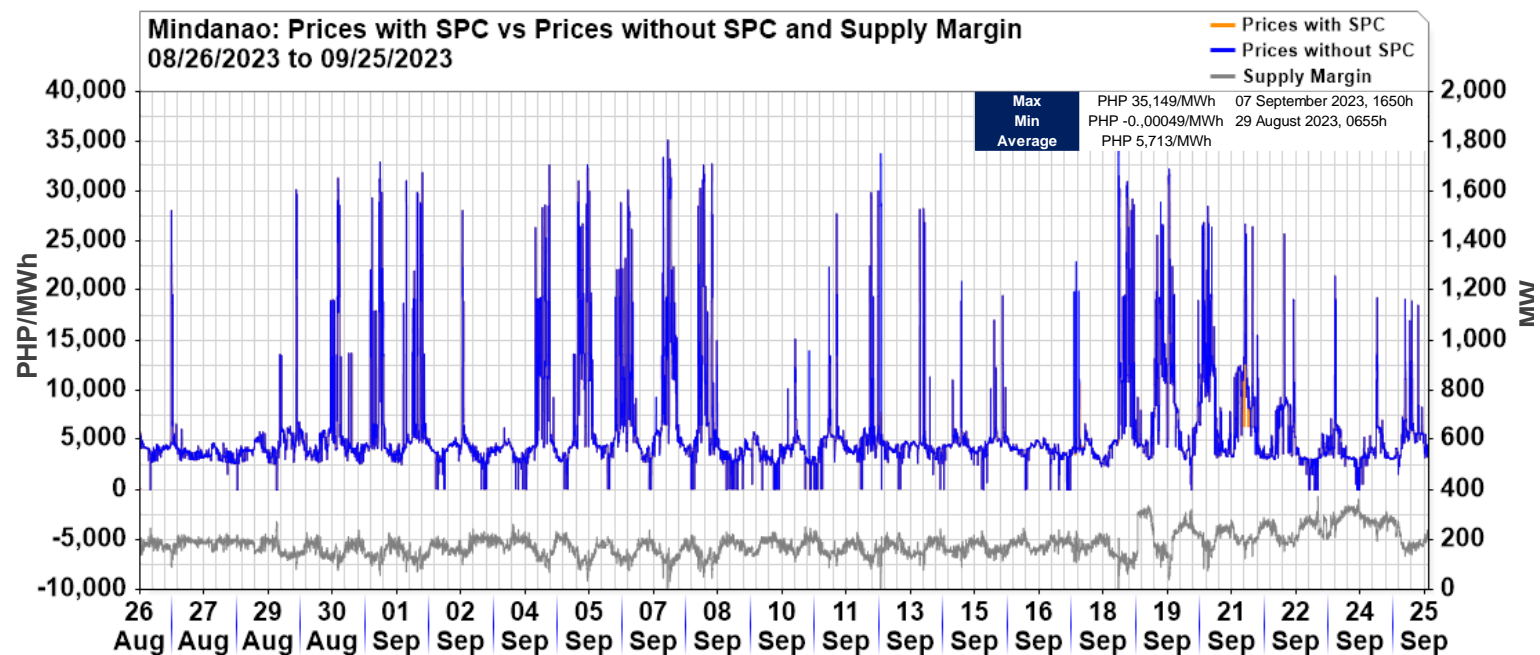
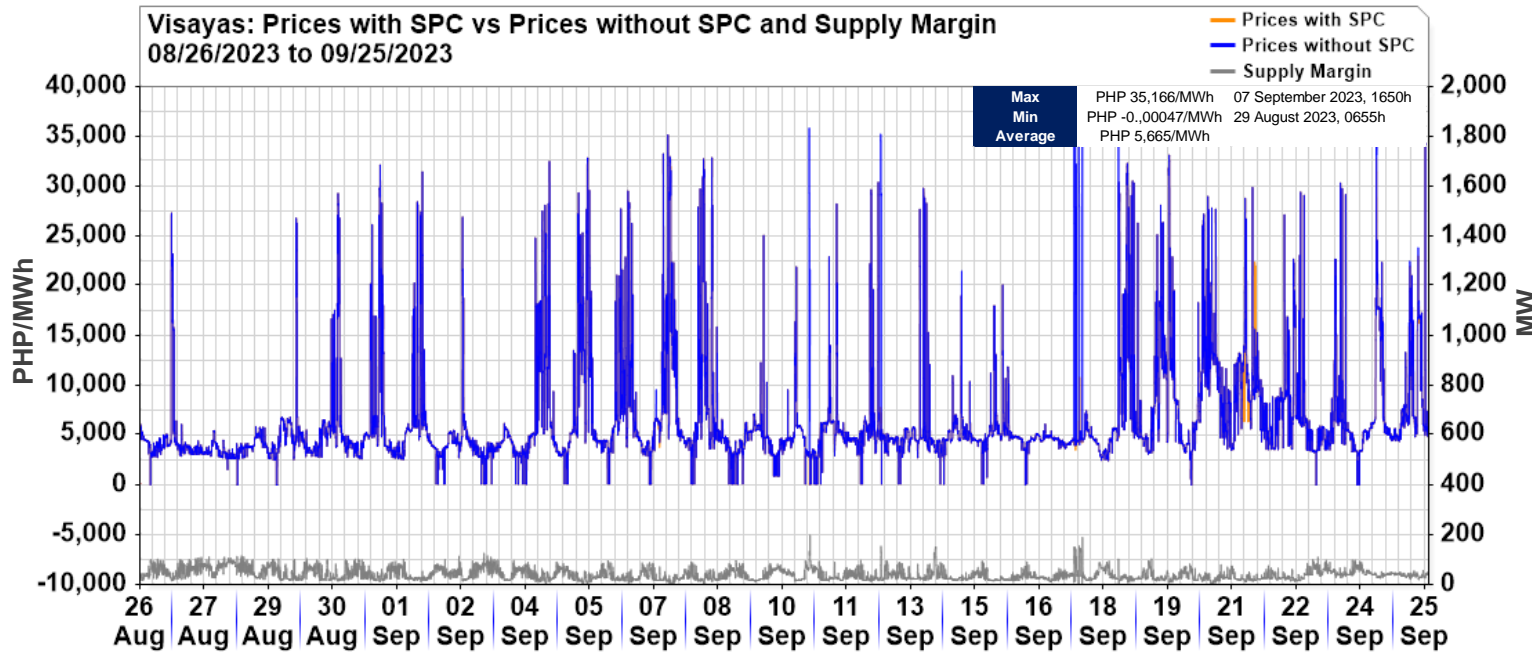
MARKET OUTCOME

MARKET PRICES



MARKET OUTCOME

MARKET PRICES



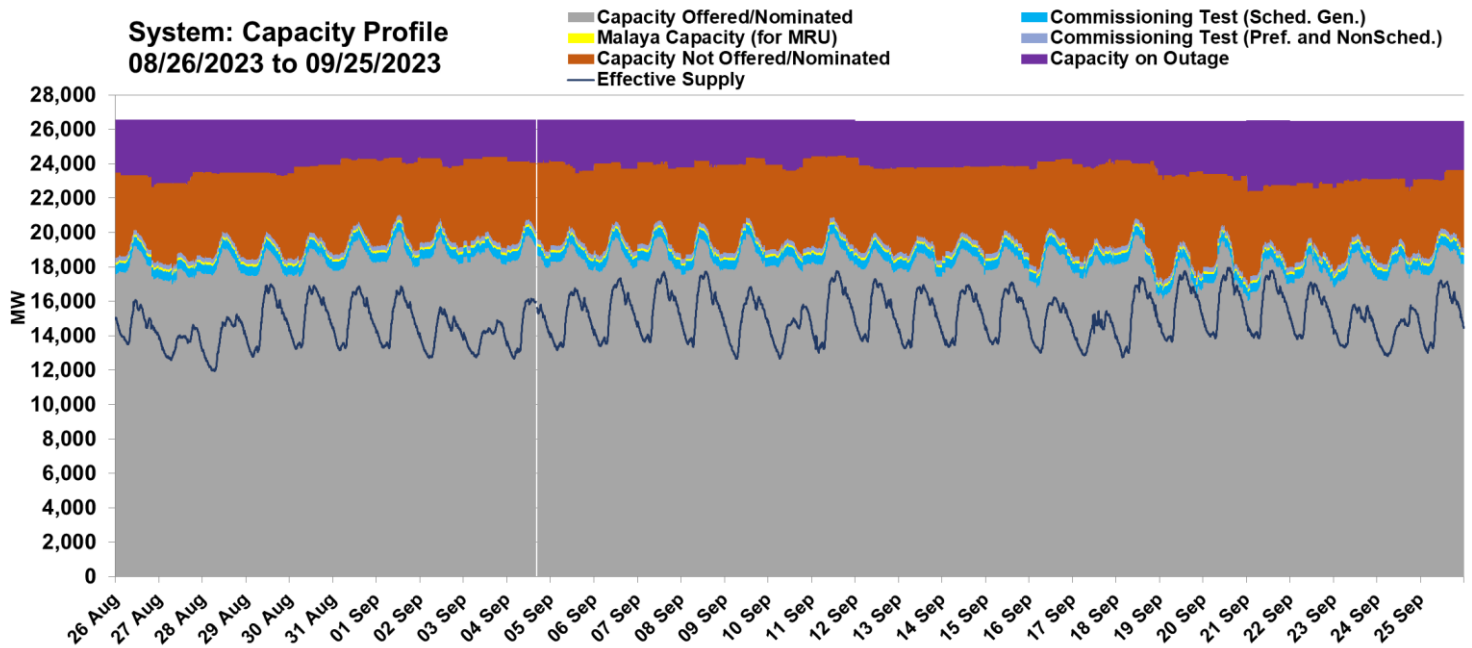
There were noted instances of price spikes in Luzon, Visayas, and Mindanao regions, affected mainly by the availability of supply to meet the demand. These price spikes triggered the imposition of secondary price cap on 21 September 2023, brought about by the reduction in the level of supply which was primarily due to the forced and maintenance outages of major power plants, resulting in the scheduling of high-priced, fast-react oil-based power plants.

The price differences in Luzon as compared to Visayas-Mindanao were mainly caused by the congestion in Luzon-Visayas HVDC line due to the maximization of the line's limit going to Visayas.

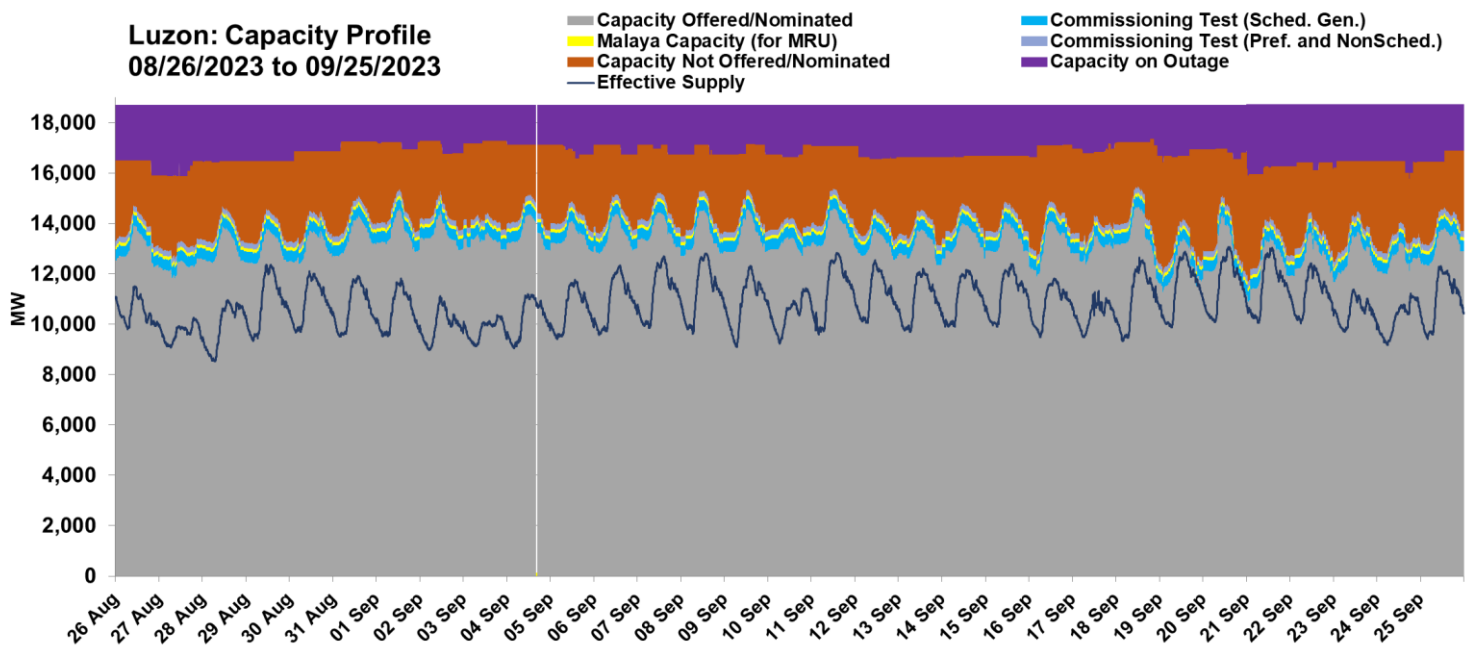
MARKET OUTCOME

CAPACITY PROFILE

System: Capacity Profile
08/26/2023 to 09/25/2023

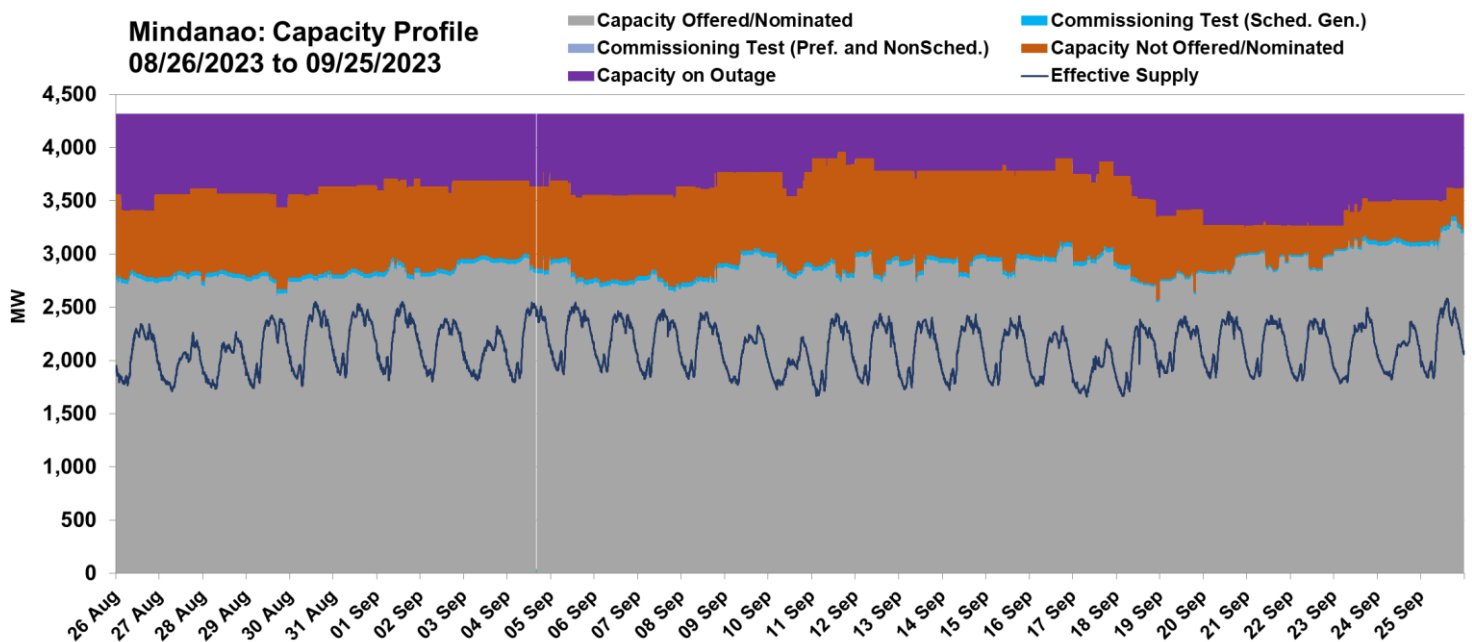
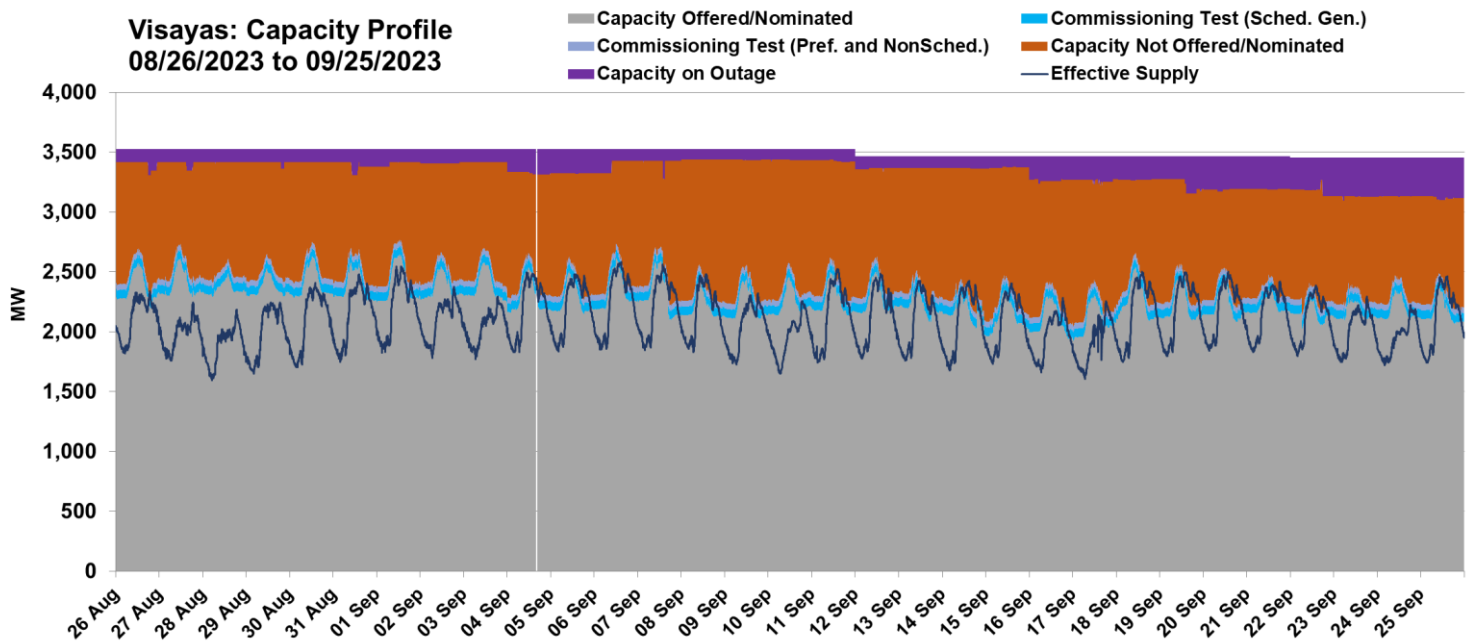


Luzon: Capacity Profile
08/26/2023 to 09/25/2023



MARKET OUTCOME

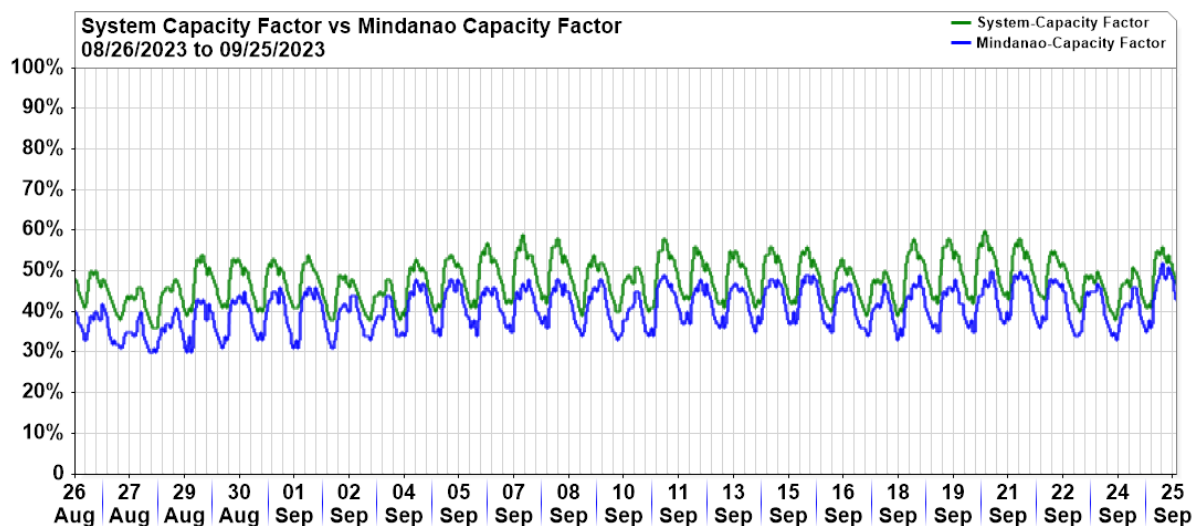
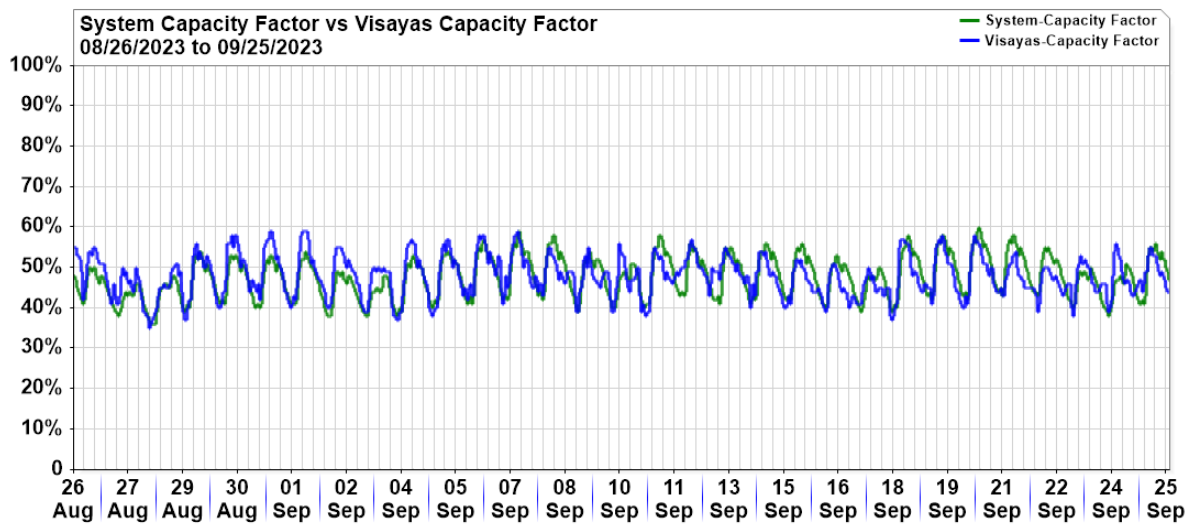
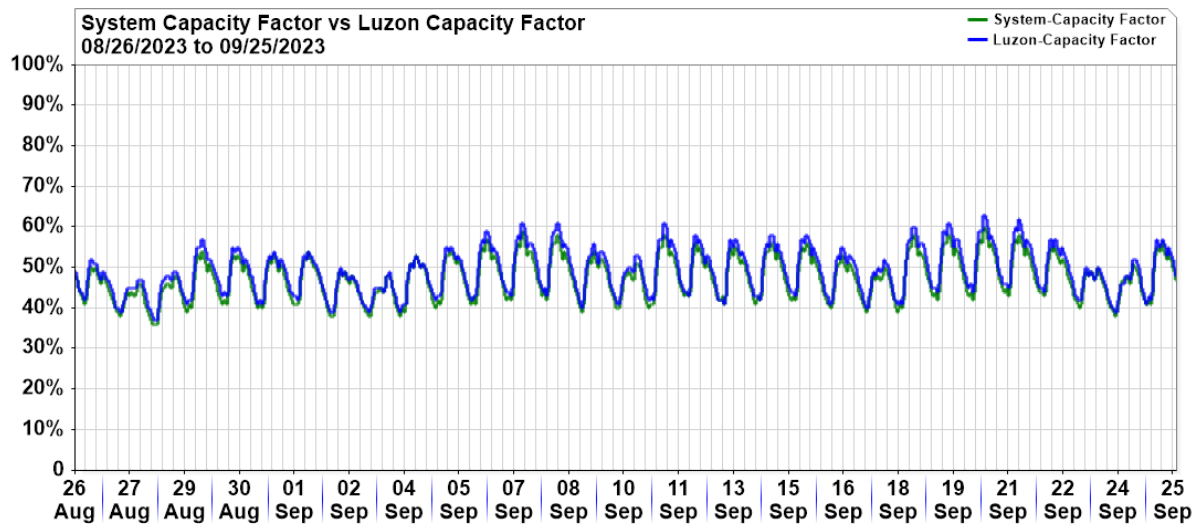
CAPACITY PROFILE



A total system registered capacity of 26,503 MW was noted during the billing period in review. Capacities Not Offered/Nominated in all regions decreased from 4,592 MW last month to 4,522 MW this month, which was mostly attributable to resource constraints and subject to further validation with the Enforcement and Compliance Office of PEMC.

MARKET OUTCOME

CAPACITY FACTOR

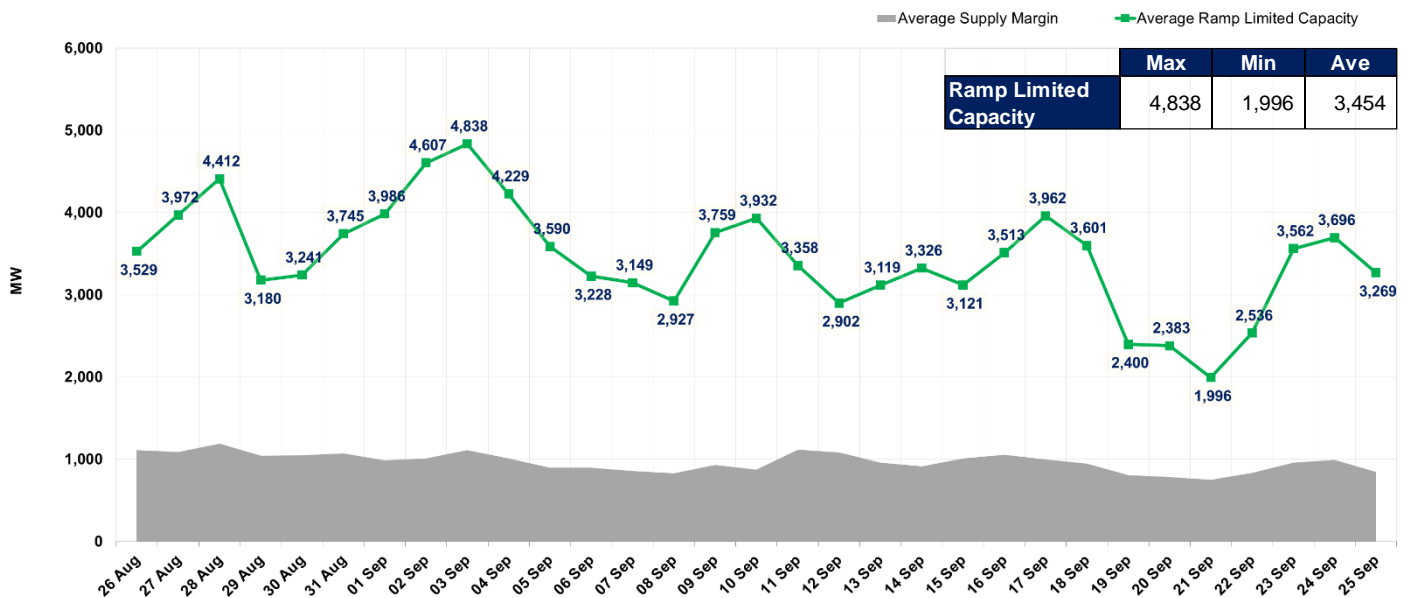


The system capacity factor was recorded only at an average of 48%. While Luzon and Visayas were highly affected by the capacities on outage and deration of the generators.

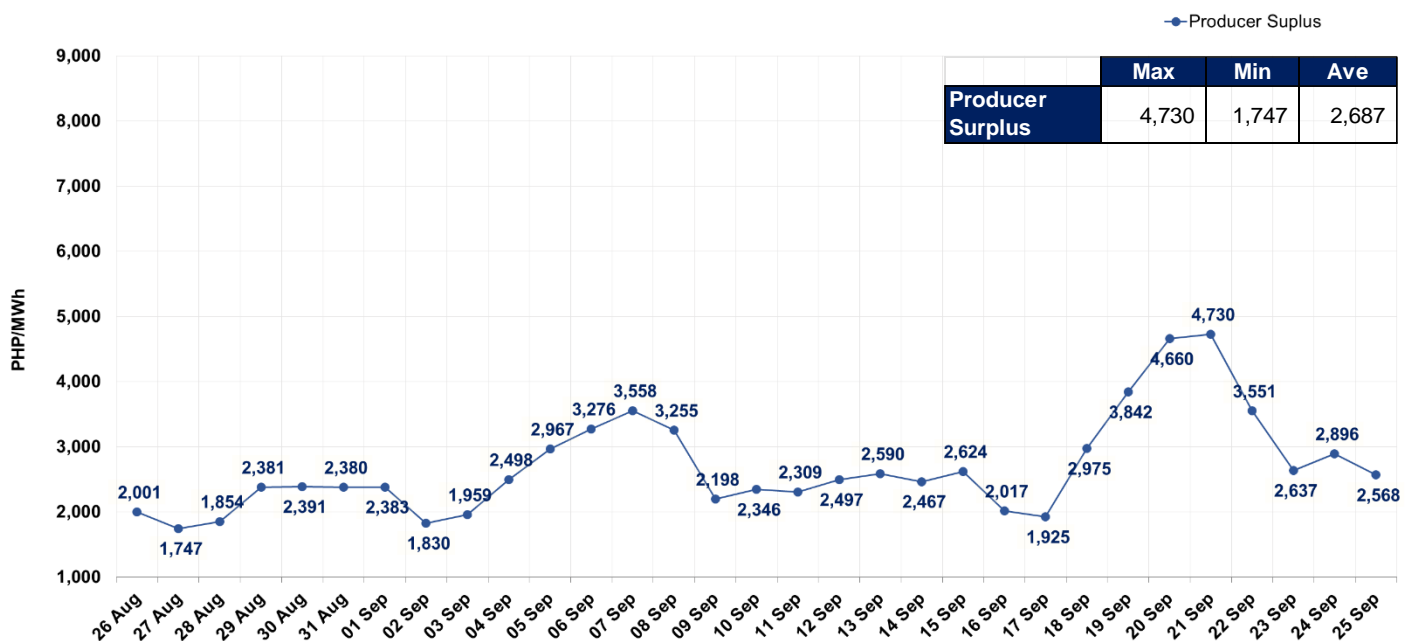
MARKET OUTCOME

GENERATOR RAMPING AND SURPLUS

RAMP LIMITED CAPACITY



PRODUCER SURPLUS



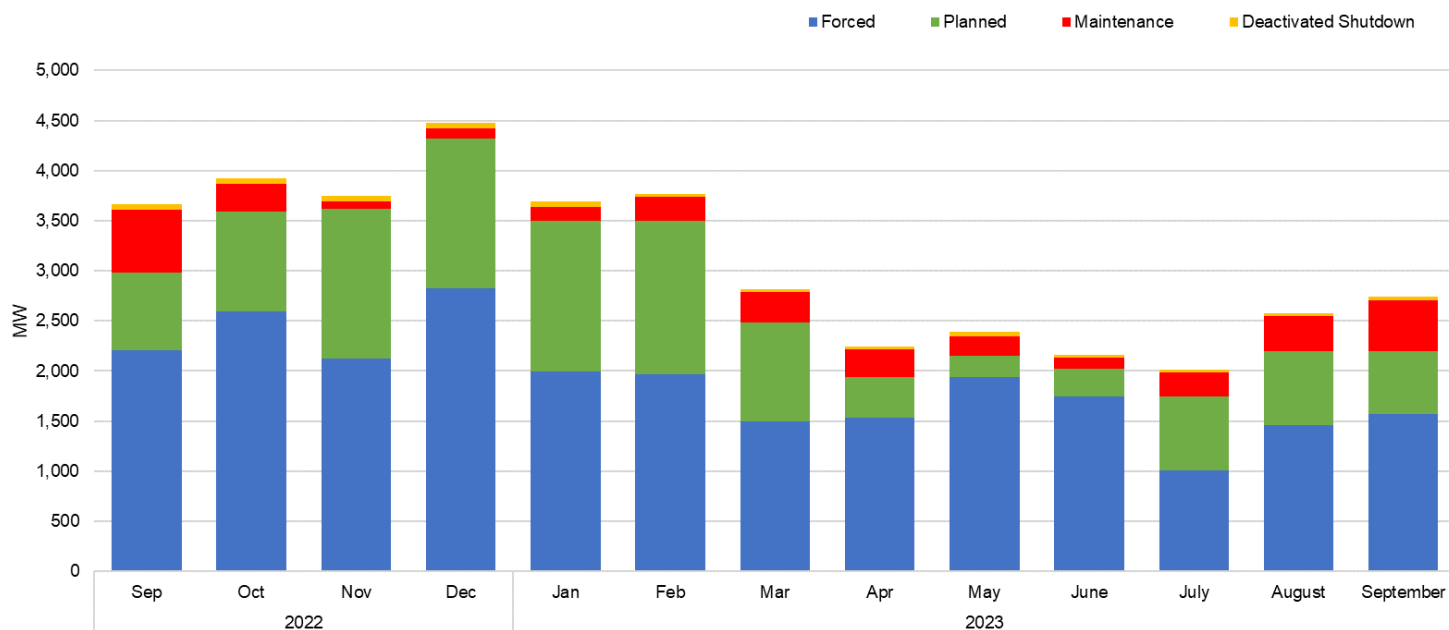
The average Power Producer Surplus decreased from last month's average of PHP2,990/MWh.

Meanwhile, the average Ramp Limited capacity was observed to dip from an average of 3,457 MW last month.

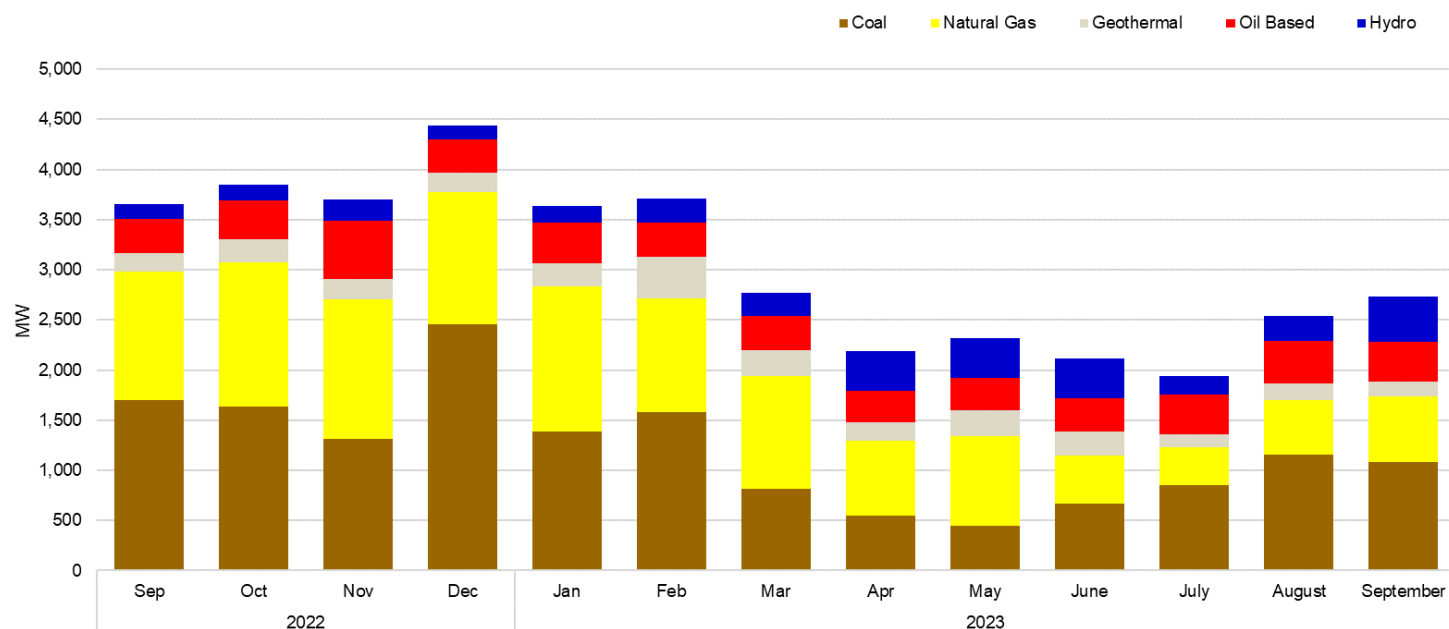
MARKET OUTCOME

OUTAGES

CAPACITY ON OUTAGE BY CATEGORY



CAPACITY ON OUTAGE BY PLANT TYPE

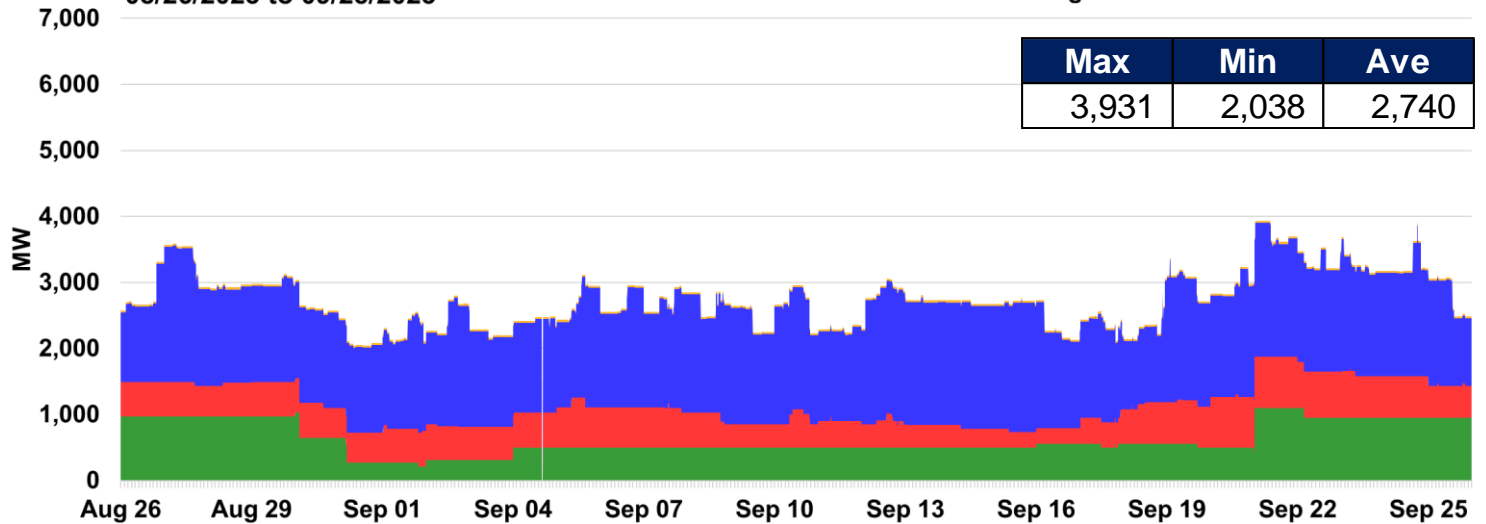


MARKET OUTCOME

OUTAGES

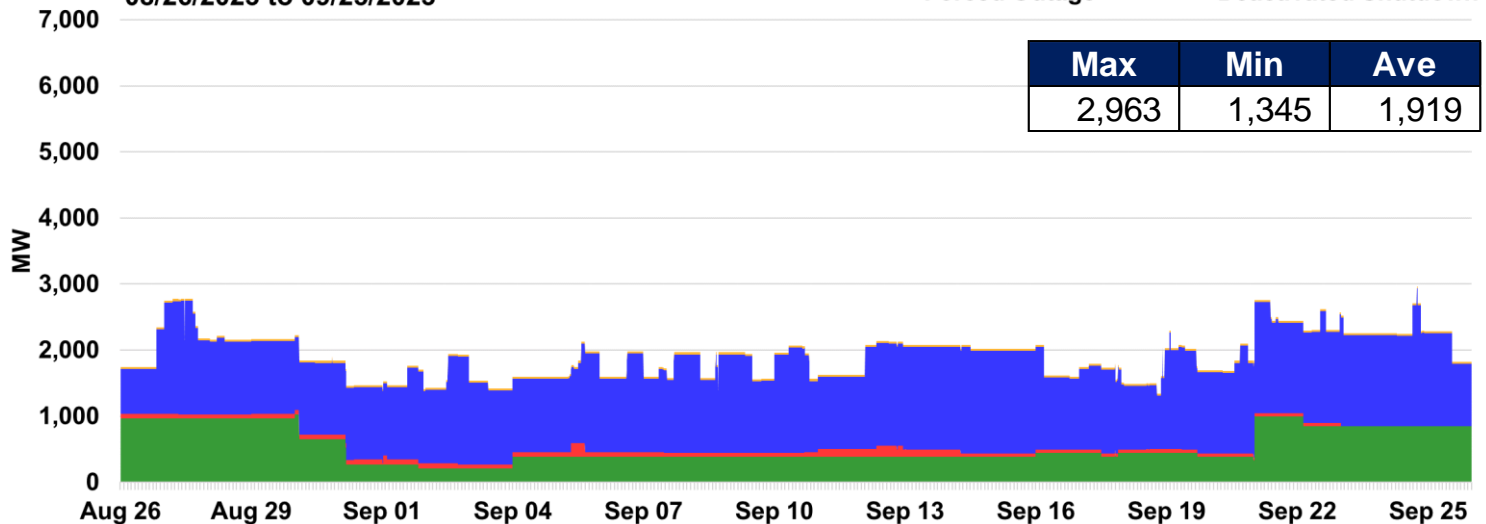
System: Capacity on Outage by Category
08/26/2023 to 09/25/2023

Planned Outage Maintenance Outage
Forced Outage Deactivated Shutdown



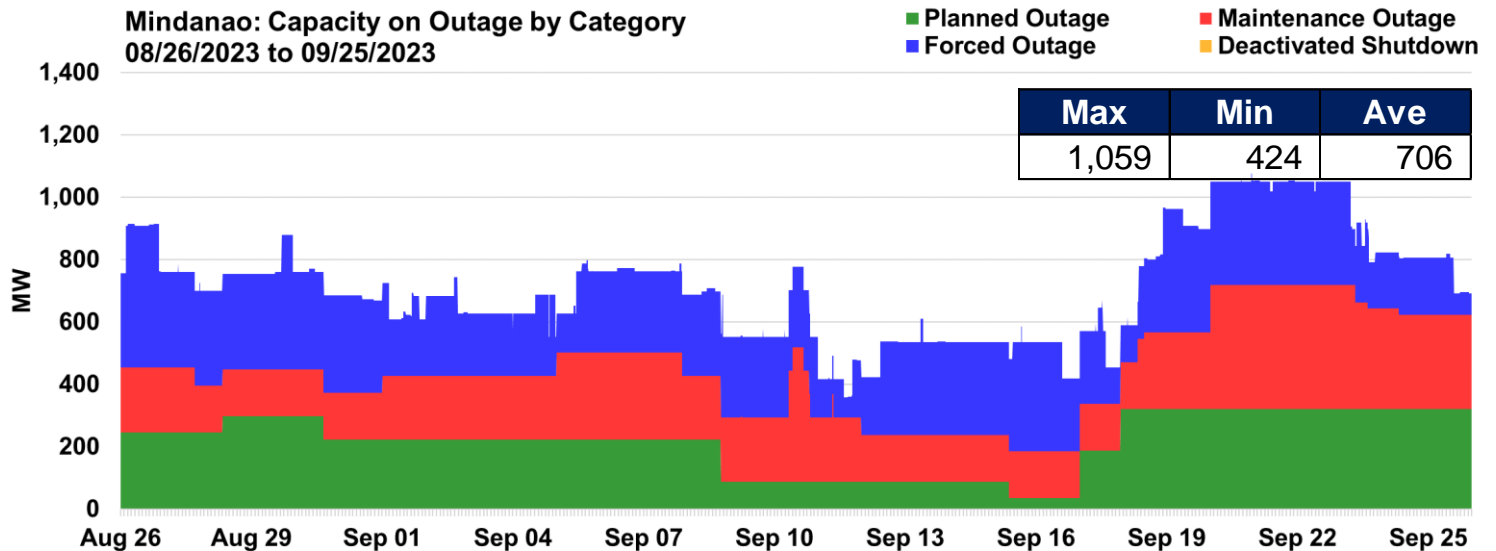
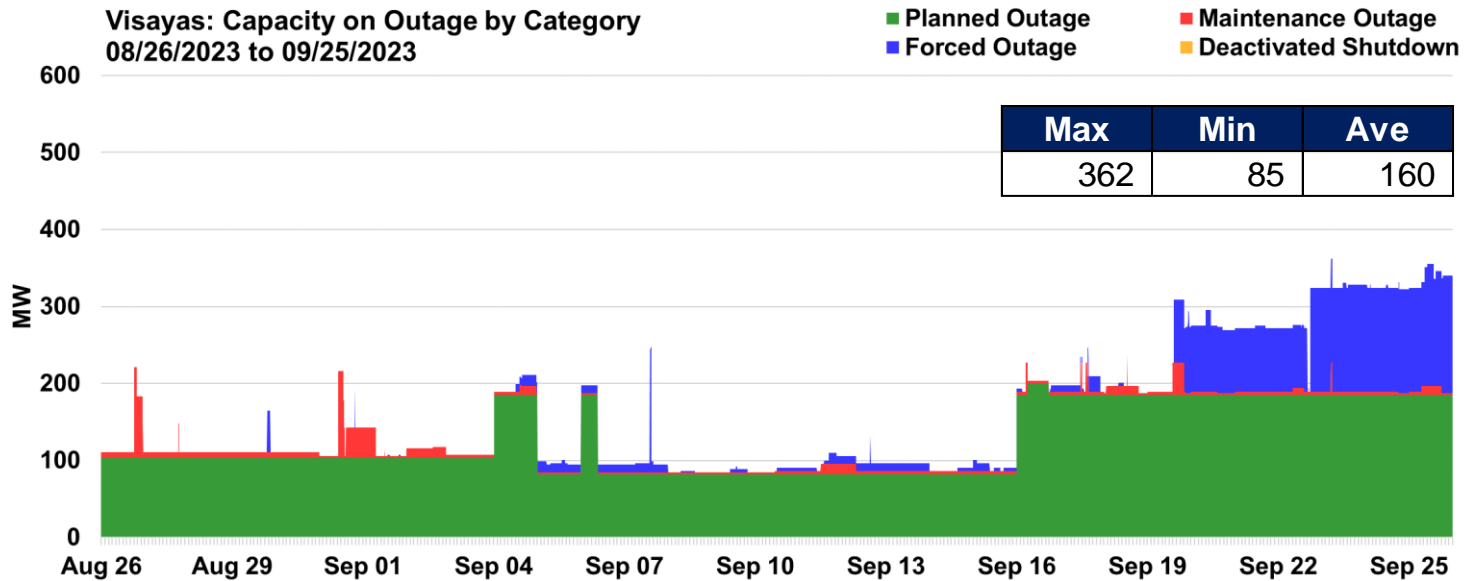
Luzon: Capacity on Outage by Category
08/26/2023 to 09/25/2023

Planned Outage Maintenance Outage
Forced Outage Deactivated Shutdown



MARKET OUTCOME

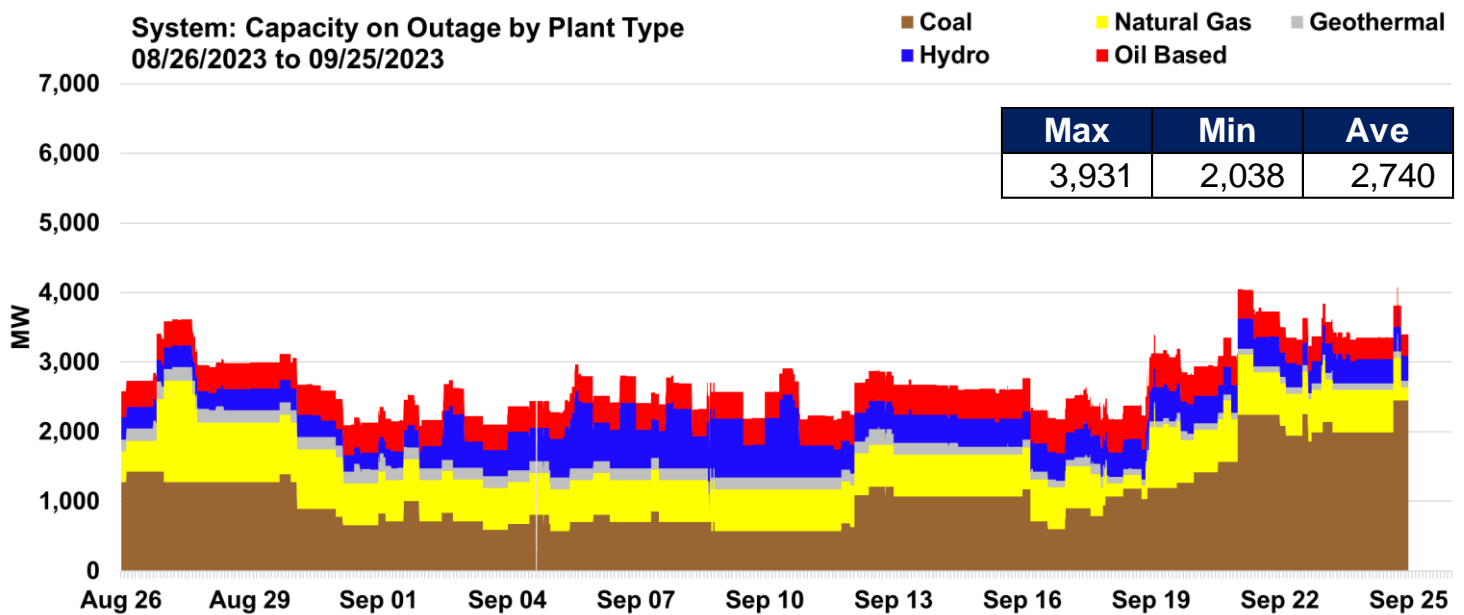
OUTAGES



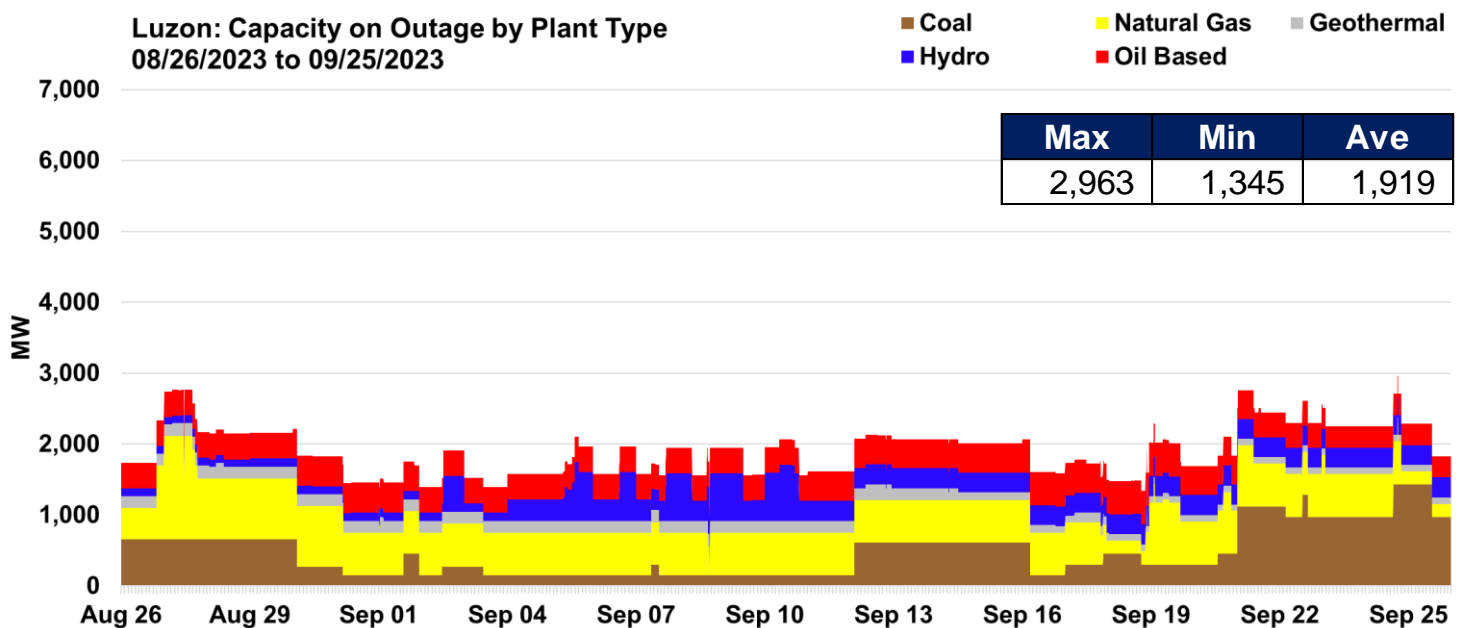
MARKET OUTCOME

OUTAGES

System: Capacity on Outage by Plant Type
08/26/2023 to 09/25/2023

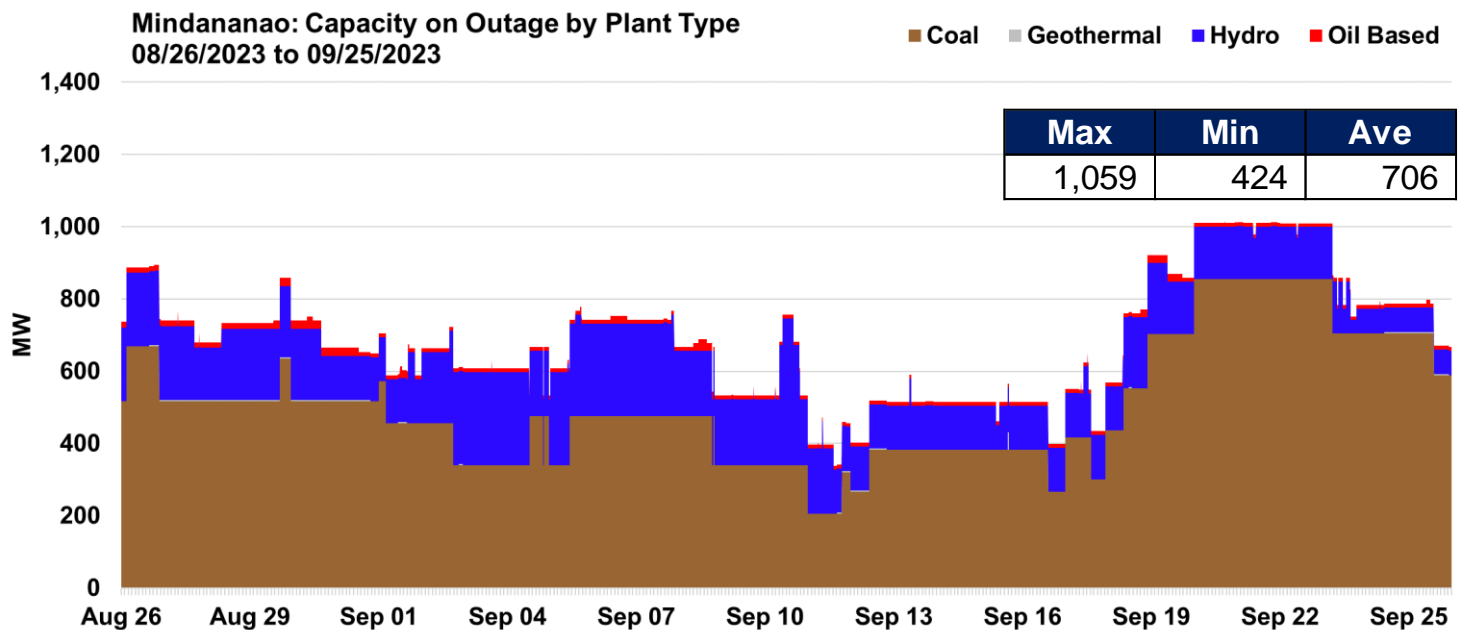
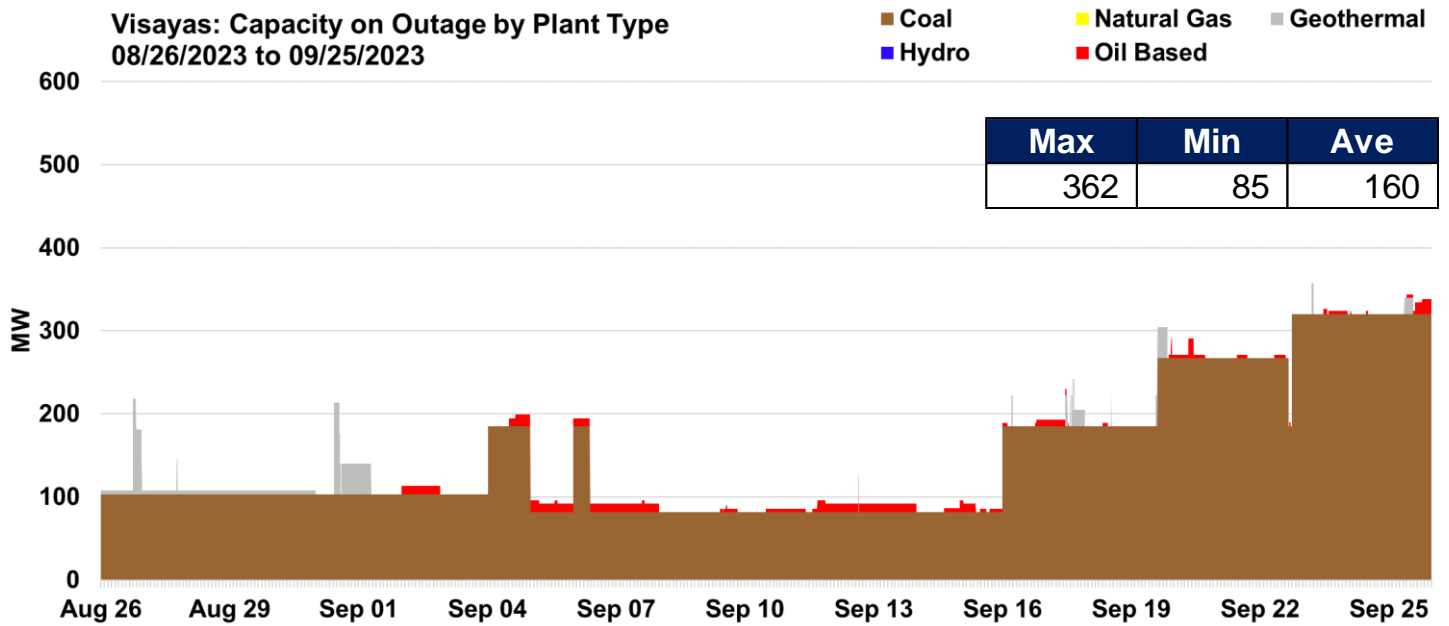


Luzon: Capacity on Outage by Plant Type
08/26/2023 to 09/25/2023



MARKET OUTCOME

OUTAGES



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

MARKET OUTCOME

REGISTERED CAPACITY

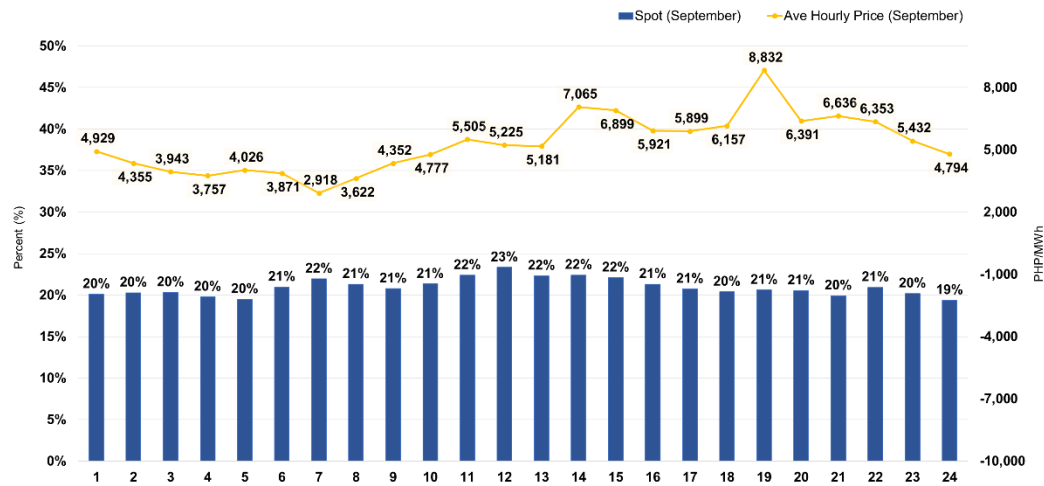
Plant Type	August 2023				September 2023			
	System	Luzon	Visayas	Mindanao	System	Luzon	Visayas	Mindanao
	Capacity (MW)				Capacity (MW)			
BAT	495	315	100	80	495	315	100	80
BIOF	415	182	191	42	415	182	191	42
COAL	12,137	8,487	1,385	2,266	12,077	8,487	1,324	2,266
GEO	1,704	752	848	104	1,704	752	848	104
HYD	3,704	2,546	53	1,105	3,709	2,551	53	1,105
NATG	3,286	3,286			3,286	3,286		
OIL	2,838	1,741	441	657	2,825	1,741	433	651
SOLR	1,474	990	416	67	1,487	1,004	416	67
WIND	507	417	91		507	417	91	
TOTAL	26,558	18,713	3,525	4,320	26,503	18,732	3,457	4,314

The noted changes in the registered capacity were mainly attributable by the registration of one (1) Hydro and one (1) Solar power plant, and the changes in the registered capacity of Coal, Hydro, Solar and Oil-based power plants.

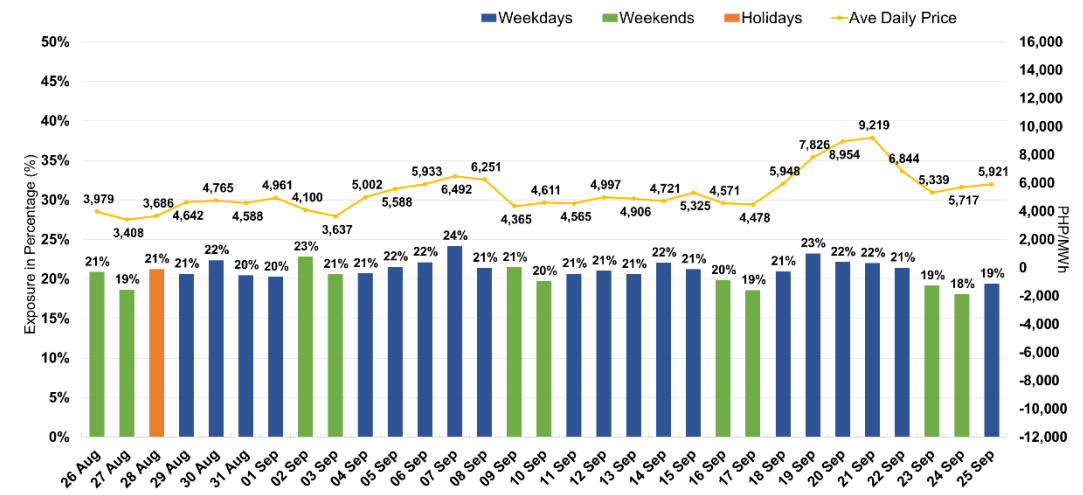
MARKET OUTCOME

SPOT EXPOSURE

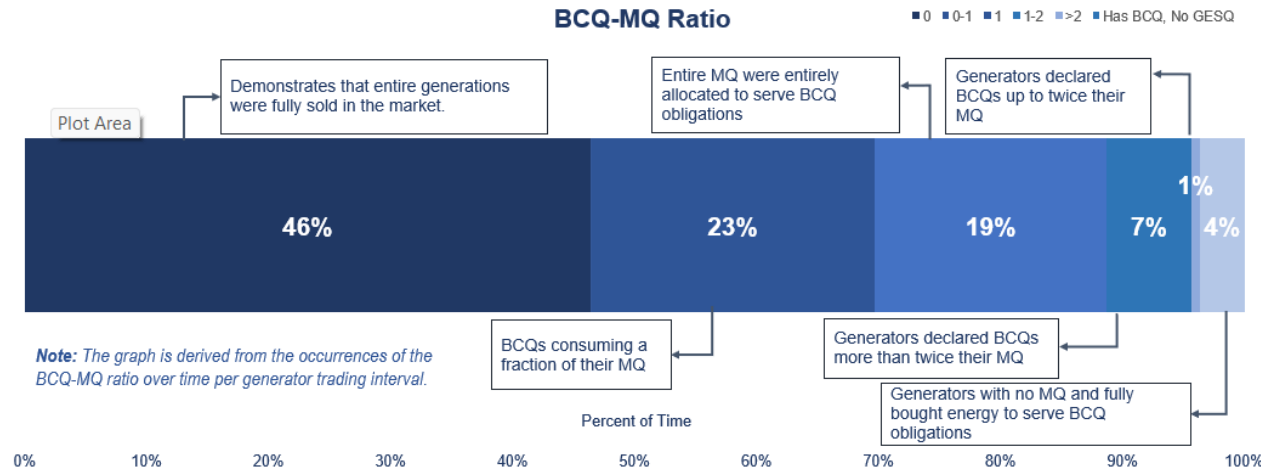
HOURLY SPOT



DAILY SPOT



BCQ-MQ Ratio

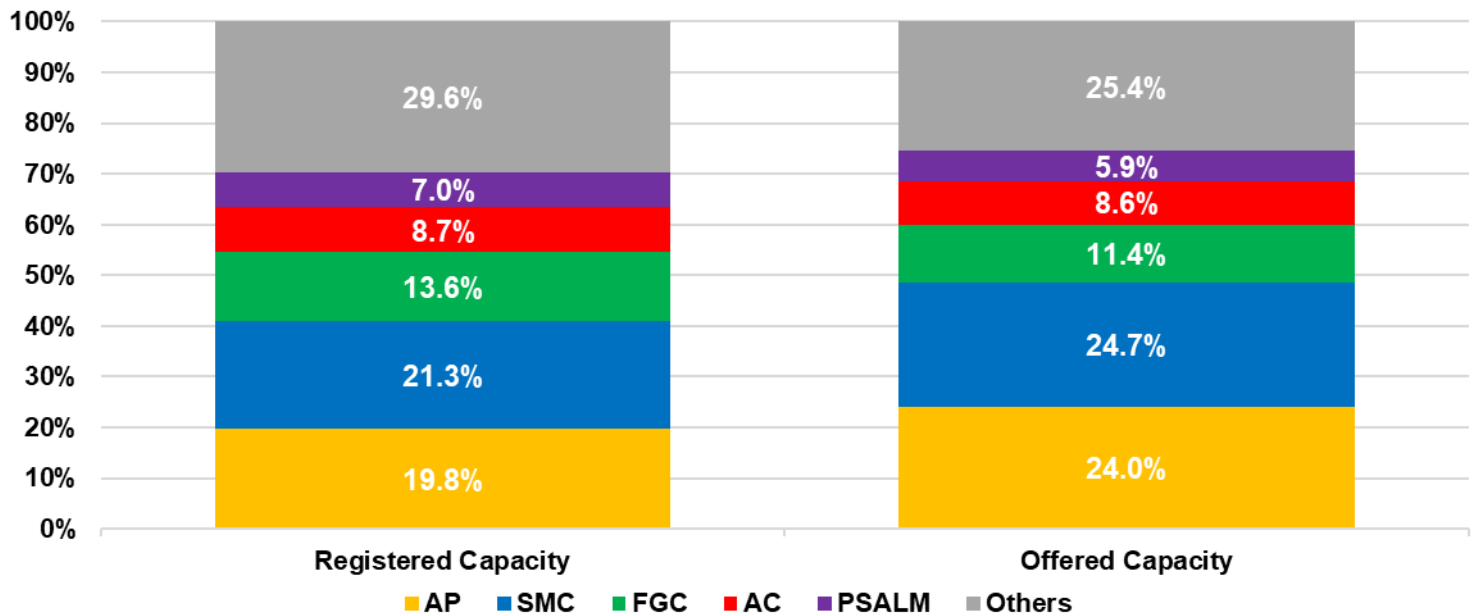


Total spot quantities of generator participants in the September billing period were at an average of 20.5% with an average price of PHP4,402/MWh during off-peak hours while during peak hours, average exposure was at 21.5% with an average price of PHP6,530/MWh. In addition, spot exposures during weekdays averaged at 21.4% with an average price of PHP5,900/MWh while it was an average of 20% during weekends with an average price of PHP4,429/MWh.

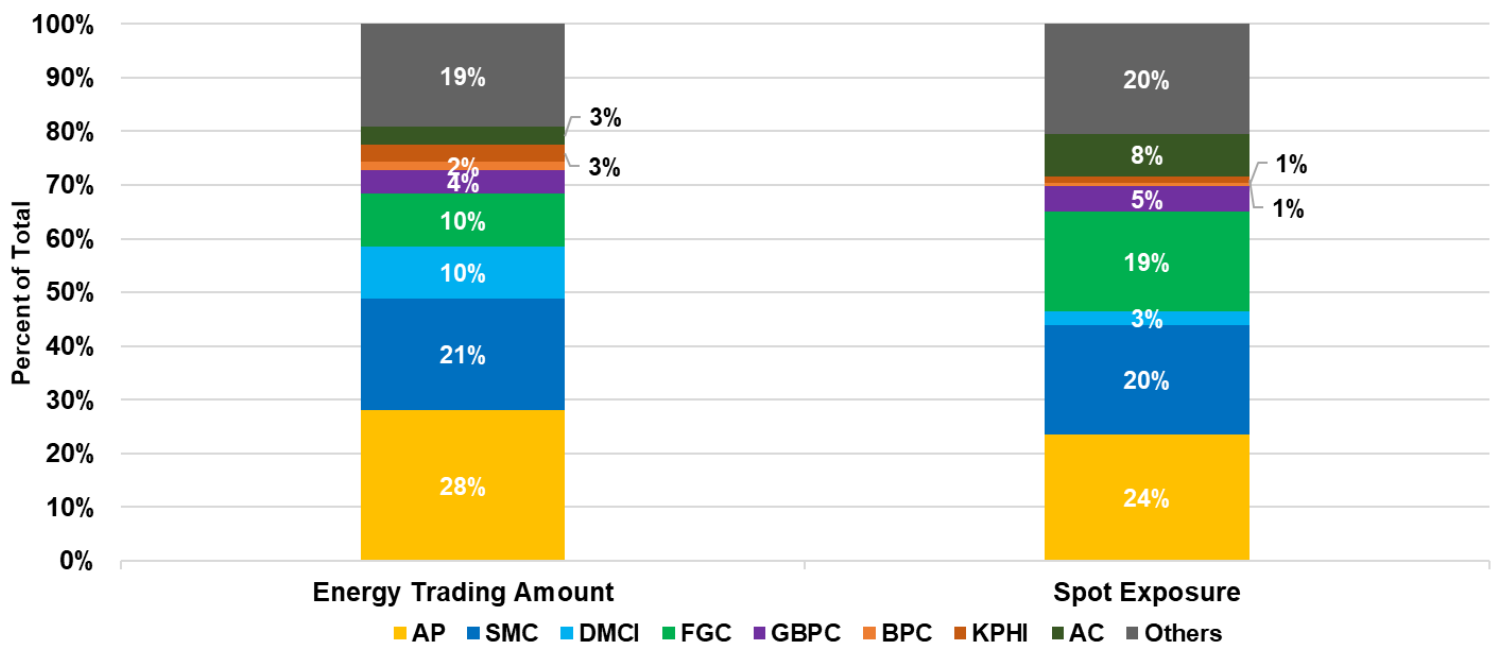
MARKET OUTCOME

STRUCTURAL COMPETITION

SYSTEM MARKET SHARES



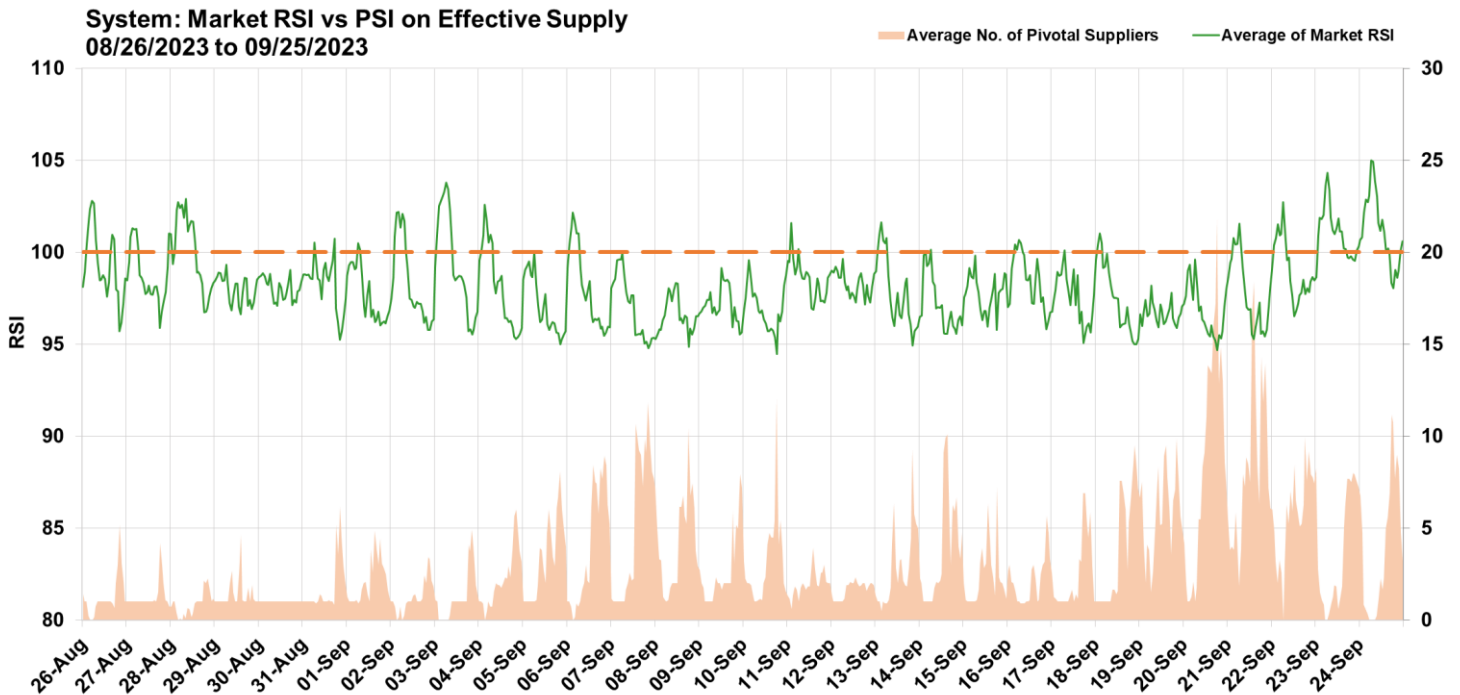
ENERGY TRADING AMOUNT (ETA)



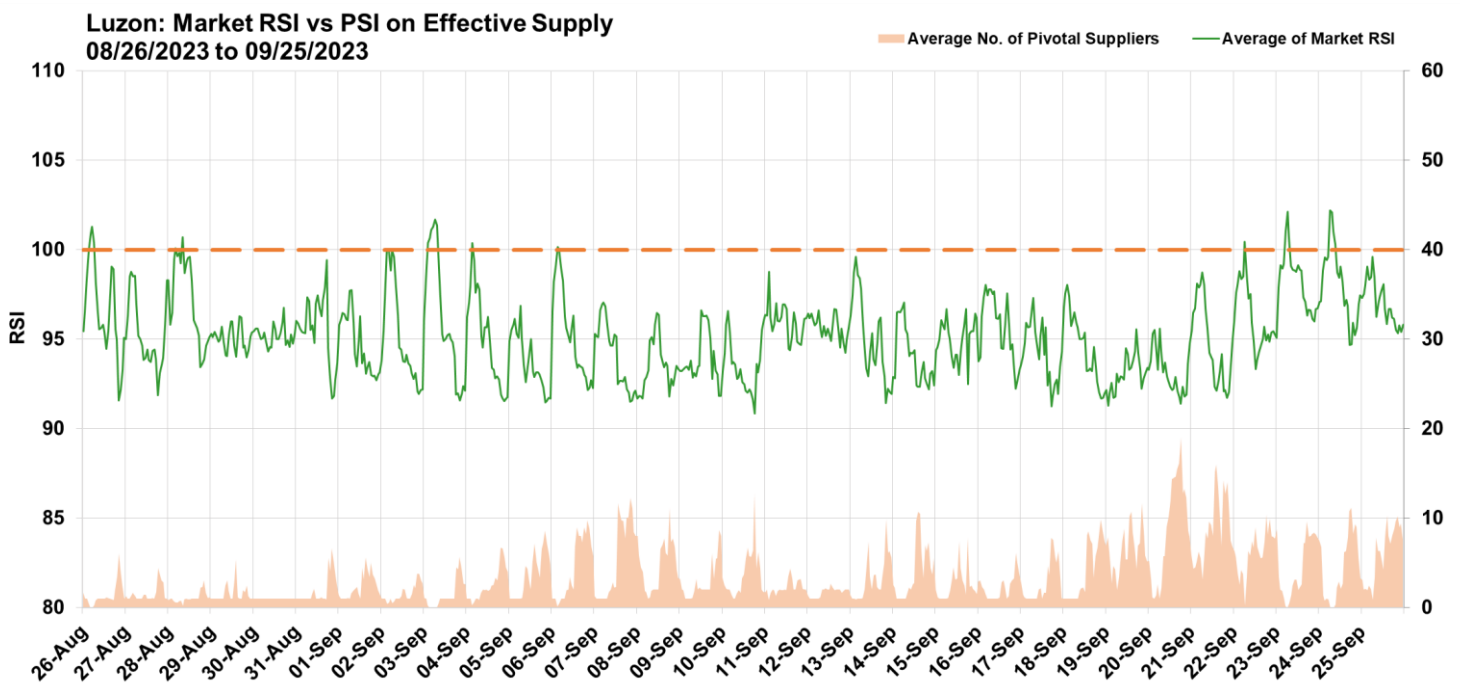
MARKET OUTCOME

STRUCTURAL COMPETITION

SYSTEM RSI



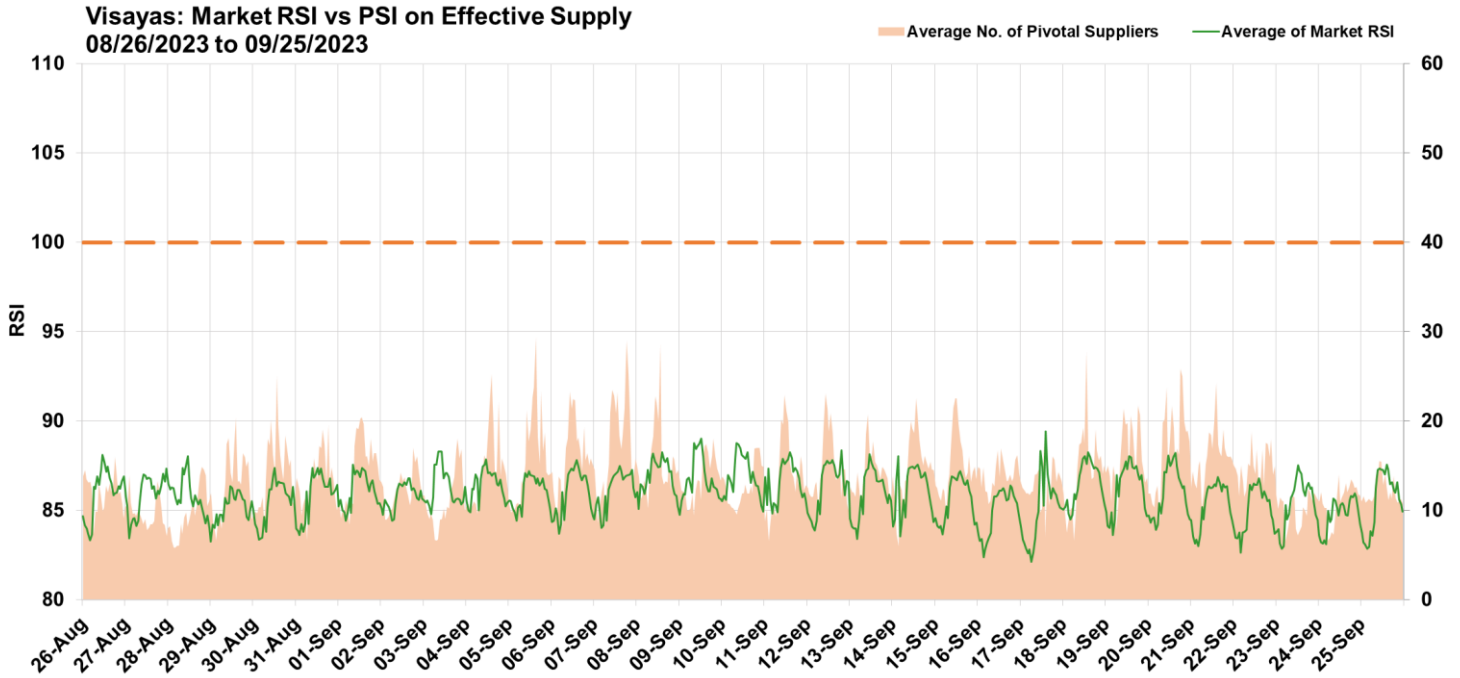
LUZON RSI



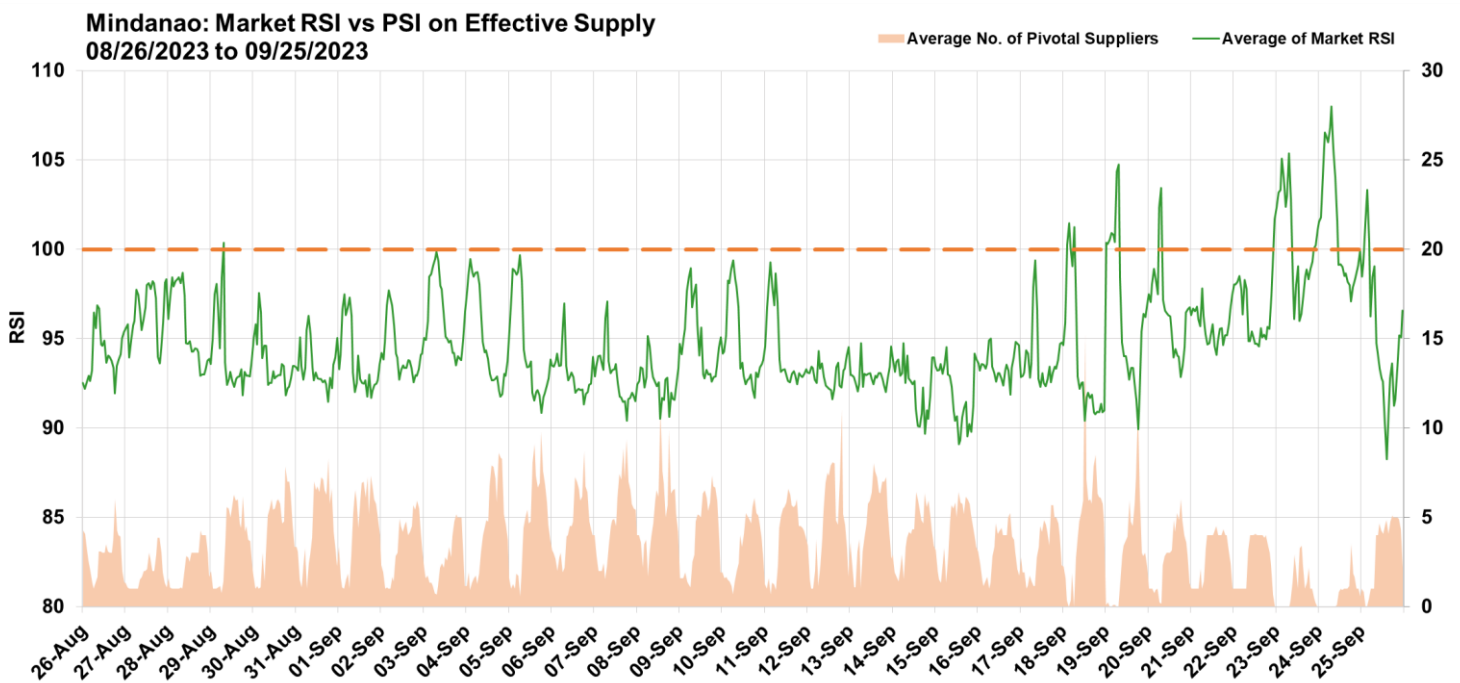
MARKET OUTCOME

STRUCTURAL COMPETITION

VISAYAS RSI



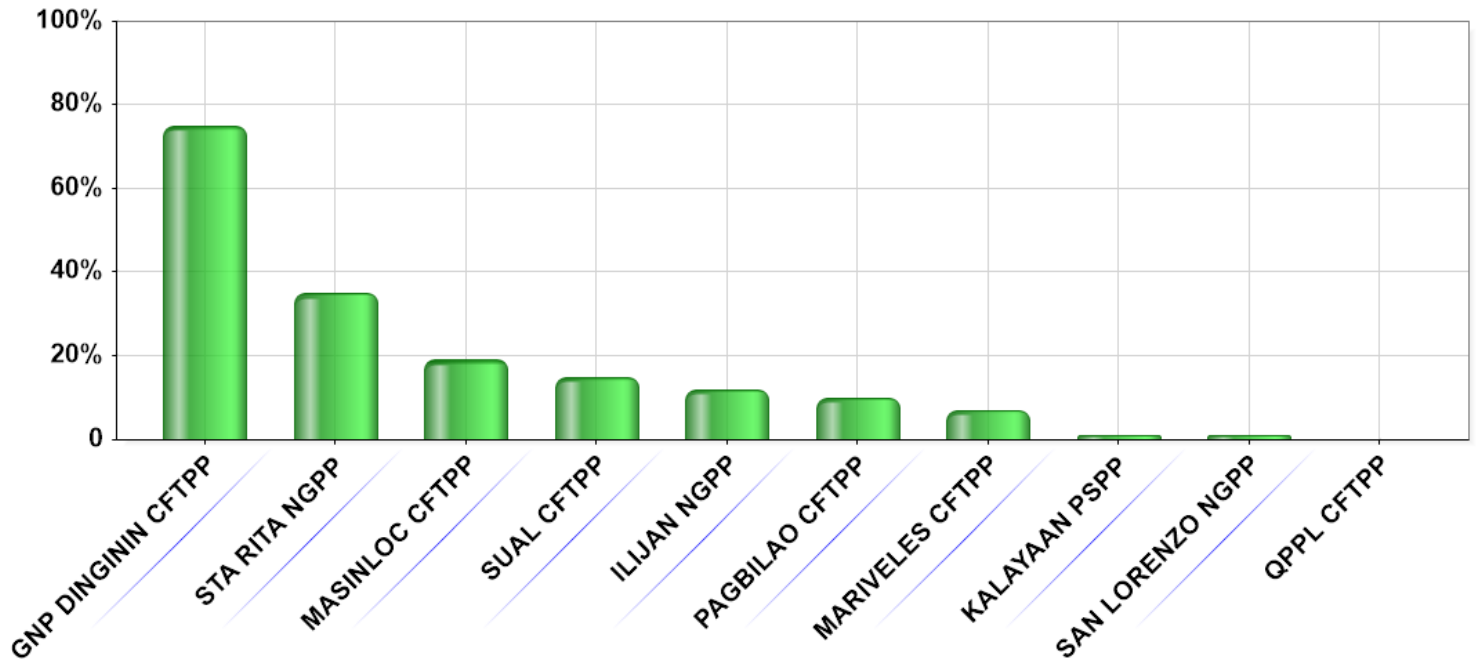
MINDANAO RSI



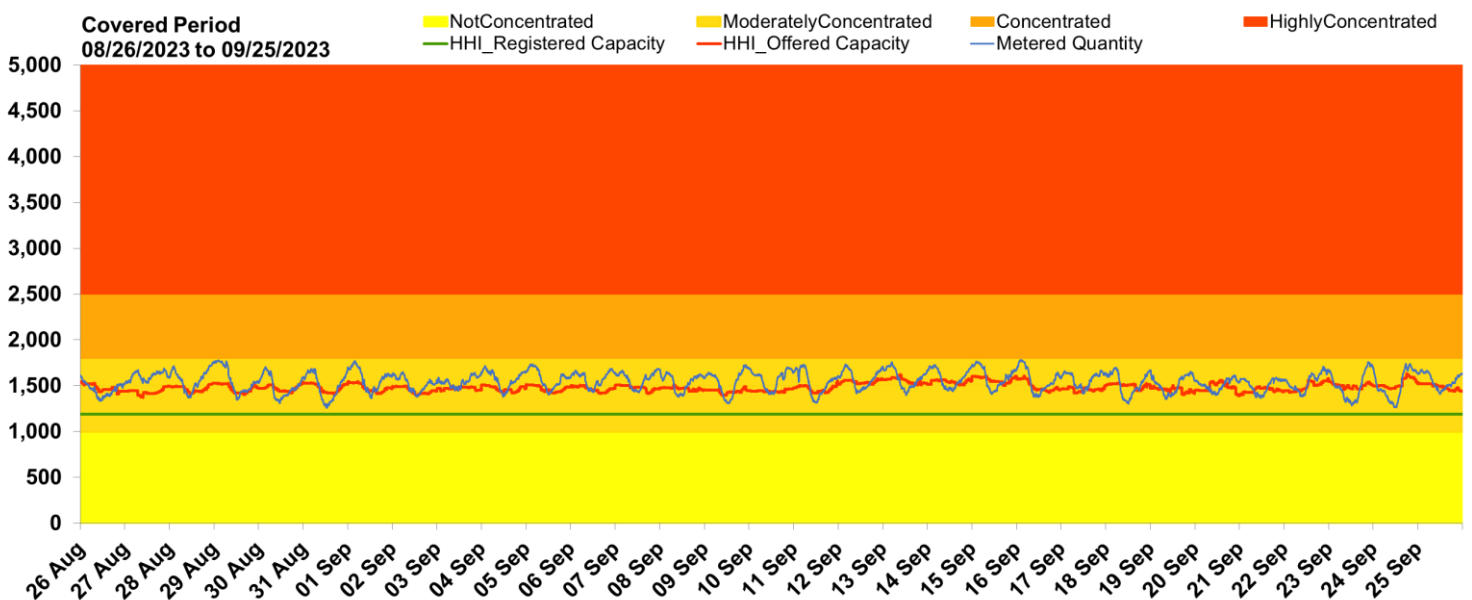
MARKET OUTCOME

STRUCTURAL COMPETITION

SYSTEM PIVOTAL SUPPLIERS



SYSTEM HHI

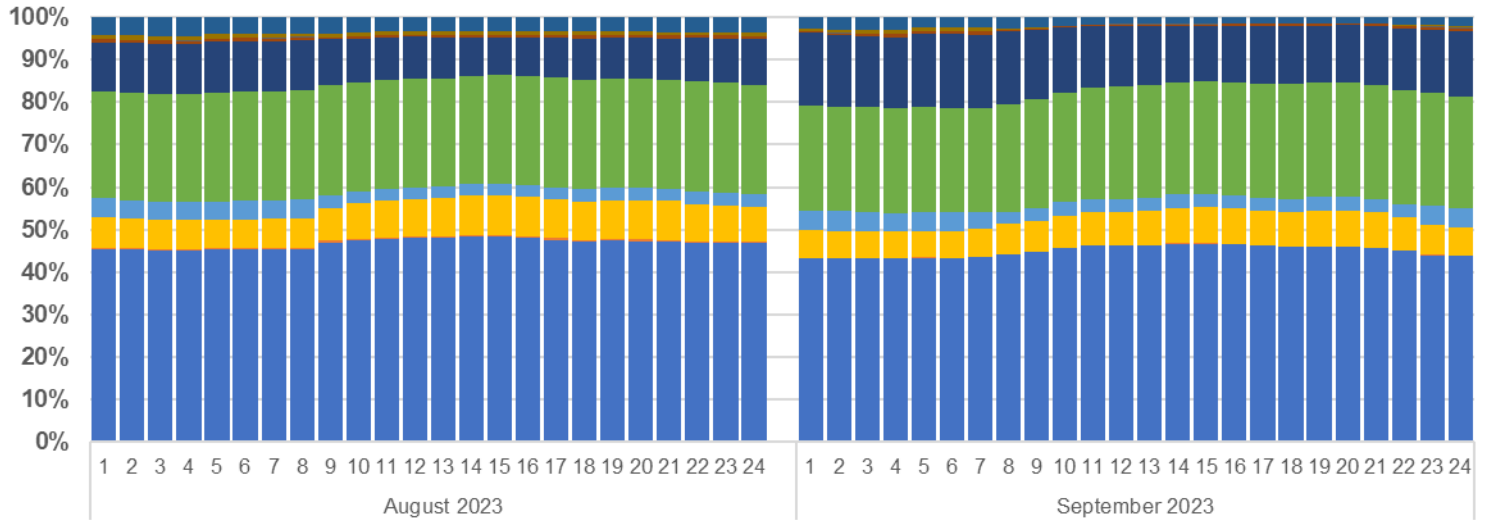


The **Herfindahl-Hirschman Index (HHI)** by major participant grouping for the September 2023 billing period posted a moderately concentrated market all measures (Offered, Metered and Registered Capacities).

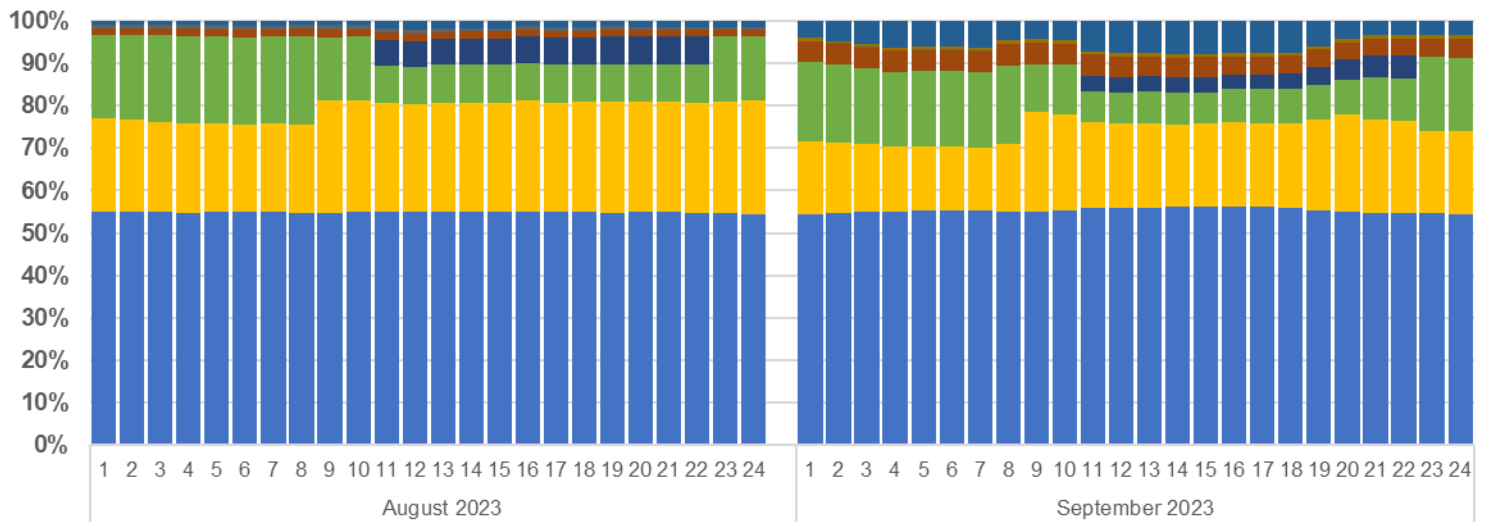
MARKET OUTCOME

BEHAVIORAL INDICES

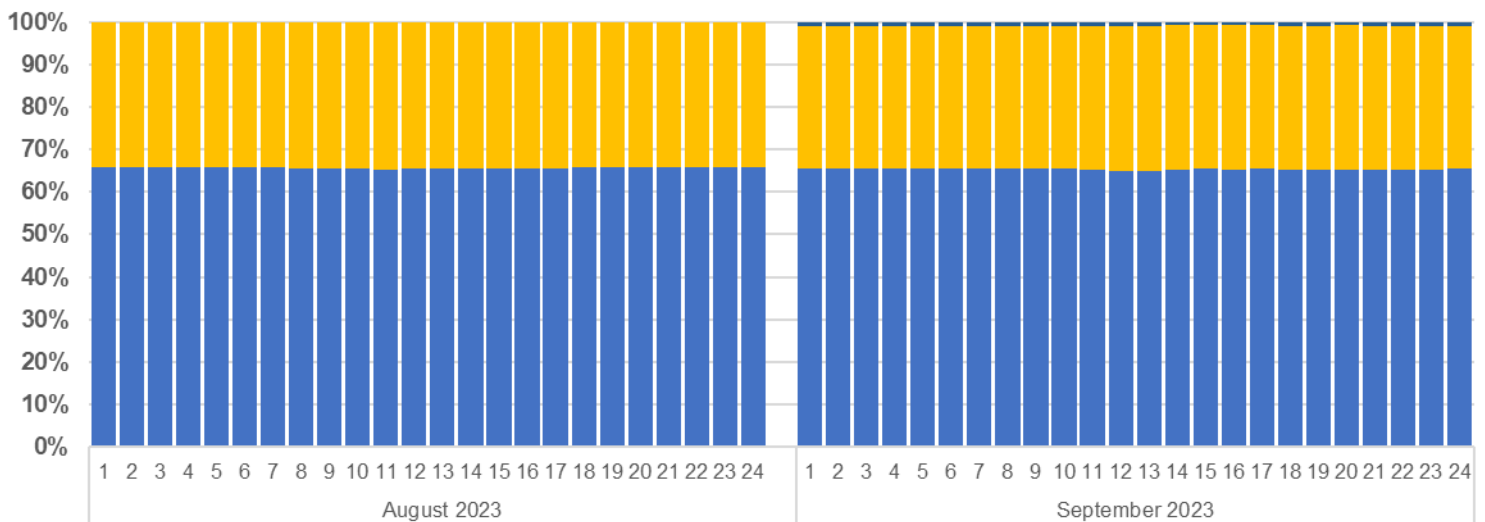
Coal



Natural Gas

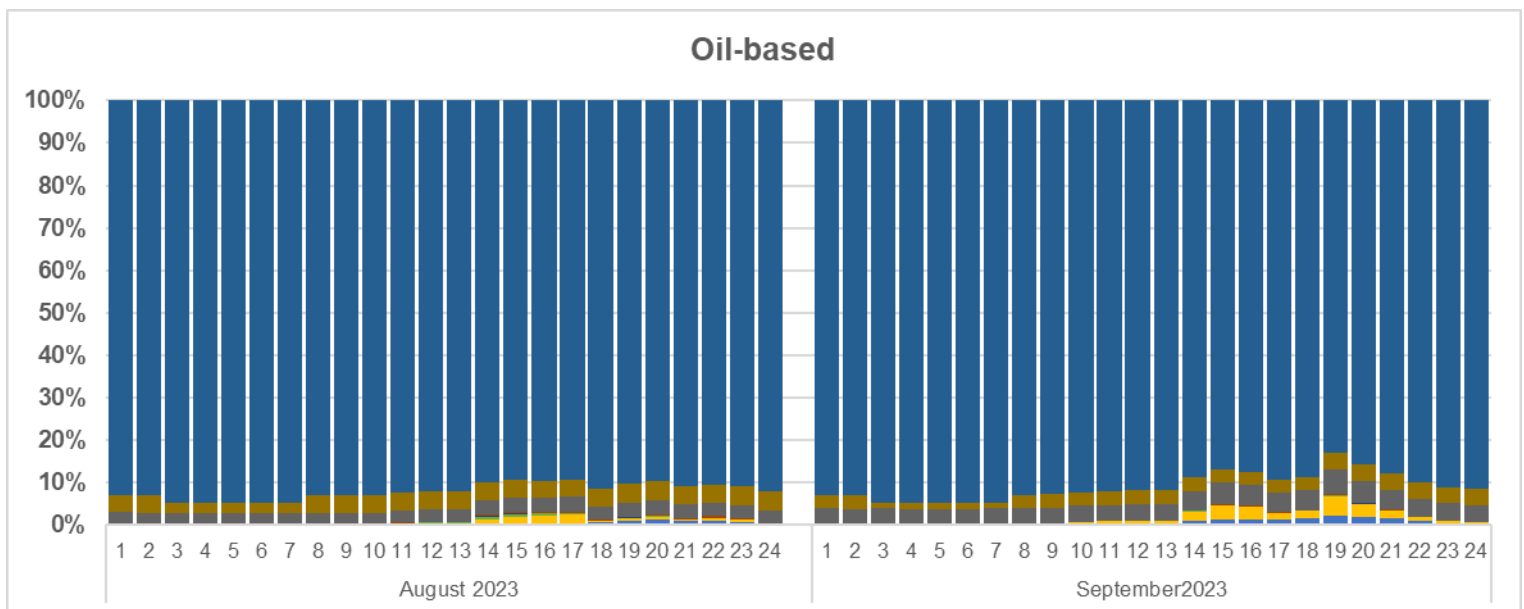
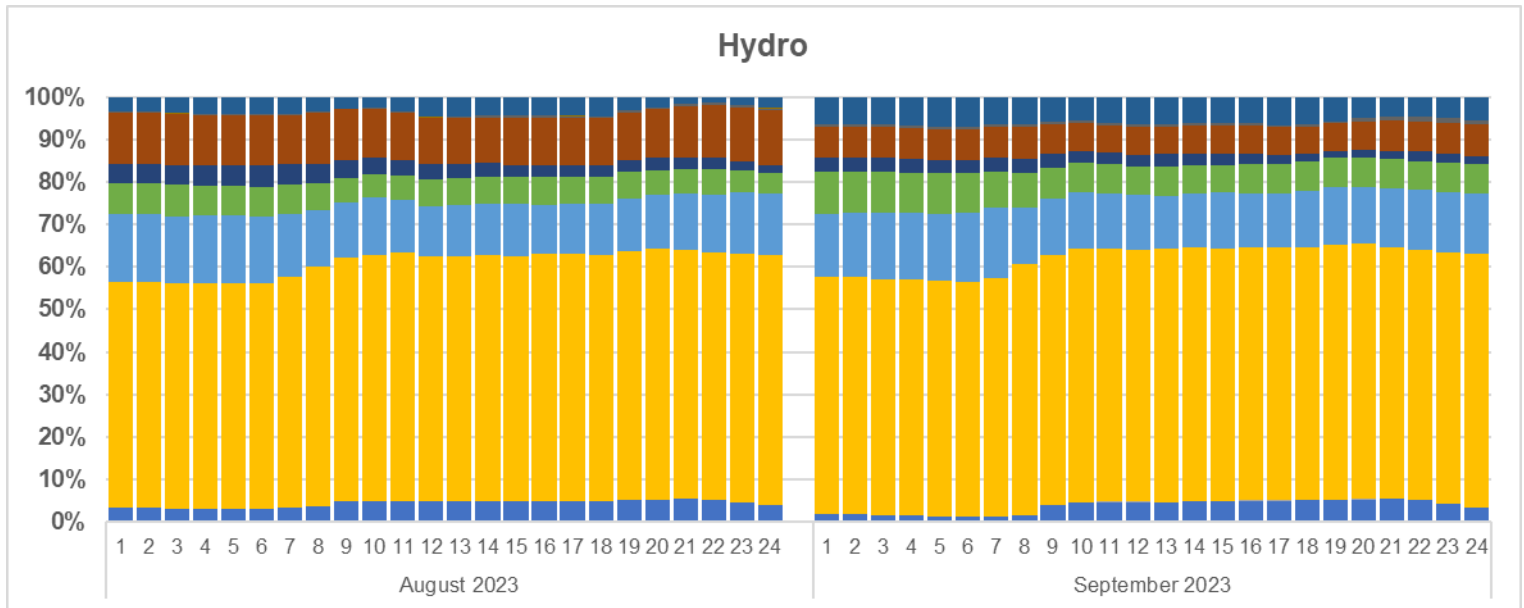


Geothermal



MARKET OUTCOME

BEHAVIORAL INDICES



■ -10,000 to -7,500 ■ -7,500 to -5,000 ■ -5,000 to -2,500 ■ -2,500 to 0 ■ 0 to 2,500 ■ 2,500 to 5,000
■ 5,000 to 7,500 ■ 7,500 to 10,000 ■ 10,000 to 12,500 ■ 12,500 to 15,000 ■ 15,000 above

Baseload power plants, such as Coal and Natural gas power plants, had varying changes coming into the September 2023 billing period, the former increased in offer prices while the latter had stable offer price behavior along with Geothermal power plants. For higher-priced generators, hydro and oil-based plants submitted slightly higher offer prices than last billing period.

ANNEX

List of Major Plant Outages

Plant Type	Plant/ Unit Name	Capacity (MW)	Date Out	Date In	Duration (Days)	Outage Type	Remarks
Luzon							
BIOF	G2REC	10.8	09/07/2023 16:45	09/20/2023 7:00	13	Forced Outage	IDF Problem.
BIOF	IPower 1	10.8	09/02/2023 0:01	09/09/2023 8:01	7	Forced Outage	Fuel System problem
BIOF	GIFT	12	08/28/2023 0:06	09/02/2023 18:00	6	Maintenance Outage	Maintenance Outage
BIOF	IPower 2	10.8	07/05/2023 19:31			Forced Outage	Unplanned shutdown due to ash system problem.
COAL	GNP Dinginin 1	668	09/21/2023 0:12			Planned Outage	Planned outage until October 14 2023.
COAL	SLPGC 1	150	09/20/2023 13:09			Forced Outage	Emergency shutdown due to coal coking at boiler.
COAL	SLPGC 2	149.6	09/16/2023 23:47			Forced Outage	Unplanned outage due to coal coking.
COAL	QPPL	460	09/12/2023 2:02	09/16/2023 4:32	4	Forced Outage	Unplanned outage due to economizer tube leak.
COAL	SMC 1	150	08/10/2023 4:01	09/22/2023 3:25	43	Planned Outage	Planned Outage until September 24 2023.
COAL	SLTEC 1	122	07/26/2023 0:30	08/31/2023 3:59	36	Planned Outage	Planned outage until September 4 2023.
COAL	Pagbilao 2	382	08/05/2023 0:56	08/30/2023 2:22	25	Planned Outage	On planned outage until September 03 2023.
GEO	Tiwi 1	60	11/30/2021 18:32			Forced Outage	Steam supply diverted to Unit 2.
GEO	Makban 7	20	08/22/2023 17:57	09/16/2023 18:44	25	Forced Outage	MAKBAN D UNIT 7 SHUTDOWN DUE TO HIGH TURBINE VIBRATION
GEO	Makban 6	30	04/11/2013 22:44			Deactivated Shutdown	Conducted Gas compressor test.
GEO	Makban 1	57	08/05/2023 1:50	09/14/2023 6:38	40	Maintenance Outage	Generator unit overhaul.
HYD	Kalayaan 4	180	09/04/2023 0:01			Planned Outage	Planned outage until November 24 2023.
HYD	Masiway	12	08/27/2023 19:30	09/10/2023 15:17	14	Forced Outage	Cut-off of NIA IDR due to heavy rain in down stream area.
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	San Gabriel	420	09/18/2023 20:54	09/24/2023 20:09	6	Forced Outage	Gas restriction
NATG	Ilijan B2	190	09/08/2023 17:10	09/17/2023 19:52	9	Forced Outage	Emergency shutdown due to fuel gas supply restriction.
NATG	Sta. Rita 2	255.7	08/25/2023 23:42	08/31/2023 4:21	5	Planned Outage	On planned outage until August 30 2023.
NATG	Ilijan B3	220	08/23/2023 21:15	09/17/2023 23:13	25	Forced Outage	Shutdown due to gas optimization.
NATG	Ilijan B2	190	08/23/2023 21:37	09/08/2023 16:22	16	Forced Outage	Shutdown due to gas optimization.
NATG	Ilijan B1	190	07/15/2023 9:26			Forced Outage	Tripped by Generator earth fault protection
OIL	Limay 7	60	09/16/2023 0:01	09/19/2023 17:00	4	Planned Outage	To conduct Hot Gas Path Inspection and other pending works on unit.
OIL	TMO Unit 2	51.5	09/11/2023 0:00	09/23/2023 0:00	12	Maintenance Outage	Maintenance outage.
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	Limay 3	60	08/07/2023 0:01	09/21/2023 0:00	45	Planned Outage	To conduct C-inspection (Major Overhauling) until September 20 2023.
OIL	Limay 1	60	08/26/2023 0:01	09/01/2023 19:58	7	Planned Outage	Planned Outage Hot Gas Path inspection
Visayas							
BIOF	HPCO	9.5	09/25/2023 7:00			Maintenance Outage	Offline weekly maintenance.
COAL	PALM 1	135	09/22/2023 17:44			Forced Outage	transformer tripped
COAL	CEDC 1	82	09/19/2023 14:33	09/22/2023 16:02	3	Forced Outage	EMERGENCY CUT-OUT DUE TO POSSIBLE BOILER TUBE LEAK
COAL	Kepco Salcon 2	103	09/16/2023 0:01			Planned Outage	Manually shutdown for scheduled APMS Duration 40 Days
COAL	CEDC 2	82	09/04/2023 0:21			Planned Outage	AMPS - Conduct of Major Turbine Overhaul(MOH) in accordance with the Approved 2023 GOMP Harmonization
COAL	Kepco Salcon 1	103	08/02/2023 0:01	09/06/2023 9:22	35	Planned Outage	APMS
GEO	PGPP1 Unit 2	37.47	09/14/2023 0:01			Maintenance Outage	Planned maintenance
GEO	PGPP1 Unit 1	37.5	08/11/2023 0:01	09/07/2023 6:12	27	Maintenance Outage	Shutdown due to PMS.
HYD	THC	15.2	09/09/2023 13:55	09/16/2023 12:01	7	Forced Outage	Tripped due to activation of high vibrations.
OIL	TPC Carmen 2	10	09/25/2023 13:59			Forced Outage	Manually shutdown due to fuel linkage intermediate shaft
OIL	TPC Carmen 2	10	09/11/2023 15:51	09/15/2023 9:07	4	Forced Outage	Manually shutdown due to inspection of piston on cylinder #11 due to suspected cut-off piston rings
OIL	TPC Carmen 4	10	09/04/2023 11:36	09/08/2023 0:02	4	Forced Outage	AUTO-TRIPPED DUE TO LUBE OIL PRESSURE LOW
OIL	CPPC 7	6.5	09/02/2023 0:02	09/16/2023 13:16	15	Planned Outage	Preventive Maintenance ECD September 19 2023

ANNEX

List of Major Plant Outages

Plant Type	Plant/ Unit Name	Capacity (MW)	Date Out	Date In	Duration (Days)	Outage Type	Remarks
Mindanao							
BAT	MACO BAT1	20	09/25/2023 10:30			Forced Outage	Unplanned Outage. Root-cause under investigation.
BAT	JASAAN BAT1	20	09/18/2023 11:45	09/23/2023 14:40	5	Maintenance Outage	Maintenance Outage
COAL	GNPK U1	151.9	09/20/2023 10:21			Maintenance Outage	Planned Outage. (PMS) ETC 10/30/2023 2359H.
COAL	GNPK U1	151.9	09/20/2023 0:01			Maintenance Outage	Planned Outage. (PMS) ETC 10/30/2023 2359H.
COAL	GNPK U4	151	09/18/2023 21:56	09/23/2023 5:30	4	Forced Outage	Forced Outage due to UCB Triggered Off Signal (Tentative Indication). No ETC
COAL	STE U2	116	09/18/2023 8:35	09/25/2023 14:03	7	Forced Outage	Emergency shutdown due to tube leak. (Unplanned Outage). No ETC.
COAL	FMP U3	135	09/17/2023 22:15			Maintenance Outage	PMS (GOMP). ETC October 02 2023.
COAL	DCPP Unit 1	151.4	09/17/2023 0:25			Maintenance Outage	PMS (GOMP). ETC October 11 2023.
COAL	STE U1	116	09/12/2023 10:19	09/17/2023 14:13	5	Forced Outage	Emergency shutdown due to Boiler Fouling. ETC Sept 21 2023
COAL	STE U2	116	09/11/2023 18:45	09/16/2023 14:12	5	Forced Outage	Emergency shutdown due to Boiler Fouling. ETC Sept 20 2023
COAL	FMP U2	135	09/05/2023 10:52	09/11/2023 0:01	6	Forced Outage	Emergency maintenance re: tube leak at boiler backpass. ETC: 12-Sep-2023
COAL	MCC U2	55	09/01/2023 0:01	09/11/2023 23:48	11	Maintenance Outage	PMS (Non-GOMP). ETC September 20 2023
COAL	STE U2	116	08/23/2023 13:00	09/01/2023 4:11	9	Forced Outage	Forced Outage due to fouling of boiler. No ETC.
COAL	STE U1	116	08/25/2023 5:50	09/02/2023 17:35	8	Forced Outage	Forced outage due to boiler fouling. No ETC.
COAL	FMP U1	135	08/26/2023 0:01	09/08/2023 18:10	14	Maintenance Outage	PMS (GOMP). ETC September 9 2023
COAL	DCPP Unit 2	150	08/22/2023 0:22			Maintenance Outage	Planned Outage. PMS ETC 10/01/2023 2359H
HYD	AG6 U1	31.5	09/23/2023 18:49			Forced Outage	Shutdown. Repair of governor oil pump not yet resolved. Note Forced outage since 05/24/2023 1650. Closed at 09/23/2023 1511H for test run of governor.
HYD	PG4 U3	75	09/18/2023 8:02	09/23/2023 7:51	5	Maintenance Outage	PMS (Non-GOMP). ETC September 23 2023.
HYD	AG4 U1	52.7	09/15/2023 11:00	09/19/2023 9:02	4	Forced Outage	Emergency shutdown due to frequent governor hunting.
HYD	PG4 U1	75	09/05/2023 0:02	09/07/2023 20:54	3	Maintenance Outage	PMS (Non-GOMP). ETC: September 8 2023
HYD	AG2 U1	60	09/02/2023 14:45	09/11/2023 14:24	9	Forced Outage	Tripped due to high temperature of turbine guide bearing (Unplanned Outage).
HYD	PG4 U2	75	09/02/2023 0:01	09/04/2023 12:15	3	Forced Outage	Emergency shutdown due to low water inflow.
HYD	AG4 U1	52.7	08/28/2023 8:05	09/15/2023 8:59	18	Maintenance Outage	Planned Outage (GOMP). ETC: September 29 2023.
HYD	PG4 U3	75	08/08/2023 0:02	08/30/2023 15:39	23	Maintenance Outage	PMS (GOMP). ETC 08/30/2023
HYD	AG6 U1	31.5	05/24/2023 16:50	09/21/2023 9:15	120	Forced Outage	Emergency shutdown due to governor oil pump failure. Unplanned Outage. No ETC.
HYD	AG2 U1	60	08/25/2023 9:05	08/27/2023 16:38	2	Maintenance Outage	PMS(Non-GOMP). ETC August 27 2023.
HYD	AG1 U2	35	08/01/2023 9:23			Maintenance Outage	PMS (GOMP). ETC October 19 2023
OIL	WMPC Unit 4	10.2	05/01/2023 21:59			Forced Outage	Tripped due to generator earth fault. Unplanned Outage. ETC October 20 2023.
OIL	KEP U2	7.8	08/29/2023 13:01	08/31/2023 13:00	2	Forced Outage	Forced Outage due to Smoke Stop replacement. ETC August 31 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.
OIL	NBPC 1	5	08/10/2023 0:00	08/31/2023 13:00	22	Forced Outage	DG02 on extended PMS undergoing repair and maintenance due to charge air cooler contaminated of water. No ETC.
SOLR	NVVOGTSE1	5	09/25/2023 9:13			Forced Outage	Affected by SOCOTECO 1 substation failure (Outside management control outage).
SOLR	ADG U0	20	08/17/2023 19:42			Forced Outage	Unable to generate due to damage main switchgear at line 1 to replace feeder cable of line 1. Unplanned Outage. No ETC.

Connect with **PEMC**

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