



Market Assessment Report June Billing Month

26 May 2020 to 25 June 2020

JULY 2020

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



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Monthly Market Assessment Report for June 2020 Billing Month

I. Assessment of the Market

- 90 percent of the total market price outcome in June 2020 was a result of normal pricing condition, almost similar to last May's 93 percent
- The remainder, however, required other forms of pricing methodologies
 - Price Substitution Methodology was applied to a low 8 percent of the total outcomes. About 47 percent of which accounts for the frequent congestion events on Balingueo-Kadampat line 1 in Luzon while around 35 percent was due to the persistent congestion in the Samboan-Amlan line 1.
 - Prices with pricing error occurred around 2 percent of the time as a result of inappropriate input data affecting Luzon and Visayas' prices and schedules
- None of the intervals were imposed with administered prices and secondary price caps

Table 1. Summary of Pricing Conditions (Ex-ante), June 2020

Pricing Condition	No. of Intervals			
	Luzon	% of Time	Visayas	% of Time
Normal	672	90.3%	671	90.2%
Congestion	57	7.7%	60	8.1%
Pricing Error Notice	15	2.0%	13	1.7%
Administered Price	0	0%	0	0%
Secondary Cap	0	0%	0	0%
Total	744	100%	744	100%

- For intervals under normal condition, a continuing increase in the price level was observed due to the interaction between the supply and demand as a result of a more relaxed protocol for the General Community Quarantine (GCQ) and Modified General Community Quarantine (MGCQ) implementation.
- Supply situation saw an improvement driven by the recorded low total outage level from power plants although demand continued to gradually increase, reaching the highest monthly average for 2020. The rise in demand, however, is still on an unusual lower level in comparison with past years' June demand.

Notable Highlights:

1. *Demand gradually regaining normalcy*
 - *Observance of increase in system demand upon implementation of GCQ and MGCQ in the country*
2. *Thinning of supply margin on 04 June*
 - *Luzon grid on Yellow Alert for 3 intervals as imposed by the System Operator*
3. *Occurrence of price spike events*
 - *Price spikes recorded on 26 May, 02 June, 04 June, and 05 June 2020 reaching as high as PhP32,609/MWh for peak and PhP12,138/MWh for off-peak*

II. Market Outcome**a. Price****i. Price and Supply Margin**

- On 01 June, the transition of high-risk areas to the General Community Quarantine (GCQ), and low-risk areas to Modified General Community Quarantine (MGCQ) allowing for a wider range of economic activities in the country resulted to the increase in market price.
- Meanwhile, an average supply margin at 2,221 MW for June 2020 was noted to have been the highest recorded supply margin in all of June for the past 5 years (2015-2019).
- Since the implementation of the community quarantine last March 2020, the average monthly supply margin had an unusual high level which resulted to low WESM prices. This observation was contrary to the trend in previous years of the same season.
- Load-weighted average price (LWAP) of June 2020 at PhP3,265/MWh was the lowest recorded monthly price when compared to the June billing months in the last 5 years (2015-2019).

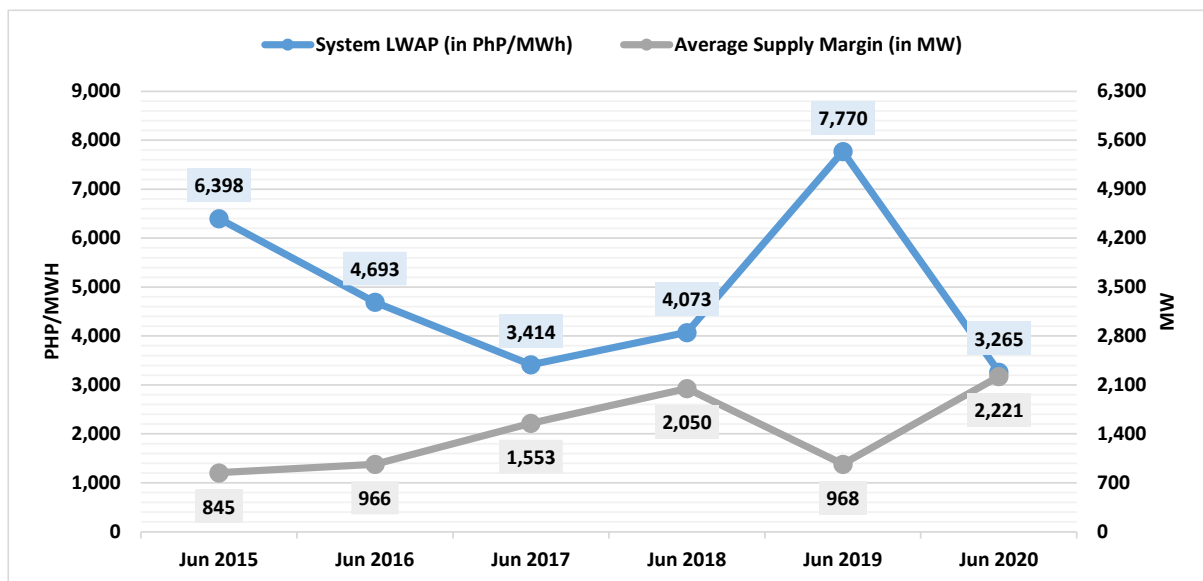


Figure 1. System LWAP and Supply Margin, June 2015-2020

- Monthly load weighted average price (LWAP) increased by 60% as compared to May.
 - Monthly average peak prices increased by 112.1% from PhP1,859/MWh to PhP3,944/MWh.
 - Monthly average off-peak prices increased by 17.7% from PhP2,194 to PhP2,581/MWh.
- The average supply margin further narrowed by 11.6 percent from 2,513 MW in May 2020 to 2,221 MW in June 2020

Table 2. System LWAP and Supply Margin, May and June 2015-2020

Year	Month	Average Supply Margin	% Change in Average Supply Margin	System LWAP	% Change in System LWAP
2015	May	1,207	-30%	4,512	42%
	June	845		6,398	
2016	May	1,378	-30%	2,734	72%
	June	966		4,693	
2017	May	1,506	3%	3,471	-2%
	June	1,553		3,414	
2018	May	1,851	11%	4,105	-1%
	June	2,050		4,073	
2019	May	1,143	-15%	6,647	17%
	June	968		7,770	
2020	May	2,513	-12%	2,040	60%
	June	2,221		3,265	

- Hourly resolution of supply margin showed the lowest recorded supply margin at 114 MW on 04 June 2020 at 1400H as a combined result of the high plant outage reaching 2,938 MW and the increasing level of demand.
- Also, occurring on the same date and interval was the highest hourly LWAP recorded in the market for June 2020 at PhP32,609/MWh.
- The hourly LWAP achieved consistency in trend in the latter part of the month, after the occurrence of the high prices, hovering below the PhP4,000/MWh level majority of the time.
- As of the end of the June billing month, prices climbed by 14.4 percent from the MECQ period's (16 to 31 May 2020) average of PhP2,907/MWh to the GCQ period's (01 to 25 June 2020) average of PhP3,324/MWh.
- Several price spike¹ events were recorded on the following dates:
 - 26 May 2020 during 1400H at a generator-weighted average price (GWAP) of PhP21,188/MWh
 - 02 June 2020 during 2200H and 2300H at a GWAP of PhP13,747/MWh and PhP12,138/MWh, respectively
 - 04 June 2020 during 1100H at PhP21,870/MWh, 1200H at PhP20,108/MWh, 1400H at PhP31,600/MWh, 1500H at PhP31,514/MWh, 1600H at PhP22,324/MWh, 1700H at PhP21,498/MWh, and 2200H at PhP13,683/MWh
- The price spike events, in general, coincided with the high level of outages in the specified dates where an issuance of a Yellow Alert notice in the Luzon grid 04 June was noted due to the insufficient operating reserve.
- The price creep up² trigger was also met when there was a four-day price creep, with at least 20 percent daily increase, from 01 to 04 June. During the price creep event, the surges in generator-weighted average prices (GWAP) were recorded following the implementation of the GCQ on top of the high outages during the onset of the June billing month.

¹ Price spike refers to the significant upward movement of prices brought about by high-priced clearing prices breaching the set threshold for peak and off-peak hours in a season

² Price creep up refers to the sustained upward movement of price determined by percent increases higher than 20 percent for four (4) consecutive days with the last price of the day or week breaching the set threshold.

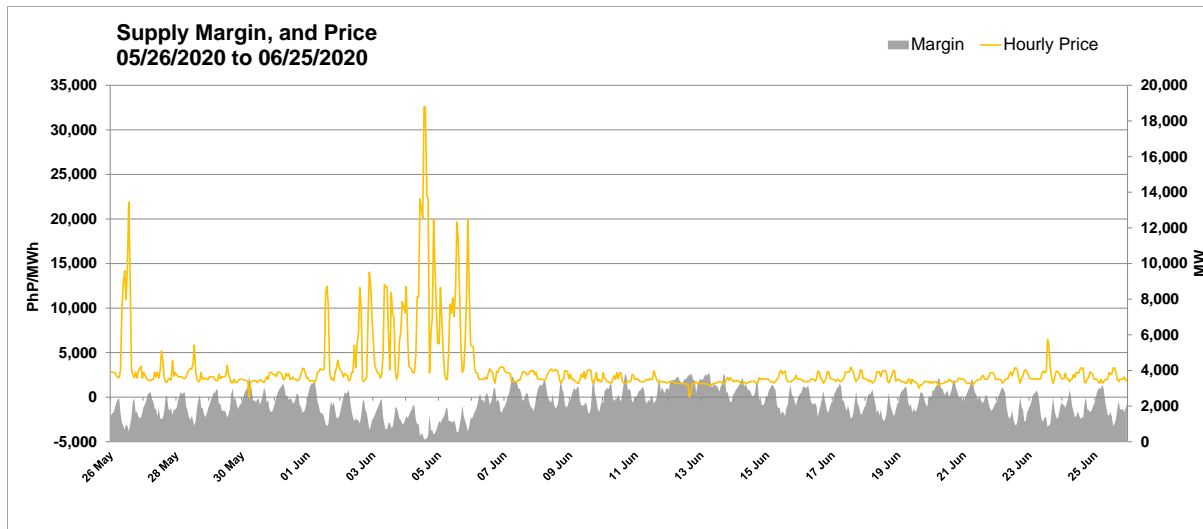


Figure 2. Supply Margin and Price, June 2020

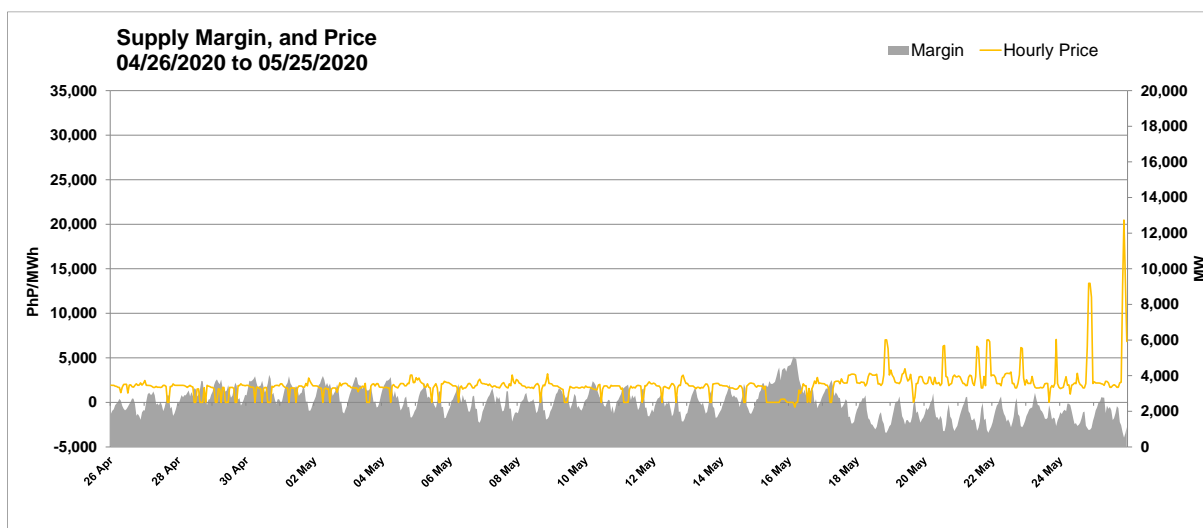


Figure 3. Supply Margin and Price, May 2020

ii. Price Duration Curve³

- For peak hours, about 90 percent of the load nodal prices fell below PhP5,765/MWh in June and PhP2,873/MWh in May while distribution of prices during the off-peak hours were seen below PhP2,961/MWh in June and PhP2,614/MWh in May in about the same percentage of time.
- Maximum off-peak and peak load nodal price reached PhP41,176/MWh and PhP33,422/MWh in June, respectively.

³ Nodal prices under normal pricing condition are used and are subject to change upon final validation of prices

- High nodal prices greater than PhP30,000/MWh for peak hours were the result of the thinning of the supply margin to which the SO has issued a corresponding Yellow Alert Notice.

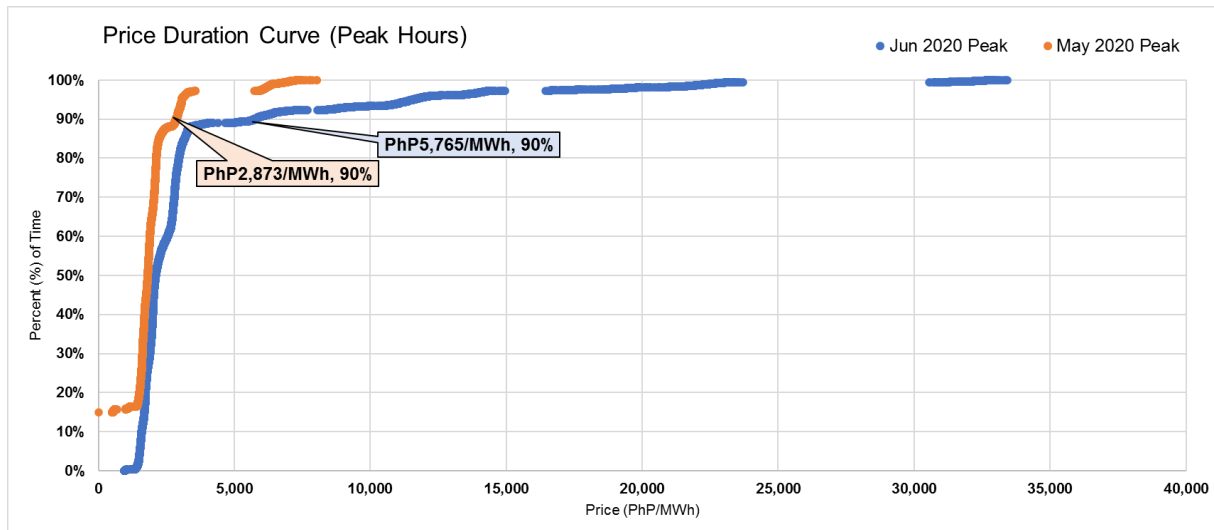


Figure 4. Load Nodal Price Duration Curve (Peak), May 2020 and June 2020

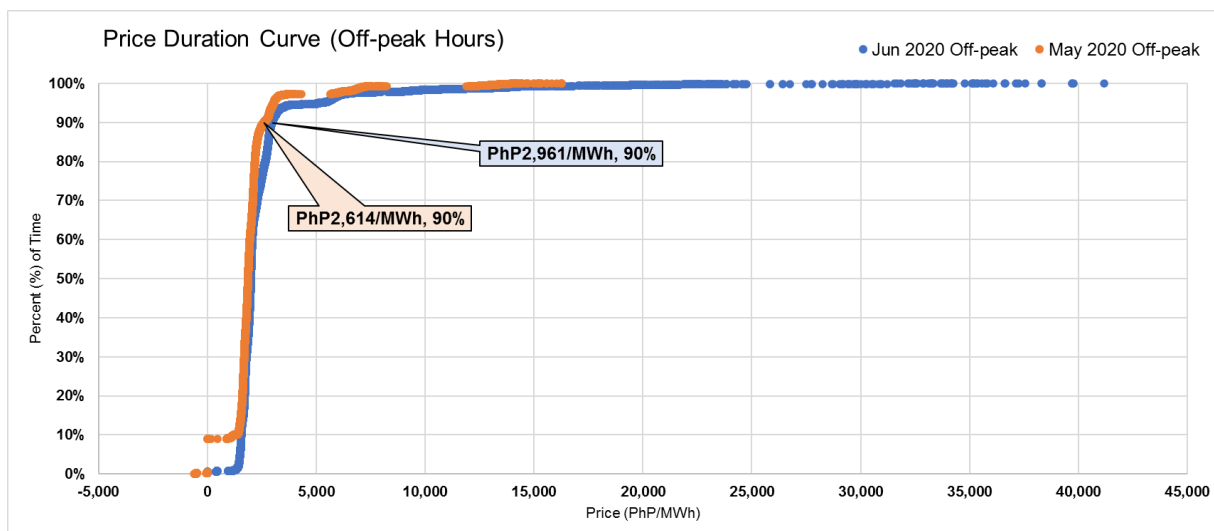


Figure 5. Load Nodal Price Duration Curve (Off-peak), May 2020 and June 2020

iii. Supply Margin-Price Index (SMPI)⁴

- The upper price threshold for the rainy season was breached on 3 intervals, which later in this section be referred to as interesting pricing event, during the peak hours of the June billing month. Furthermore, no threshold was breached during the off-peak hours.
- All the interesting pricing events occurred during a thin supply margin of less than 1,000 MW.

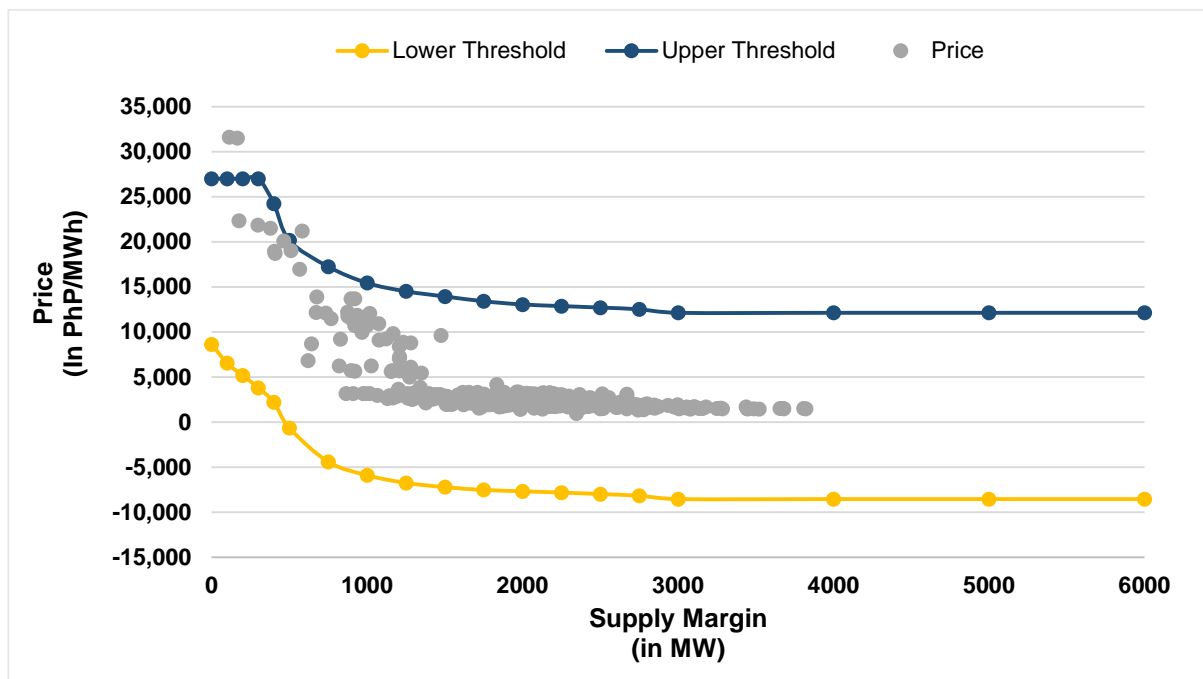


Figure 6. Supply Margin-Price Index (Peak), June 2020

⁴ The supply margin-price index identifies intervals with unusual high or low prices based on the historical relationship of supply margin and price. Prices determined to be outside the bounds of the upper and lower price thresholds for peak and off-peak hours are interesting price points which may require further analysis. Also, price thresholds vary depending on seasonality.

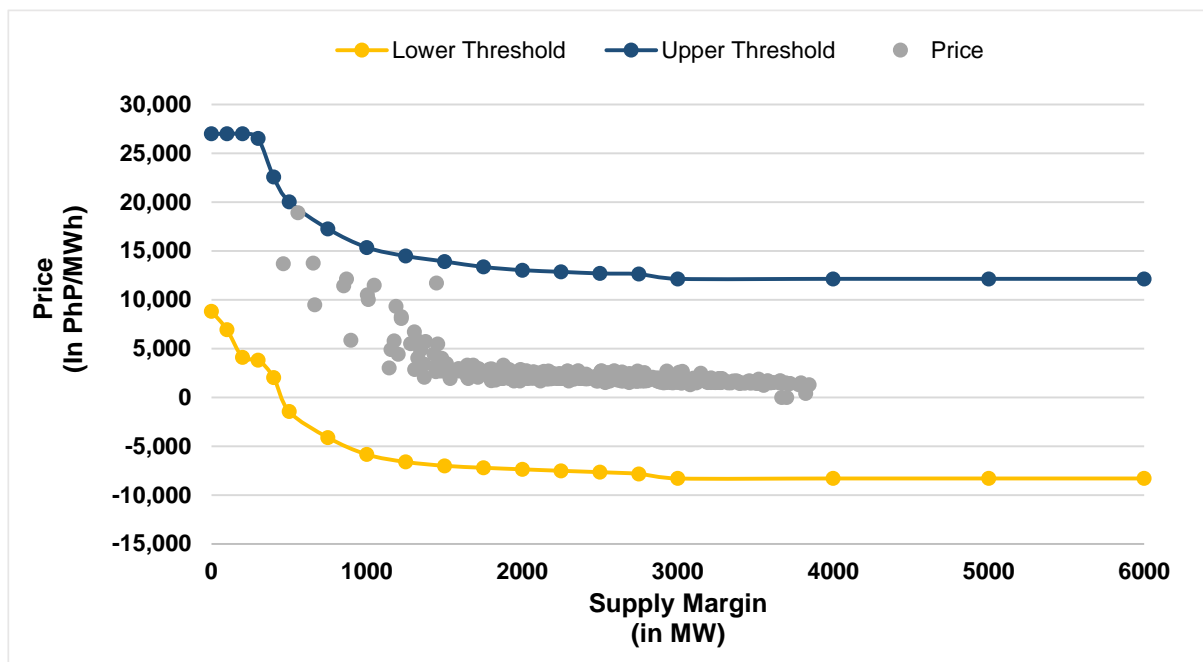


Figure 7. Supply Margin-Price Index (Off-peak), June 2020

- These events may have resulted from possible changes in the offer pattern of power plants, specifically from generators with a high market power to set the price.
- As a summary, provided in the list below were 1 coal, 2 natural gas, 2 geothermal, 2 oil-based, and 2 hydro generator units who exhibited probable bid splitting behavior and increase in offer pattern while setting the market price at above PhP10,000/MWh for the corresponding intervals when the breach in the threshold occurred.
- Generators in the list are subject to further monitoring based on the defined methodology set by the Market Surveillance Committee (MSC).

Table 3. List of Price Setters during the Interesting Pricing Events, June 2020

Event	Generator Unit	Nodal Price (PhP/MWh)	Price Setter (Y/N)	Bid Splitting Behavior (Y/N)	Increase in Offer Pattern (Y/N)
Event 1	Oil A	21,000	Y	N	N
	NatGas A U1	21,422	Y	Y	Y
	NatGas A U2	21,422	Y	Y	Y
	Geo A U1	20,622	Y	Y	Y
	Geo A U2	20,702	Y	Y	Y
Event 2	Coal A	32,700	Y	Y	Y
	Oil B	31,702	Y	N	N
	Hydro A U1	32,000	Y	N	Y
	Hydro A U2	32,000	Y	N	Y
Event 3	Coal A	32,656	Y	Y	Y
	Oil B	31,680	Y	N	N
	Hydro A U1	32,000	Y	N	Y
	Hydro A U2	32,000	Y	N	Y

b. Supply

- A net decrease of 13.1 MW for this month from a total of 20,190.77 MW to 20,177.67 MW was recorded in the WESM registered capacity.
 - Entry of Philippine Power and Development Corporation's three (3) must-dispatch hydro units with an aggregate capacity of 3.1 MW
 - Increase in capacity of Makban GPP units A and B from 126 to 126.4 MW each, Tiwi GPP unit A from 118 MW to 120 MW, Calumangan DPP units 1 and 2 from 4.2 to 4.3 MW each, and Sabangan HEP from 14.3 to 15 MW
 - Decrease in capacity of FFHC biomass from 13 MW to 9 MW, SCBI biomass from 8.3 MW to 7.4 MW, and PWEI Nabas wind from 36 MW to 21 MW
- Available capacity⁵ constituted an average of 15,085 MW or 75 percent of the total registered capacity.
- Capacity not offered comprised an average of 2,874 MW or 14 percent.
- Outage capacity accounted for an average of 2,222 MW or 11 percent.

⁵ Available capacity refers to the aggregate of Capacity Offered/Nominated, Malaya Capacity for MRU, and Capacity of Plants on Testing and Commissioning

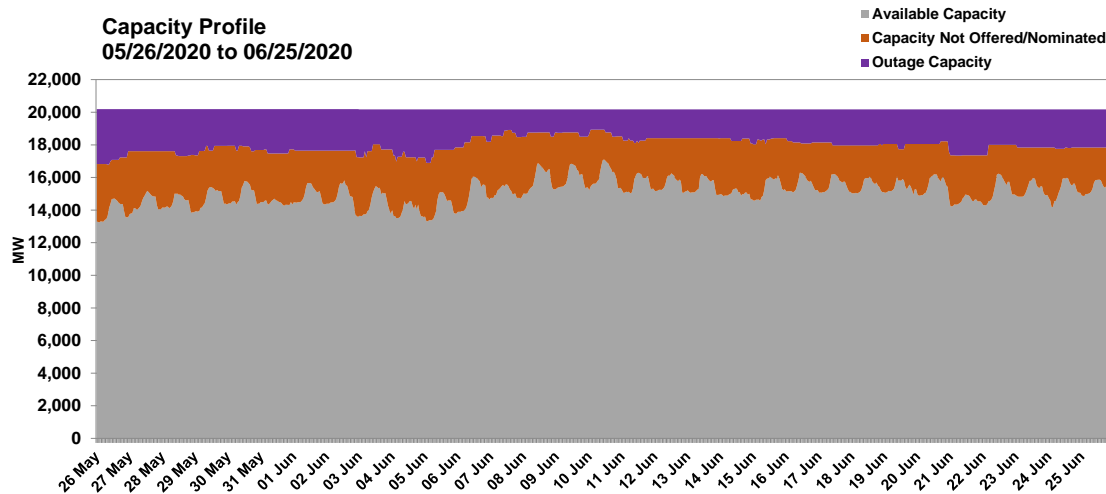


Figure 8. Capacity Profile, June 2020

i. Outage Capacity⁶

- Outage capacity significantly declined by 25 percent from an average of 2,962 MW last month to an average of 2,222 MW this month
- Planned outages comprised only 271 MW on average or 12 percent of the total outages. Majority or about 67 percent was composed of forced outages averaging at 1,517 MW, and maintenance outages at 416 MW or 18 percent of the total outages. Meanwhile, deactivated shutdown accounted for only about 55 MW on average or 2 percent of the outages.
- Level of total outages for the month closed at 2,337 MW, 31 percent lower than its opening level of 3,365 MW.
- Coal plants majorly contributed in the level of planned and forced outages while natural gas plants in maintenance outages.

Table 4. Outage Factor by Plant Type and Outage Category, June 2020

Plant Type	Planned Outage	Forced Outage	Maintenance Outage	Deactivated Shutdown
Coal	81%	56%	37%	0%
Natural Gas	0%	2%	63%	0%
Geothermal	0%	18%	0%	100%
Hydro	19%	3.4%	0%	0%
Oil-based	0%	20%	0%	0%
TOTAL	100%	100%	100%	100%

⁶ Notable plants on outage are detailed in the Annex

- Planned outages had a noticeable decrease of about 41 percent due to the resumption of SLPGC CFTPP unit 2 (150 MW), SMC Limay CFTPP unit 3 (150 MW), CEDC CFTPP unit 2 (82 MW), and TPC Sangi CFTPP unit 2 (85 MW) which were all noted to have undergone long periods of outage.
- Similarly, forced outages had a decline in average level from 2,233 MW to 1,517 MW despite noting a high level of forced outage on the onset of the June billing month.
- The high level of forced outages accounted the outages from SBPLC CFTPP (455 MW), SLPGC CFTPP unit 2 (150 MW), Masinloc CFTPP units 1,2, and 3 (994 MW), SMC Limay CFTPP unit 1 (150 MW), and Pagbilao CFTPP units 1 and 2 (764 MW) which the market endured on 04 June that resulted to high prices.
- Maintenance outage of SBPLC CFTPP (455 MW) persisted through the June billing month which then went online on 05 June. Also, the substantial increase in the average level of maintenance outages from last month's 51 MW to this month's 416 MW was attributed to the outage of San Lorenzo NGPP units 1 and 2 (530 MW) on 10 and 11 June, respectively.

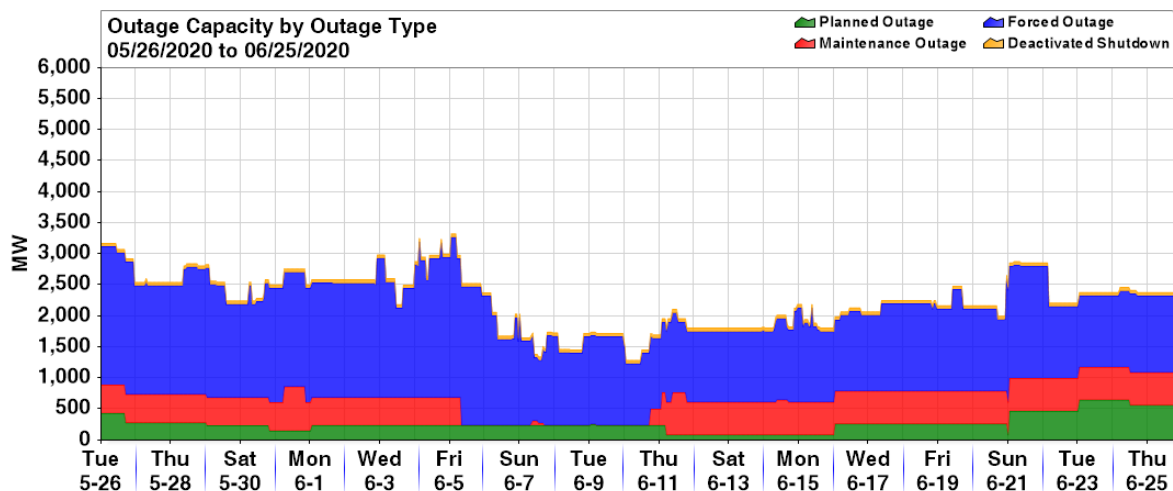


Figure 9. Outage Capacity by Outage Category, June 2020

Table 5. Outage Summary by Outage Category, May 2020 and June 2020

Outage Category	June 2020 (in MW)			May 2020 (in MW)		
	Max	Min	Average	Max	Min	Average
Planned	647	85	271	577	300	461
Maintenance	712	0	416	455	0	51
Forced	2,578	995	1,517	3,074	1,519	2,233
Deactivated Shutdown	55	55	55	55	55	55
TOTAL	3,323	1,285	2,259	3,816	1,890	2,800

- In terms of type of power plants, coal generators accounted for more than half of the outages at 55 percent. This was followed by geothermal and oil-based generators at 14 percent each. Natural gas plants came in close with 13 percent share while hydro plants came in last at 5 percent.
- During the onset of the billing month until 05 June, coal plants registered almost three quarters or 73 percent of the total outages.
- Natural gas plants posted a significant increase in outage from 47 MW to 282 MW owing to the maintenance outage of the San Lorenzo NGPP (530 MW).
- Hydro plants had a 64 percent reduction in average outage capacity as most resumed operations this month with only Kalayaan HEP units 1 and 4 (360 MW) on outage.
- Majority of the average outage of oil-based plants at about 302 MW this month consisted of the prolonged outage of Malaya TPP unit 1 at 300 MW due to problems in the unit generator since 03 May 2019
- Geothermal plants recorded a minimal decline in outage of about 12 percent coming into June.

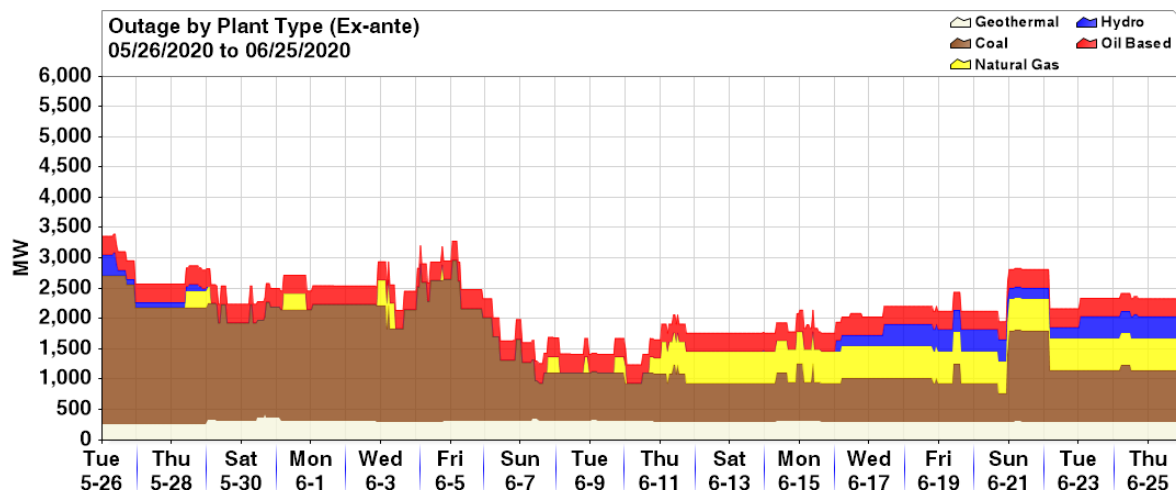


Figure 10. Outage Capacity by Plant Type, June 2020

Table 6. Outage Summary by Plant Type, May 2020 and June 2020

Plant Type	June 2020 (in MW)			May 2020 (in MW)		
	Max	Min	Average	Max	Min	Average
Coal	2,658	480	1,224	2,798	1,232	1,967
Natural Gas	527	0	282	684	0	47
Geothermal	426	270	301	612	258	344
Hydro	395	0	108	568	0	300.5
Oil-based	420	300	307	360	300	304
TOTAL	3,400	1,245	2,222	4,045	1,890	2,962

c. System Demand

- A month-on-month persistent increase of about 9.4 percent was observed in the electricity demand in view of the transition of the country to MECQ and GCQ this month.
- Demand was observed to gradually increase towards the end of the month upon the implementation of GCQ.
- In comparison to last month, the average off-peak demand at 9,539 MW this month saw a 7.0 percent increase while average peak demand at 10,946 MW had a 11.3 percent increase.
- Maximum system demand in June reached 12,648 MW for peak hours on 23 June and 11,505 MW for off-peak hours on 05 June.
- Minimum system demand in May reached 8,906 MW for peak hours and 7,803 MW for off-peak hours which occurred on 13 June and 21 June, respectively.
- It can be observed that during the MECQ and GCQ period this June, the afternoon peak hours were slowly regaining normality becoming slightly higher than the evening peak hours.
- Average temperature for the month was slightly lower as the country is at the onset of the rainy season.

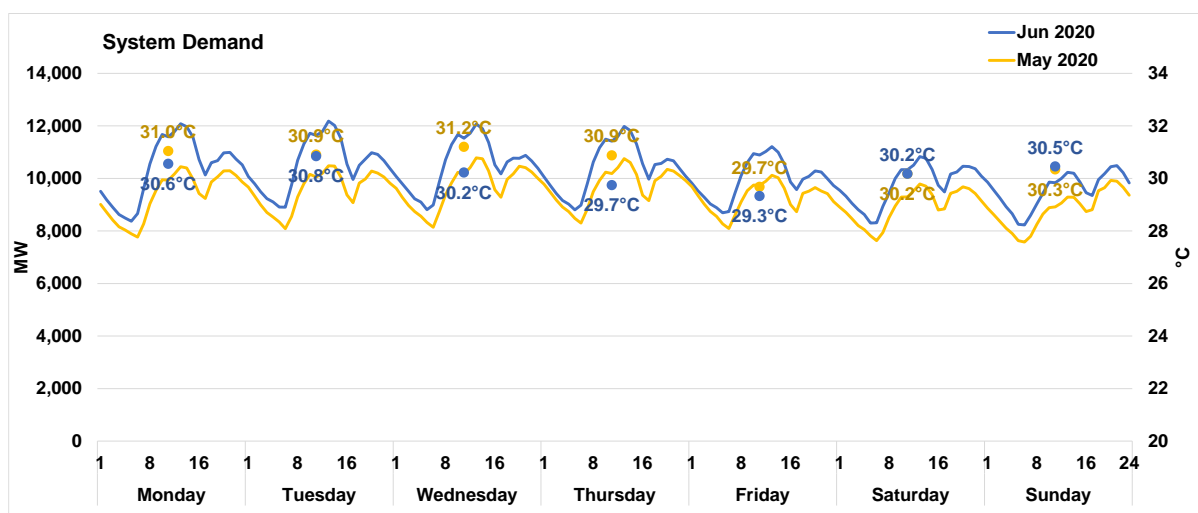


Figure 11. Average Hourly System Demand, May 2020 and June 2020

- Comparing to previous year, the average system demand had an opposite trend with a remarkable decline by 15.5 percent from 11,027 MW in June 2019 to 9,318 MW in June 2020
- Similarly, the year-on-year trend had a reduction in average system demand by 8.0 percent during off-peak hours from an average of 10,367 MW to 9,539 MW and 10.0 percent during peak hours from an average of 12,159 MW to 10,946 MW

- The average temperature in June this year was generally lower than last year.

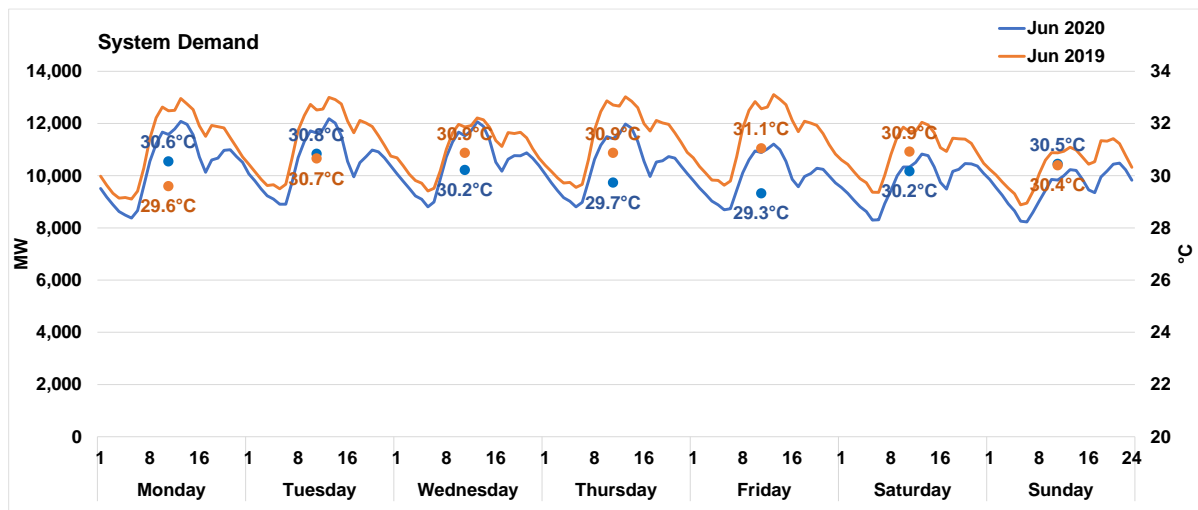


Figure 12. Average Hourly System Demand, June 2019 and June 2020

- Year 2020 was exempt in the consistent pattern of increasing demand every June, which was noticed to have declined because of the community quarantine period.
- Even though the demand in June 2020 was comparable to the demand in June 2018, the resulting lower market price was the result of the entry of more power generators competing in the spot market together with the expansion of non-contestable quantities in the market during the gap. This resulted to a wider supply margin for June 2020 than June 2018.

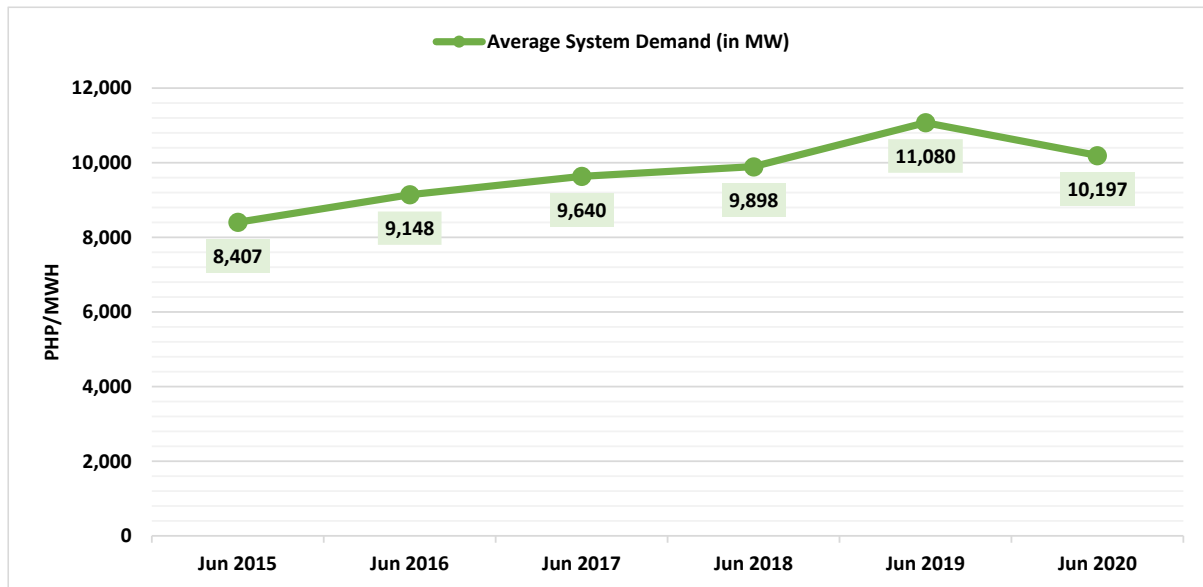


Figure 13. Average System Demand, June 2015-2020

III. Spot Transactions

a. Spot Exposure

i. Load

- Spot quantities⁷ of load participants in June stood at 14.6 percent of the total metered quantities, notably higher than last month's 11.1 percent spot exposure.
- Most of the load quantities, at around 83.5 percent of their total consumption, were still transacted outside the spot market and were contracted with generators.

⁷ Spot quantity refers to the energy transacted in the market. It is the difference between the metered quantity and the bilateral contract quantity. For generator trading participants, positive spot values indicate energy sold while negative values show energy bought in the market

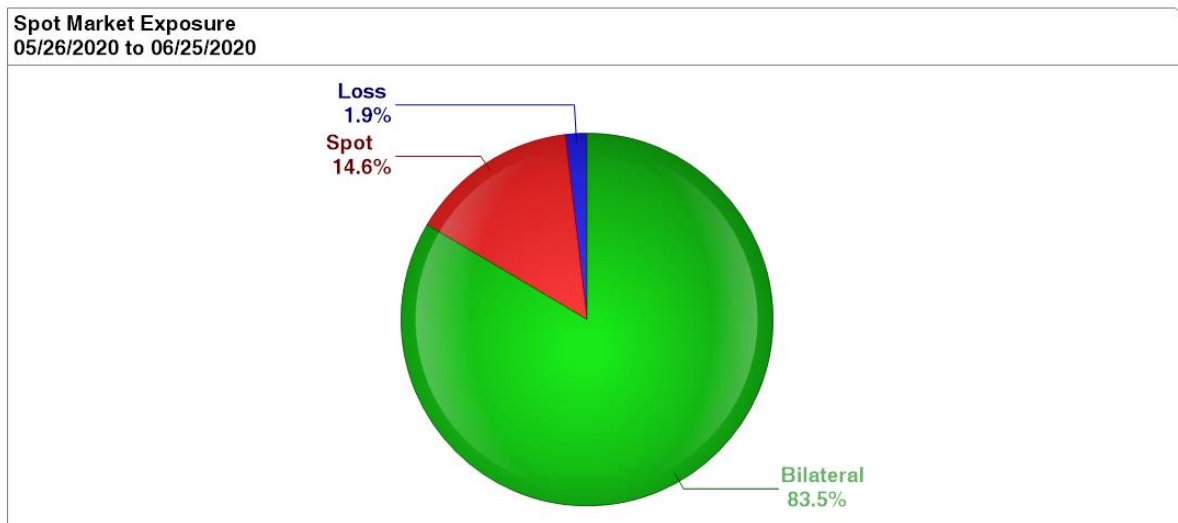


Figure 14. Spot Market Exposure, June 2020

ii. Generator

- Hourly spot exposure this month was seen to be increasing in off-peak and peak hours as compared to last month, resulting with more generator quantities being transacted in the market at higher prices.
- Spot exposure in off-peak hours averaged at 18 percent while it was 15 percent at peak hours.

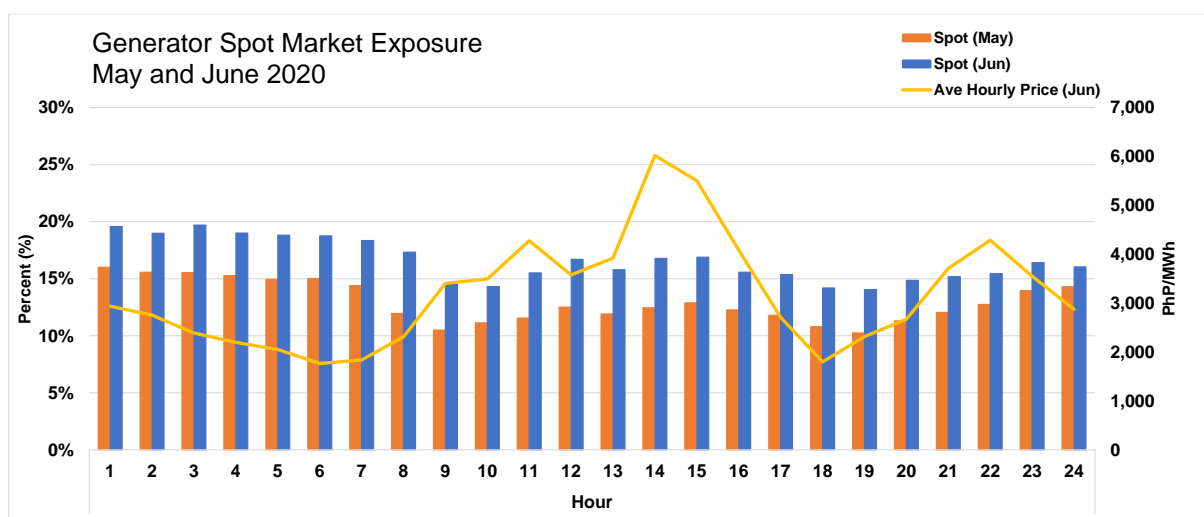


Figure 15. Hourly Spot Market Exposure, May and June 2020

- Based on the spot quantity duration curve⁸ of June billing month, hourly spot quantities of all generators fell below 47 MWh at about 90 percent of the time with maximum and minimum spot quantities at 465 MWh and -679 MWh, respectively.
- The presence of 679 MWh of purchased energy in the spot market at a single interval, higher than largest generator registered in the market at 647 MW, was due to a high BCQ of a certain coal generating unit that was on outage during the interval.

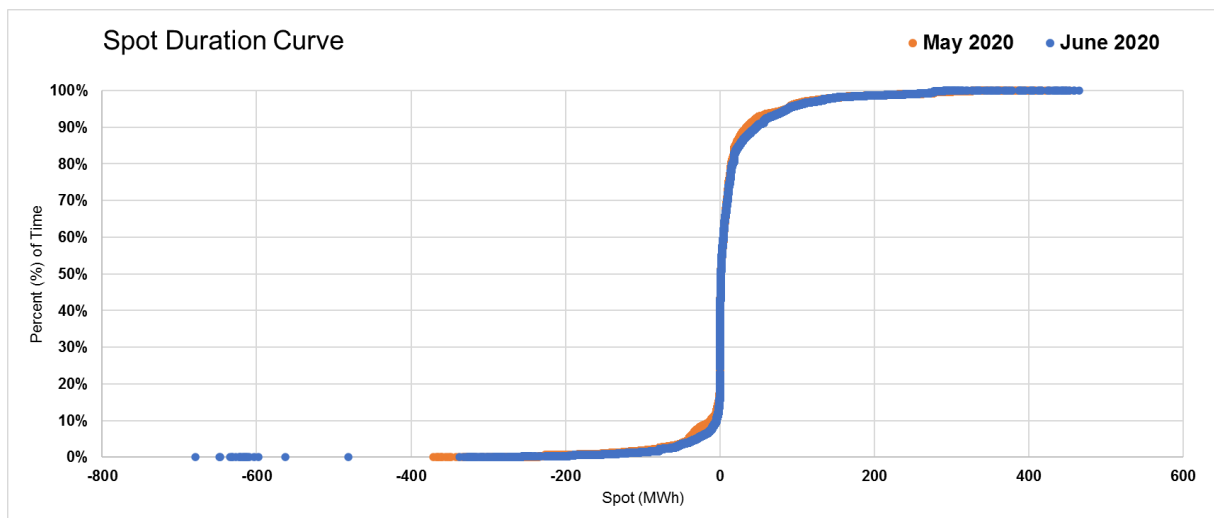


Figure 16. Spot Duration Curve, May and June 2020

- Generator spot quantities for May and June billing months were much more concentrated on the -200 MWh to 200 MWh range.
- About 77 percent of the total generator spot transactions in June, higher than last month's 76 percent. Last month's May billing period was observed to have a similar trend wherein most of the generator spot quantities were sold in the market instead of being bought.

⁸ The spot duration curve utilizes data on a per generator trading interval, meaning, all the data consisted of spot quantities of every generator per interval for the period considered

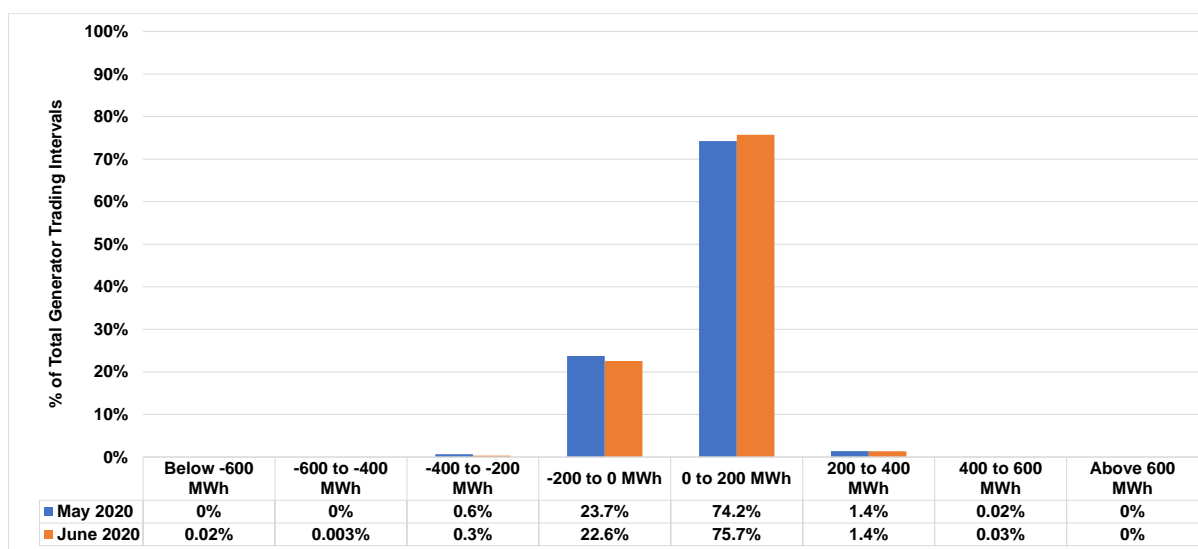


Figure 17. Spot Frequency Distribution Table, May and June 2020

b. Pivotal⁹ Plants

- 86 intervals had a Residual Supply Index¹⁰ (RSI) below the 100 percent mark from 39 intervals in May, indicating the more frequent presence of pivotal suppliers.
- Majority of these instances occurred during the onset of the GCQ period on 01 June as the market experienced tighter supply margin with the increasing demand and outage capacity.
- Additionally, during the community quarantine period, the market resulted to an RSI at an average of 109 percent indicating that supply was still generally abundant to satisfy the demand.

⁹ The Pivotal Supply Index (PSI) measures how critical a generator is in meeting the total demand at a time. It is a binary variable (1 for pivotal and 0 for not pivotal) which measures the frequency that a generating unit is pivotal for a period.

¹⁰ The Residual Supply Index (RSI) measures the ratio of the available generation without a generator to the total generation required (including operational reserve) to supply the demand. RSI also determines whether there are pivotal suppliers in an interval. An RSI below 100 indicates the presence of pivotal plants.

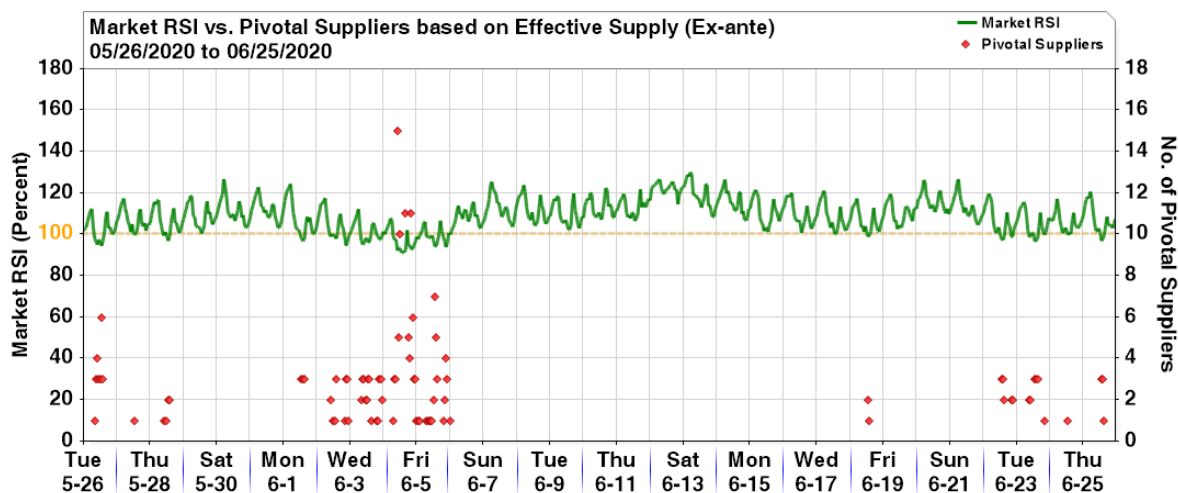


Figure 18. Market RSI vs Pivotal Suppliers, June 2020

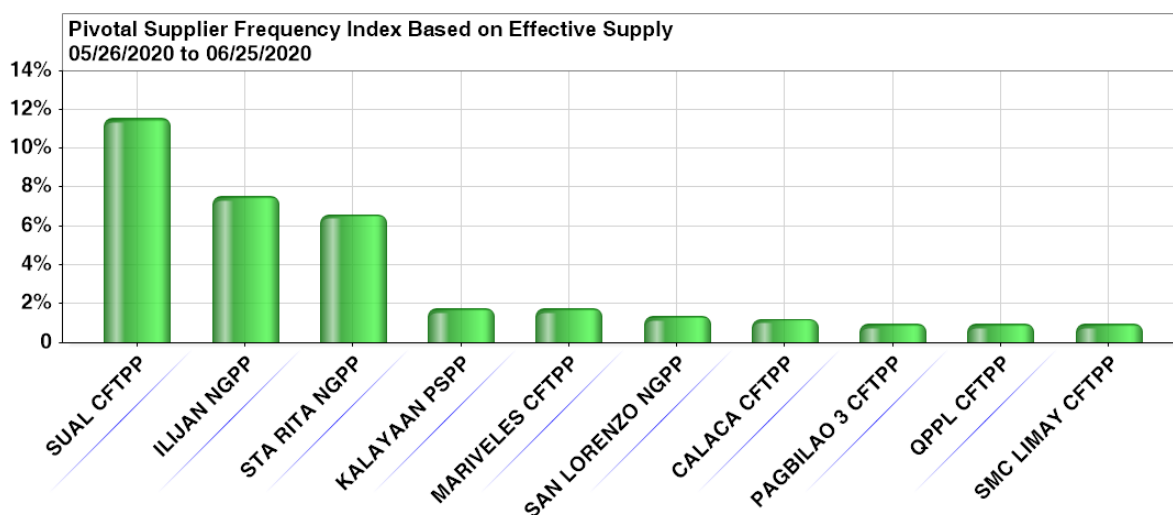


Figure 19. Top Pivotal Plants, June 2020

c. Total Trading Amount (TTA)¹¹ Share

- Semirara Mining and Power Corporation (SMPC), and Power Sector Assets and Liabilities Management Corporation (PSALM), still held the highest TTA share of top sellers in the market with approximately 23.4 percent and 16.1 percent, respectively, or a cumulative 39.5 percent of the entire TTA of generators selling in the market during the billing month. Aboitiz Power Corporation (AP) joined the top 3 this month at a TTA share of 11.8 percent.

¹¹ The Total Trading Amount (TTA) refers to the amount of revenue from spot market transactions excluding quantities that are declared by the generators as covered by bilateral power supply contracts, which are settled outside the WESM

- Meanwhile, SMPC and AP had the highest spot share at around 28.6 percent and 17.4 percent, respectively, with AP surpassing PSALM's 13.8 percent share.
- First Gen Corporation (FGC) retained its 4th spot in terms of TTA share and spot share in the market this month.
- Ayala Corporation (AC) and Gregorio Araneta, Inc. (GAI) experienced a decline in rank based on TTA share with the entry of Vivant Energy Corporation (VEC) in the list, bumping off SPC Power Corporation (SPC) this month.

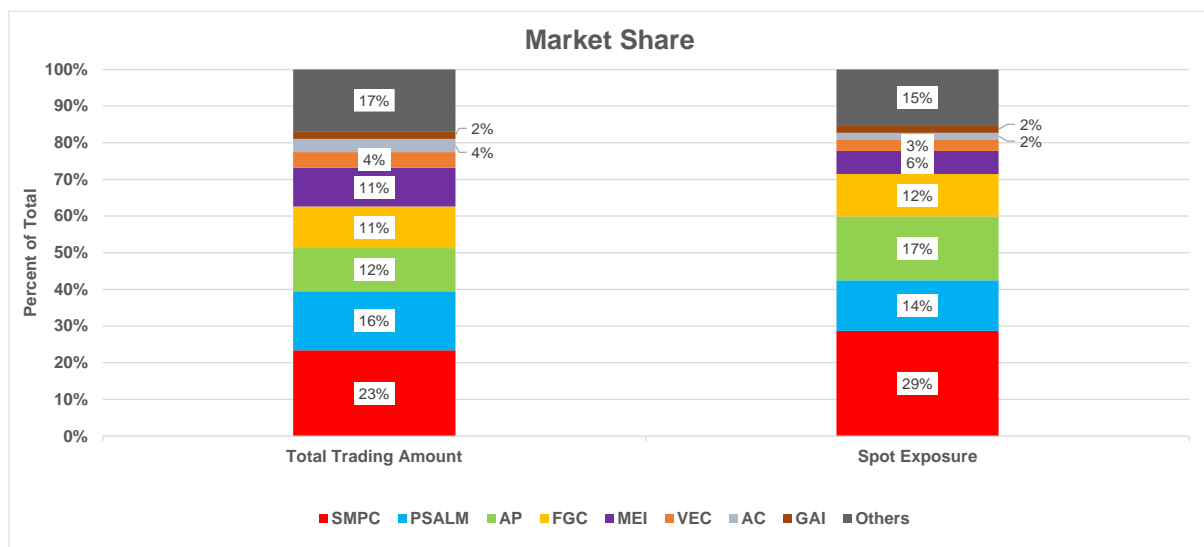


Figure 20. Total Trading Amount and Spot Exposure Share, June 2020

Annex A. List of Major Plant Outages

Region	Plant Type	Plant/ Unit Name	Capacity (MW)	Date Out	Date In	Duration (Days)	Outage Type	Remarks
LUZON	GEO	Makban 6	55	04/11/2013 22:44			Deactivated Shutdown	Conducted gas compressor test
VISAYAS	GEO	PGPP2 Unit 4	20	06/27/2014 6:07			Forced Outage	Steam being utilized by Nasulo plant
LUZON	GEO	Makban 5	55	02/08/2019 16:08			Forced Outage	Low Steam Supply. Divert Steam Supply to unit 3
LUZON	OIL	Malaya 1	300	05/03/2019 18:21			Forced Outage	Motorization of unit generator caused by the non-opening of phase B of PCB 8-05CB08M
LUZON	GEO	Tiwi 1	59	10/31/2019 23:54	05/27/2020 0:01	208.00	Forced Outage	Low steam supply. Divert steam supply to unit 2
VISAYAS	COAL	TPC Sangi 1	60	12/17/2019 6:05			Forced Outage	Generator differential trip
VISAYAS	GEO	Mahanagdong A1	5	02/04/2020 0:11			Forced Outage	Annual PMS of 230kV bus bar.
VISAYAS	GEO	Upper Mahiao 2	32	02/14/2020 16:04			Forced Outage	cut-in to the system
LUZON	COAL	SLPGC 2	150	02/19/2020 23:57	06/11/2020 4:23	112.18	Planned Outage	Maintenance outage.
LUZON	COAL	SMC 3	150	03/10/2020 23:35	05/26/2020 16:56	76.72	Planned Outage	Maintenance outage.
VISAYAS	GEO	Upper Mahiao 3	32	03/24/2020 0:11			Forced Outage	Reserved shutdown
LUZON	COAL	Masinloc 3	335	03/24/2020 0:34			Forced Outage	To facilitate repair on HP heater and Induced draft fan. On commissioning test
VISAYAS	COAL	CEDC 2	82	05/11/2020 0:34	05/30/2020 19:34	19.79	Planned Outage	APMS
VISAYAS	OIL	Bohol 3	4.2	05/14/2020 14:56	06/10/2020 17:37	27.11	Forced Outage	Auto-tripped due to excitation failure
LUZON	HYD	Angat M 2	50	05/16/2020 0:01	05/29/2020 0:01	13.00	Planned Outage	Maintenance Outage until 30 May 2020
LUZON	COAL	Pagbilao 2	382	05/16/2020 5:43	05/26/2020 22:44	10.71	Forced Outage	Tripped at 120MW load. System frequency at 59.32hz.
LUZON	COAL	Calaca 2	300	05/18/2020 2:20	05/29/2020 13:21	11.46	Forced Outage	Tripped at 150MW load. System Frequency at 59.46hz.
VISAYAS	OIL	Bohol 4	4	05/20/2020 14:16	06/01/2020 15:04	12.03	Forced Outage	Generator fault.
LUZON	COAL	Pagbilao 1	382	05/20/2020 18:44	06/03/2020 3:01	13.35	Forced Outage	Due to loss of field excitation (AVR problem)
LUZON	COAL	SBPL	455	05/23/2020 0:29	06/05/2020 7:10	13.28	Maintenance Outage	Maintenance Outage until 03 June 2020
LUZON	HYD	Magat 2	97	05/23/2020 7:31	05/26/2020 10:50	3.14	Forced Outage	Oil leak on servo motor.
LUZON	COAL	SMC 1	150	05/25/2020 2:19	06/05/2020 21:14	11.79	Forced Outage	Emergency shutdown to rectify hotspot at Lamao Substation and repair of coal feeders.
LUZON	GEO	MGPP 2	12	05/25/2020 15:46	06/04/2020 1:25	9.40	Forced Outage	Emergency shutdown to conduct trouble-shooting of main control valve.
LUZON	GEO	Tiwi 1	60	05/27/2020 0:02			Forced Outage	Low steam supply. Divert steam supply to unit 2
LUZON	GEO	Tiwi 2	60	05/27/2020 6:59	05/27/2020 7:14	0.01	Forced Outage	Mechanical extraction system trouble
LUZON	NATG	Sta. Rita 3	265.5	05/28/2020 8:52	05/29/2020 2:54	0.75	Forced Outage	Tripped due to trouble at power supply of steam turbine control cabinet
LUZON	HYD	Binga 2	35	05/28/2020 10:01	05/28/2020 18:30	0.35	Forced Outage	Emergency shutdown due to leak at cooling system
LUZON	GEO	Makban 7	20	05/28/2020 23:26	06/02/2020 20:11	4.86	Forced Outage	Affected by the shutdown of Makban C-D Tie Line
VISAYAS	GEO	Upper Mahiao 4	32	05/29/2020 0:01			Forced Outage	Loss of power Servo Position Controller
LUZON	GEO	Makban 8	20	05/29/2020 0:30	05/29/2020 7:21	0.29	Forced Outage	On houseload operation. Affected by the shutdown of Makban C-D Tie Line
LUZON	COAL	Calaca 2	300	05/30/2020 5:34	05/30/2020 7:46	0.09	Forced Outage	Tripped at 270MW load.
VISAYAS	GEO	Leyte 3	40.2	05/30/2020 10:29	05/31/2020 1:27	0.62	Forced Outage	Emergency repair of steam scrubber inlet pipeline leak.
LUZON	GEO	Makban 2	63	05/30/2020 15:49	05/30/2020 16:18	0.02	Forced Outage	Tripped at 50MW load.
LUZON	COAL	Calaca 2	300	05/30/2020 16:16	06/04/2020 3:28	4.47	Forced Outage	Unit Master Fuel Protection actuation. Tripped at 256MW load. System Frequency at 59.
VISAYAS	GEO	Leyte 3	40.2	05/31/2020 1:27			Forced Outage	completed repair of steam scrubber inlet pipeline leak.
LUZON	NATG	Sta. Rita 1	257.3	05/31/2020 5:49	05/31/2020 20:38	0.62	Maintenance Outage	Rectification of main lube oil pump
VISAYAS	COAL	TPC Sangi 2	85	06/01/2020 0:50	06/24/2020 11:20	23.44	Planned Outage	UNIT CUT-OUT FROM THE SYSTEM. ANNUAL PMS
LUZON	NATG	San Gabriel	420	06/02/2020 21:44	06/03/2020 10:06	0.52	Forced Outage	Affected by the SPEX Malampaya Gas Supply restriction
LUZON	COAL	GN Power 1	316	06/03/2020 15:38	06/04/2020 7:58	0.68	Forced Outage	Master fuel trip actuated
LUZON	COAL	Pagbilao 1	382	06/03/2020 23:13	06/06/2020 8:52	2.40	Forced Outage	AVR problem
LUZON	COAL	Pagbilao 2	382	06/04/2020 2:38	06/06/2020 22:51	2.84	Forced Outage	Boiler tube leak
LUZON	COAL	Masinloc 2	344	06/04/2020 9:45	06/05/2020 4:05	0.76	Forced Outage	Aux. power supply problem (initial information)
LUZON	NATG	Sta. Rita 1	257.3	06/04/2020 17:20	06/04/2020 18:45	0.06	Forced Outage	Tripped while on-going fuel changeover from Natural Gas to Oil
LUZON	GEO	Bacman 3	20	06/04/2020 18:52	06/10/2020 19:42	6.03	Forced Outage	Control valve trouble.
VISAYAS	OIL	TPC Carmen 4	10	06/05/2020 0:17	06/08/2020 10:50	3.44	Forced Outage	CUT-OUT
LUZON	COAL	Masinloc 1	315	06/05/2020 0:49	06/06/2020 4:05	1.14	Forced Outage	Tripped due to unit auxiliary transformer trouble.
VISAYAS	OIL	TPC Carmen 2	10	06/06/2020 18:56	06/07/2020 22:41	1.16	Forced Outage	Main bearing problem
LUZON	COAL	Masinloc 2	344	06/06/2020 20:32	06/07/2020 9:30	0.54	Forced Outage	Condenser vacuum trouble.
LUZON	COAL	Pagbilao 2	382	06/06/2020 23:11	06/07/2020 0:43	0.06	Forced Outage	Tripped with 19MW load.
LUZON	GEO	Makban 10	20	06/07/2020 7:38	06/07/2020 12:46	0.21	Maintenance Outage	To facilitate hotspot correction at 69kV Phase A CIT of Makban Plant E
LUZON	GEO	Makban 9	20	06/07/2020 7:38	06/07/2020 12:46	0.21	Maintenance Outage	To facilitate hotspot correction at 69kV Phase A CIT of Makban Plant E
VISAYAS	GEO	PGPP1 Unit 3	37.5	06/07/2020 8:07	06/07/2020 16:49	0.36	Maintenance Outage	Offline due to rectification of cooling tower fan A high vibration
VISAYAS	COAL	THVI 2	169	06/07/2020 15:40	06/09/2020 23:45	2.34	Forced Outage	Blower problem
LUZON	NATG	San Lorenzo 1	264.8	06/07/2020 18:11	06/08/2020 2:14	0.34	Forced Outage	Tripped due to condenser vacuum trouble
LUZON	NATG	San Lorenzo 1	264.8	06/08/2020 19:29	06/09/2020 22:25	1.12	Forced Outage	Condensing system trouble
VISAYAS	GEO	PGPP2 Unit 3	20	06/09/2020 0:06	06/09/2020 4:22	0.18	Planned Outage	Offline due to scheduled maintenance
LUZON	NATG	San Lorenzo 1	264.8	06/09/2020 22:26	06/10/2020 0:09	0.07	Forced Outage	Cooling system problem
VISAYAS	COAL	THVI 2	169	06/10/2020 11:04	06/20/2020 16:27	10.22	Forced Outage	TURBINE VIBRATION
LUZON	NATG	San Lorenzo 1	264.8	06/10/2020 17:35			Maintenance Outage	Maintenance outage(GOP)
LUZON	NATG	San Lorenzo 2	261.8	06/11/2020 1:29			Maintenance Outage	Maintenance outage (GOP).
LUZON	COAL	SMC 2	150	06/11/2020 5:10	06/11/2020 12:33	0.31	Forced Outage	Secondary air fan high vibration.
LUZON	COAL	SLPGC 2	150	06/11/2020 8:31	06/11/2020 18:11	0.40	Maintenance Outage	On-going maintenance test.
LUZON	HYD	Masiway	12	06/13/2020 22:36	06/14/2020 0:22	0.07	Forced Outage	Affected by the tripping of Cabanatuan-Fatima 69KV line.
LUZON	GEO	Bacman 3	20	06/14/2020 6:08	06/15/2020 14:06	1.33	Forced Outage	Low low lube oil pressure
LUZON	COAL	SMC 4	150	06/14/2020 7:17	06/14/2020 15:32	0.34	Forced Outage	To facilitate hotspot correction
VISAYAS	GEO	PGPP1 Unit 2	37.5	06/14/2020 8:06	06/14/2020 16:30	0.35	Maintenance Outage	Offline due to scheduled corrective maintenance
LUZON	COAL	Calaca 2	300	06/14/2020 20:54	06/15/2020 2:44	0.24	Forced Outage	Circulating Water Pump (CWP) trouble
LUZON	OIL	Limay 1	60	06/14/2020 22:22	06/15/2020 12:52	0.60	Forced Outage	Tripped due to high temperature of turbine exhaust
LUZON	OIL	Limay 3	60	06/15/2020 3:03	06/15/2020 6:29	0.14	Forced Outage	rotor seal trouble
LUZON	COAL	Calaca 2	300	06/15/2020 8:33	06/15/2020 9:18	0.03	Forced Outage	Uncontrollable main steam temperature
LUZON	HYD	Kalayaan 3	180	06/16/2020 0:01	06/20/2020 23:35	4.98	Planned Outage	Maintenance Outage
VISAYAS	COAL	PEDC 1	83.7	06/16/2020 4:12	06/18/2020 19:30	2.64	Forced Outage	Auto tripped. Cause under assessment
LUZON	OIL	Limay 1	60	06/16/2020 10:05	06/16/2020 18:23	0.35	Forced Outage	
LUZON	HYD	Kalayaan 1	180	06/17/2020 8:49			Forced Outage	Declared unavailable due to generator radiator water leak
VISAYAS	COAL	PEDC 1	83.7	06/18/2020 20:38	06/18/2020 22:39	0.08	Forced Outage	feeder trouble
LUZON	COAL	Masinloc 1	315	06/19/2020 9:51	06/19/2020 16:23	0.27	Forced Outage	Tripped due to Auto Plant Control (APC Turbine-Generator Control)) trouble.
VISAYAS	OIL	TPC Carmen 4	10	06/20/2020 21:41	06/23/2020 0:26	2.11	Forced Outage	HIGH INTENSITY OIL MIST
LUZON	COAL	Sual 1	647	06/20/2020 22:33	06/22/2020 3:44	1.22	Forced Outage	Boiler circulating pump trouble.
LUZON	COAL	Pagbilao 1	382	06/21/2020 0:31			Planned Outage	Maintenance outage until 7.20.2020
LUZON	GEO	Makban 10	20	06/21/2020 3:14	06/21/2020 8:59	0.24	Forced Outage	UPS problem.
LUZON	HYD	Kalayaan 4	180	06/23/2020 0:01			Planned Outage	Maintenance Outage until 02 July 2020
VISAYAS	COAL	CEDC 2	82	06/24/2020 4:43			Forced Outage	SUSPECTED BOILER TUBE LEAK
LUZON	HYD	Binga 4	35	06/24/2020 11:53	06/24/2020 16:13	0.18	Forced Outage	Governor system problem
LUZON	OIL	Limay 1	60	06/25/2020 23:52			Forced Outage	Fuel System Trouble