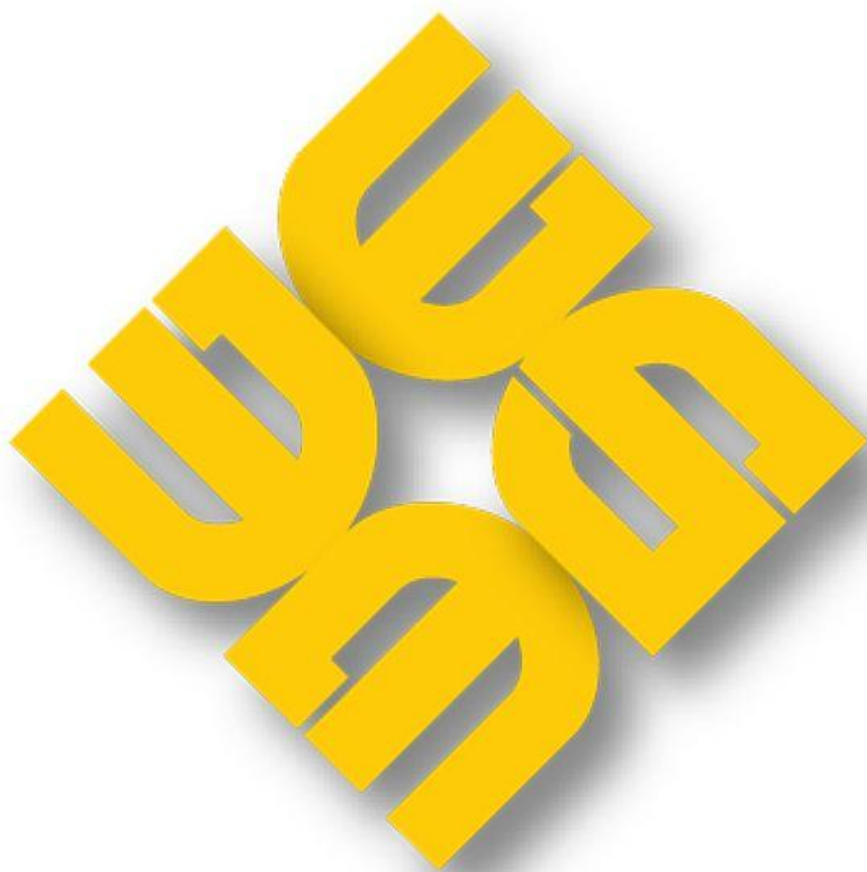


MAG-MMAR-2020-03

MONTHLY MARKET ASSESSMENT REPORT

For the Billing Period 26 February to 25 March 2020



**PHILIPPINE
ELECTRICITY
MARKET
CORPORATION**

**MARKET ASSESSMENT GROUP
(MAG)**

DISCLAIMER: The information contained in this document is based on the available electricity spot market data. The same information is subject to change as updated figures come in. As such, the PEMC does not make any representation or warranty as to the completeness of this information. The PEMC likewise accepts no responsibility or liability whatsoever for any loss or cost incurred by a reader arising from, or in relation to, any conclusion or assumption derived from the information found herein.

Monthly Market Assessment Report for March 2020 Billing Month

1. Assessment of the Market

- More than 75 percent of the total market price outcomes in March 2020 was a result of normal pricing condition
- The remainder, however, required other forms of pricing methodologies
 - Price Substitution Methodology was applied to a low 14 percent of the outcomes which the majority was due to frequent congestion events on Samboan-Amlan line 1
 - Prices with pricing error occurred around 6-7 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), March 2020

Pricing Condition	No. of Intervals			
	Luzon	% of Time	Visayas	% of Time
Normal	552	79%	553	79%
Congestion	98	14%	98	14%
Pricing Error Notice	46	7%	45	6%
Administered Price	0	0%	0	0%
Secondary Cap	0	0%	0	0%
Total	696	100%	696	100%

- For those intervals under normal condition, a significant decline in the price pattern was observed
- Supply situation was more adequate driven by the low recorded outages this month while demand was on the opposite trend of usual March months with high demand

Special Feature:

1. *Unusual decline in the demand and price*
 - *Observance of demand and price depression as a result of the declaration of Enhanced Community Quarantine caused by the Coronavirus Disease 2019 (COVID-19)*

2. Market Outcome

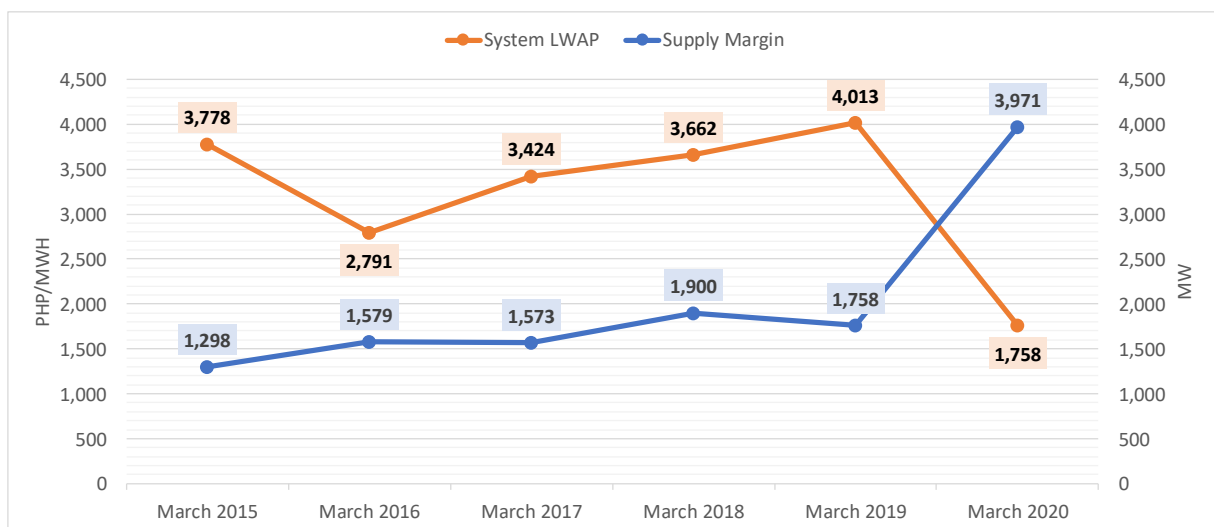
2.1. Price

2.1.1. Price and Supply Margin

- On 15 March, the implementation of the Community Quarantine, and on 17 March, the Enhancement of the Community Quarantine (ECQ) resulted to a further decline in market price

2.1.1.1. During Enhanced Community Quarantine Period (15 to 25 Mar)

- There was a decrease in price trend of about 35 percent during off-peak hours and 46 percent during peak hours on weekdays coming into the ECQ
- A similar decline of about 19 percent during off-peak hours and 18 percent during peak hours on weekends was observed
- Resulting market price during the considered period was at its lowest for the past 5 years of the same period averaging at PhP1,758
- A significant decrease in the supply margin on weekdays by 32 percent during off-peak hours and 125 percent during peak hours was recorded
- Also, about 21 percent and 69 percent were the decline on supply margin trend on weekends for off-peak and peak hours, respectively
- Supply margin during the considered period was at its highest for the past 5 years of the same period averaging at 3,971 MW



**Data used were from 15 to 25 March of the corresponding years*

Figure 1. System LWAP and Supply Margin, 15-25 March of 2015-2020

2.1.1.2. Monthly and Yearly Comparison

- Monthly load weighted average price (LWAP) decreased by 25.4% attributable to the ECQ as compared to February
 - Monthly average peak prices decreased by 30%
 - Monthly average off-peak prices decreased by 19%
- No price spikes¹ recorded in March 2020 billing month
- An unexpected decline in LWAP of about 25 percent was seen from February to March 2020 as compared to the usual positive trend of LWAP over the past years of February and March
- Average supply margin widened by 19.4 percent from 2,560 MW in February 2020 to 3,057 MW in March 2020

Table 2. System LWAP and Supply Margin, Mar and Feb 2015-2020

Year	Month	System LWAP	% Change in System LWAP	Average Supply Margin	% Change in Supply Margin
2015	February	5,100	0%	1,094	6%
	March	5,114		1,163	
2016	February	2,307	43%	1,847	-23%
	March	3,296		1,427	
2017	February	3,306	7%	1,675	-10%
	March	3,538		1,508	
2018	February	3,740	36%	1,716	-17%
	March	5,095		1,431	
2019	February	4,058	25%	1,891	-13%
	March	5,082		1,644	
2020	February	3,280	-25%	2,560	19%
	March	2,447		3,057	

- LWAP of March 2020 was the lowest recorded price in the previous 5 years of March (2015-2019) and was also the lowest since Sep 2019 when the LWAP was PhP2,139/MWh
- Average supply margin for the month of March was noted to have the highest recorded supply margin since 2015
- Similar to the monthly market price pattern this month, an opposite trend was observed in the average supply margin from February to March as compared to previous 5 years

¹ Market price triggers on price spikes are regularly monitored with thresholds based on the following:

- Cool Dry (26 Nov to 25 Feb) – Peak: PhP21,000/MWh; Off-peak: PhP8,500/MWh
- Hot Dry (26 Feb to 25 May) – Peak: PhP25,000/MWh; Off-peak: PhP16,500/MWh
- Rainy (26 May to 25 Nov) – Peak: PhP20,000/MWh; Off-peak: PhP12,000/MWh

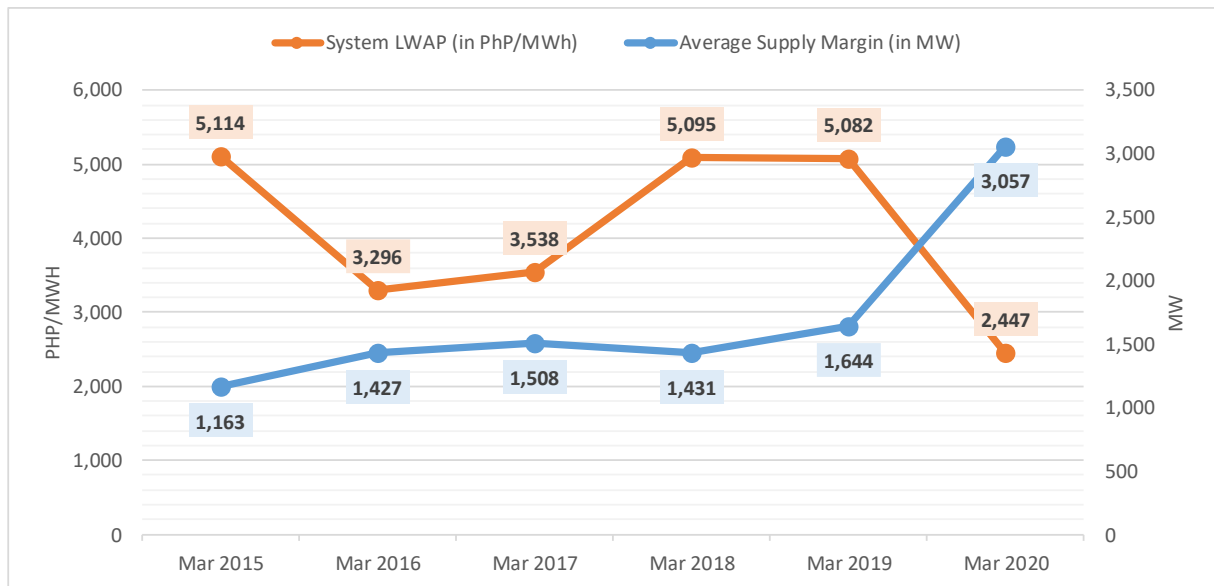


Figure 2. Supply Margin and Price, March 2015-2020

- Hourly resolution of supply margin in the month of March shows the lowest recorded supply margin at 327 MW on 03 March 14H as a result of the outage reaching 3,474 MW, highest during the month
- Hourly LWAP pattern over the month was consistently low despite occurrence of PhP10,154/MWh on 03 March 14H
- Prices further saw a decline on trend on the latter part of the month owing to the significant widening of the supply margin

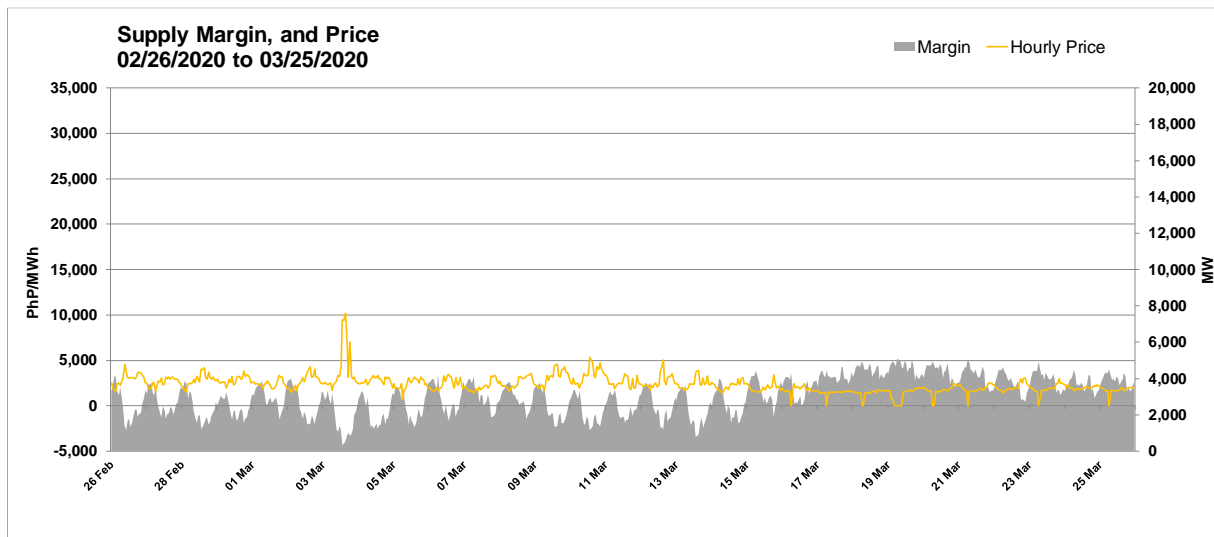


Figure 3. Supply Margin and Price, March 2020

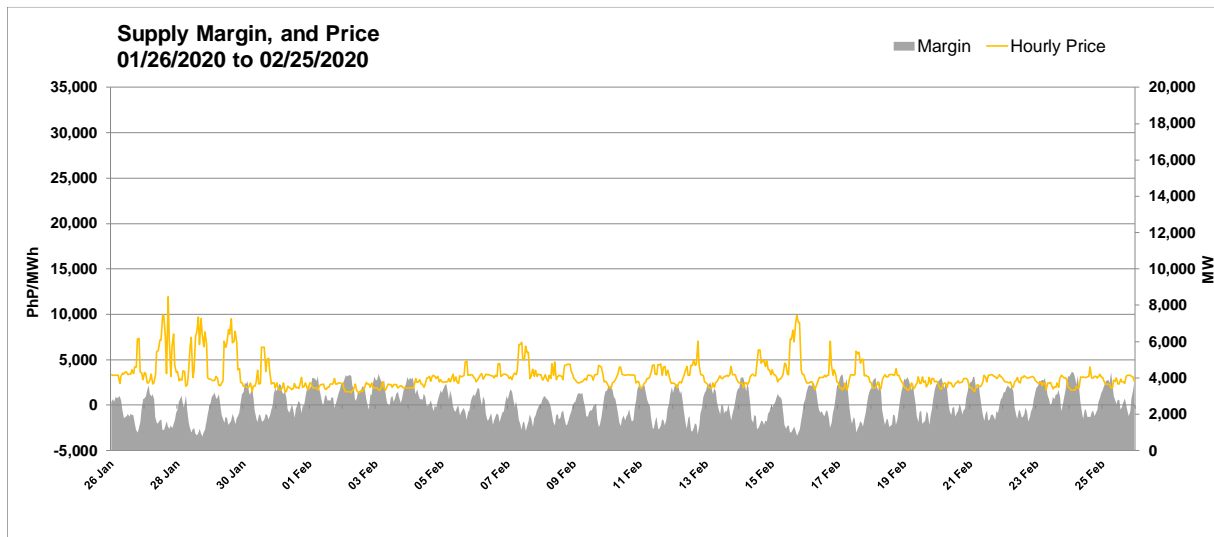


Figure 4. Supply Margin and Price, February 2020

2.1.2. Price Duration Curve²

- Bulk of the peak and off-peak load nodal prices are concentrated on the lower price range of PhP0/MWh to PhP5,000/MWh during the March and February billing month with March posting lower prices than February
- High load nodal prices ranging from PhP8,627/MWh to PhP12,522/MWh were evident during hour 16 due to the recorded highest level of outage on 03 March
- Maximum off-peak and peak load nodal price reached PhP12,522/MWh and PhP10,345/MWh in March, respectively

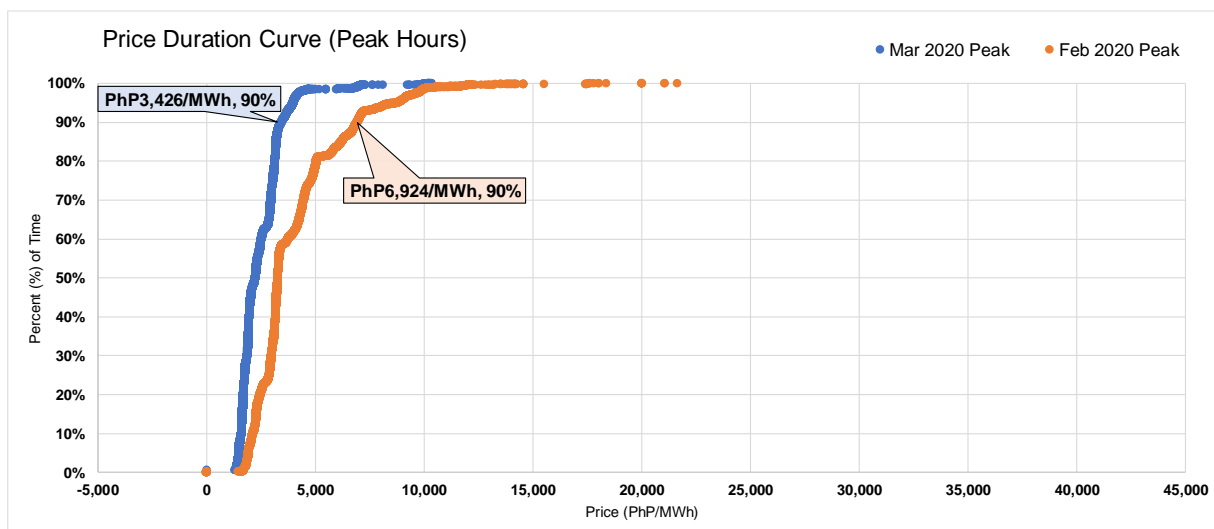


Figure 5. Load Nodal Price Duration Curve (Peak), Mar 2020 and Feb 2020

² Nodal prices are subject to change upon final validation of prices

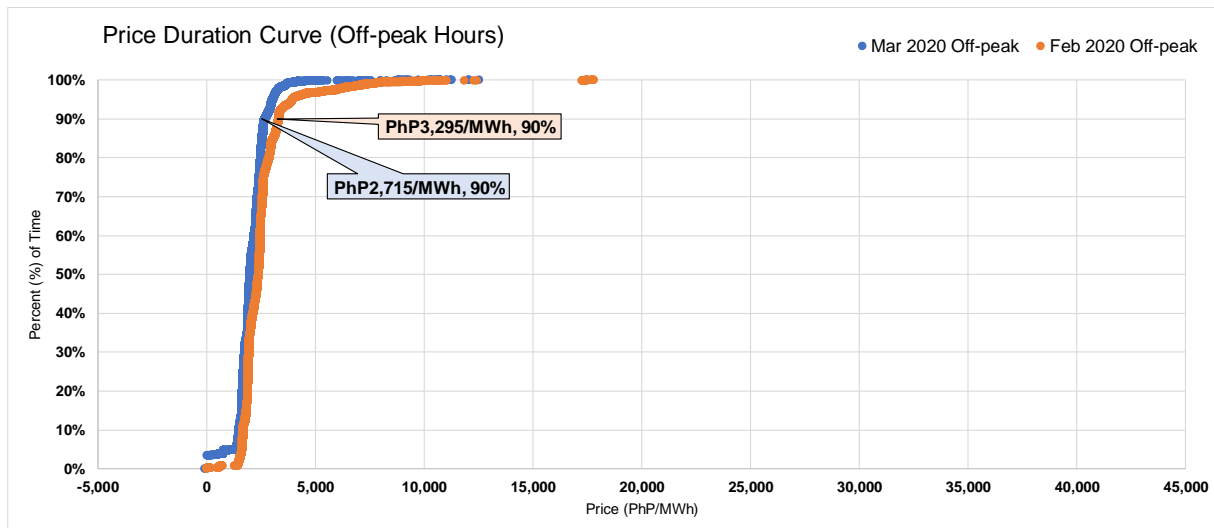


Figure 6. Load Nodal Price Duration Curve (Off-peak), Mar 2020 and Feb 2020

2.2. Supply

- An increase of 10.1 MW for this month from a total of 20,161.87 MW to 20,171.97 MW was recorded in the WESM registered capacity
 - 5-MW Pilipinas Shell Petroleum Corporation natural gas plant
 - 5.1-MW Isabela La Suerte Rice Mill Corporation biomass plant
- Available capacity³ constituted an average of 15,418 MW or 76 percent of the total registered capacity of 20,172 MW
- The increase in available capacity coincided with the low demand on the onset of the ECQ period but later decreased as outages were seen to increase prior the end of the month
- Capacity not offered comprised an average of 2,797 MW or 14 percent
- Outage capacity accounted for an average of 1,952 MW or 10 percent

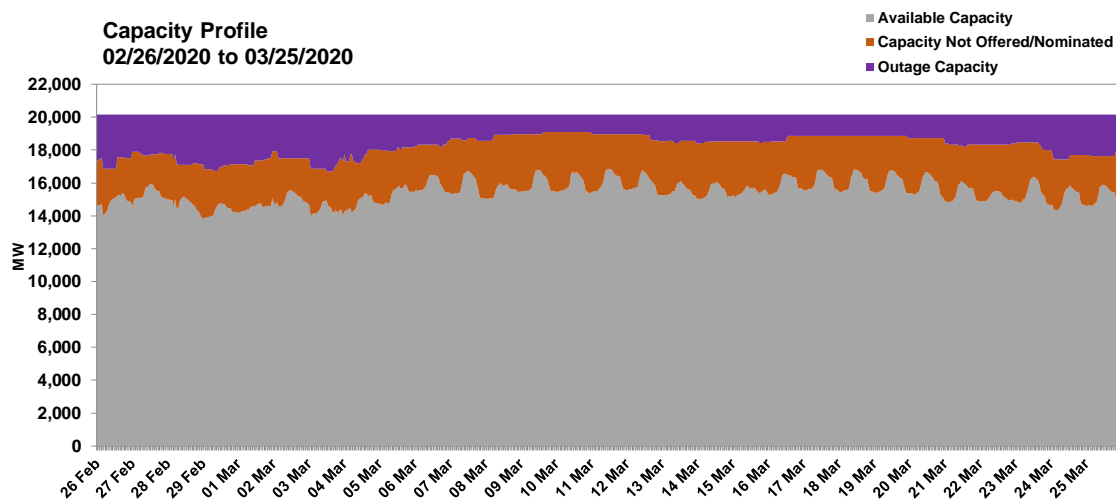


Figure 7. Capacity Profile, March 2020

³ Available capacity refers to the aggregate of Capacity Offered/Nominated, Malaya Capacity for MRU, and Capacity of Plants on Testing and Commissioning

2.2.1. Outage Capacity

- Outage capacity significantly decreased by 38 percent from an average of 3,128 MW last month to an average of 1,952 MW this month
- Planned outages comprised only 469 MW or 24 percent of the total outages, majority or about 69 percent was composed of forced outages at an average of 1,364 MW, and maintenance outages constituted 83 MW or 4 percent of the total outages. Meanwhile, deactivated shutdown accounted for only about 55 MW or 3 percent of the outages.
 - Notable plants on planned outage: Calaca CFTPP unit 2 (300 MW), SLTEC CFTPP unit 1 (121 MW), SMC CFTPP units 3 and 4 (300 MW), SLPGC CFTPP unit 2 (150 MW), and GN Power CFTPP unit 2 (316 MW)
 - Notable plants on forced outage: Kalayaan HEPP units 1 and 2 (360 MW), Pagbilao CFTPP unit 1 (382 MW), Limay CCGT unit 1 (60 MW), SMC CFTPP unit 4 (150 MW), GN Power CFTPP unit 2 (316 MW), THVI CFTPP unit 2 (169 MW), PEDC CFTPP unit 2 (84 MW), SLPGC CFTPP unit 1 (150 MW), Masinloc CFTPP unit 3 (335 MW), and Anda CFTPP (72 MW)
 - Notable plant on maintenance outage: CEDC CFTPP unit 2 (82 MW)
 - Notable plant on deactivated shutdown: Makban GPP unit 6 (55 MW)
- Planned outages had a noticeable decline of about 68 percent in line with the low level of scheduled outage on the onset of the summer months
- Level of planned outages was also observed to be consistently low until the end of the March billing month at around 300 MW, owing to the outages of SLPGC CFTPP unit 2 (150 MW) and SMC CFTPP unit 3 (150 MW)
- Maintenance outages were on a downtrend as well coming into March with a decrease of around 71 percent
- Level of total outages was on an uptrend towards the end of the billing period, closing with 2,316 MW, but still was slightly lower than its opening level of 2,721 MW

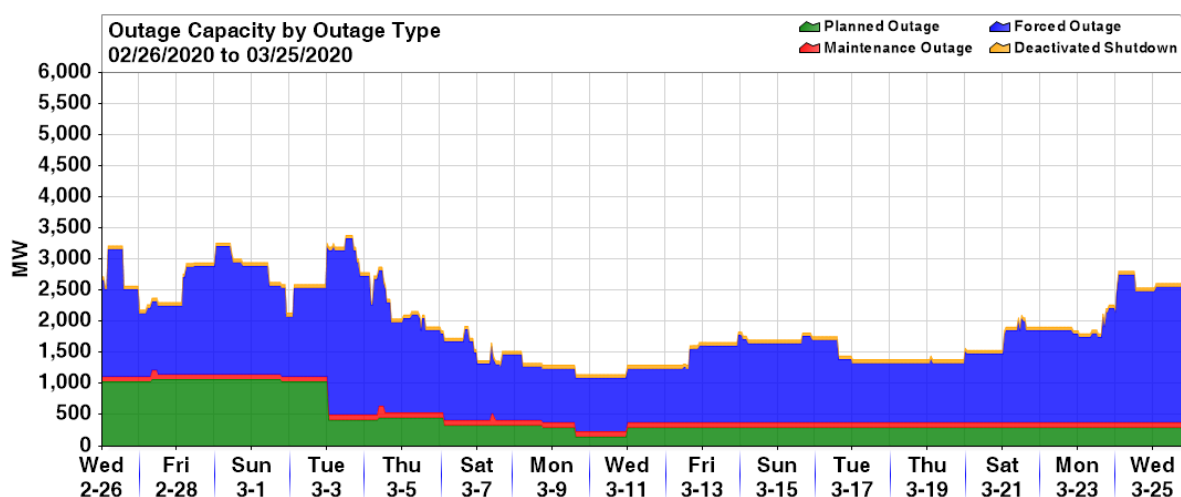


Figure 8. Outage Capacity by Outage Category, March 2020

Table 3. Outage Summary by Outage Category, Mar 2020 and Feb 2020

Outage Category	March 2020 (in MW)			February 2020 (in MW)		
	Max	Min	Average	Max	Min	Average
Planned	1,072	150	469	1,806	1,037	1,463
Maintenance	187	82	83	1,037	82	286
Forced	2,829	863	1,364	1,887	899	1,345
Deactivated Shutdown	55	55	55	55	55	55

- In terms of type of power plants, coal generators accounted for the highest percentage of outage at 59 percent with a corresponding 46 percent decrease from last month's average outage, followed by oil-based generators at 17 percent; geothermal and hydro generators came after at 15 percent and 7 percent, respectively, with hydro plants recording a decrease in average from 240 MW to 141 MW, while natural gas plants posted only 2 percent in total outage which was the same from last month
 - Notable coal plants on outage: Calaca CFTPP unit 2 (300 MW), CEDC CFTPP unit 2 (82 MW), GN Power CFTPP unit 2 (316 MW), SMC CFTPP units 3 and 4 (300 MW), SLPGC CFTPP units 1 and 2 (300 MW), SLTEC CFTPP unit 1 (121 MW), Masinloc CFTPP units 1 and 3 (650 MW), THVI CFTPP unit 2 (169 MW), PEDC CFTPP unit 2 (84 MW), and Anda CFTPP (72 MW)
 - Notable natural gas plant on outage: Ilijan NGPP Blocks A and B (1,200 MW)
 - Notable geothermal plants on outage: Leyte NGPP – Mahanagdong A1, and Upper Mahiao 2, 3, and 4 (96 MW), Makban GPP units 5 and 6 (110 MW), and Tiwi GPP unit 1 (59 MW)
 - Notable oil-based plants on outage: SLPGC GTPP units 3 and 4 (50 MW), and Malaya TPP unit 1 (300 MW)

- Though natural gas plants have the second highest share of registered capacity, they still posted a low level of outage of 40 MW this month from 75 MW last month.
- Ilijan NGPP's outage during the month of March did not significantly affect the total outages of natural gas plants since they were only episodic and short
- Majority of the average outage of oil-based plants at about 328 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 decline in outage of about 13 percent coming into March

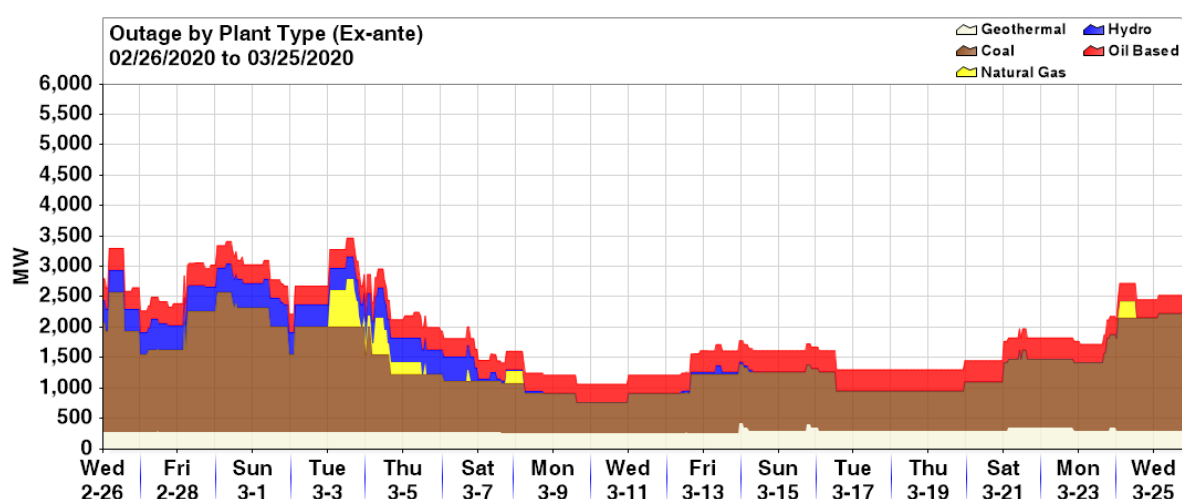


Figure 9. Outage Capacity by Plant Type, March 2020

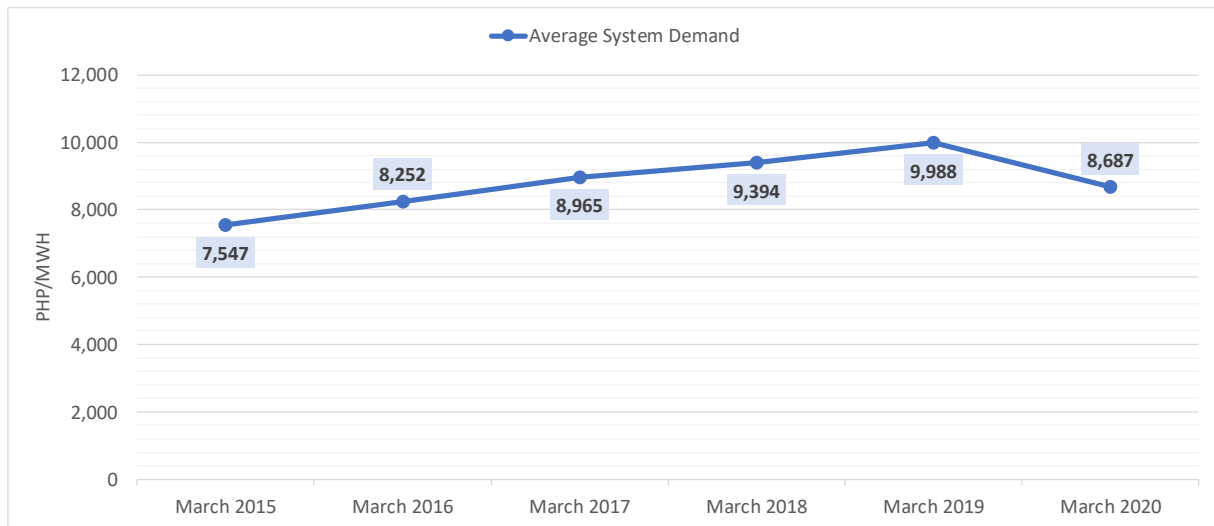
Table 4. Outage Summary by Plant Type, Mar 2020 and Feb 2020

Plant Type	March 2020 (in MW)			February 2020 (in MW)		
	Max	Min	Average	Max	Min	Average
Coal	2,295	510	1,151	2,887	1,552	2,145
Natural Gas	790	0	40	420	0	75
Geothermal	427	258	292	416	231	289
Hydro	500	0	141	748	0	240
Oil-based	428	300	328	485	300	379

2.3. Demand

2.3.1. During Enhanced Community Quarantine Period (15 to 25 Mar)

- An unusual downward trend in demand towards the end of the March billing month was a result of limited economic activity driven by the implementation of the ECQ
- The average demand during the ECQ at 8,687 MW was closely comparable to the average demand of the same period in 2017 at 8,965 MW



**Data used were from 15 to 25 March of the corresponding years*

Figure 10. Average System Demand, 15-25 March 2015-2020

2.3.2. Monthly and Yearly Comparison

- Despite the decrease in demand towards the end of the month, the onset of the summer months or hot dry season drove an increase in average demand by 2.2 percent from last month's 9,548 MW to current month's 9,759 MW
- The minimal difference in average system demand between the March and February billing months was the result of the impact of the ECQ and the observance of hotter temperatures indicating the start of hot dry season
- On a monthly comparison, average off-peak demand increased by 4.2 percent owing to higher temperatures in March while average peak demand decreased by 0.7 as a result of the ECQ
- Maximum system demand in March reached 13,162 MW for peak hours and 11,584 MW for off-peak hours which both occurred on 10 March prior the ECQ
- Minimum system demand in March reached 7,816 MW for peak hours and 6,900 MW for off-peak hours which occurred on 21 and 25 March, respectively, during the ECQ

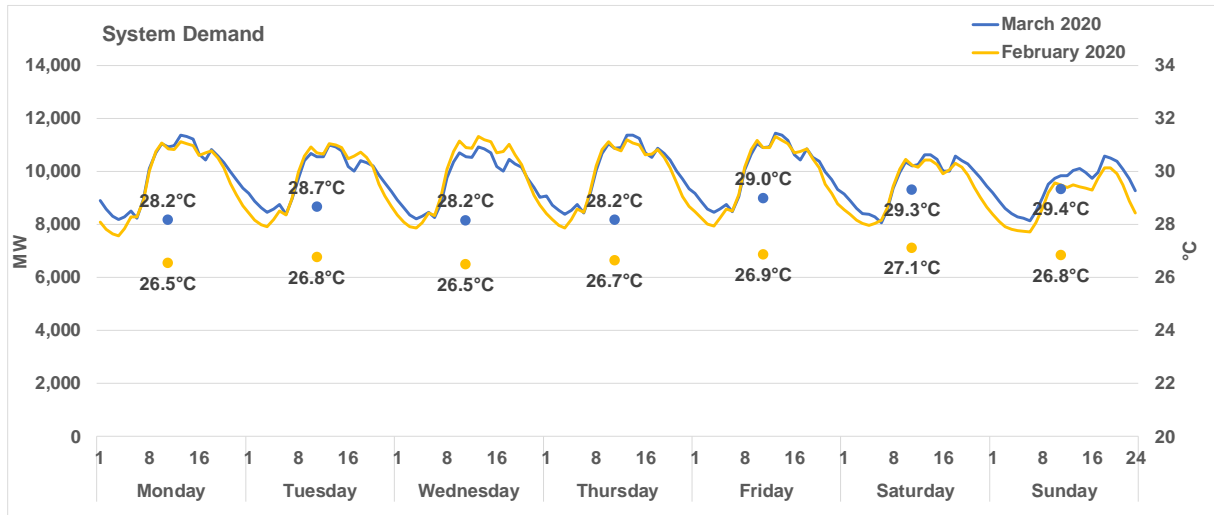


Figure 11. Average Hourly System Demand, Mar 2020 and Feb 2020

- Comparing to previous year, the average system demand had an opposite pattern with a marginal decline by 0.4 percent from 9,801 MW in March 2019 to 9,759 MW in March 2020
- Similarly, the year-on-year trend had an increase in average system demand by 0.9 percent during off-peak hours and a decrease by 3.1 percent during peak hours
- Over the years, the increasing trend of demand in March was noticed to have declined on 2020 as a result of the ECQ

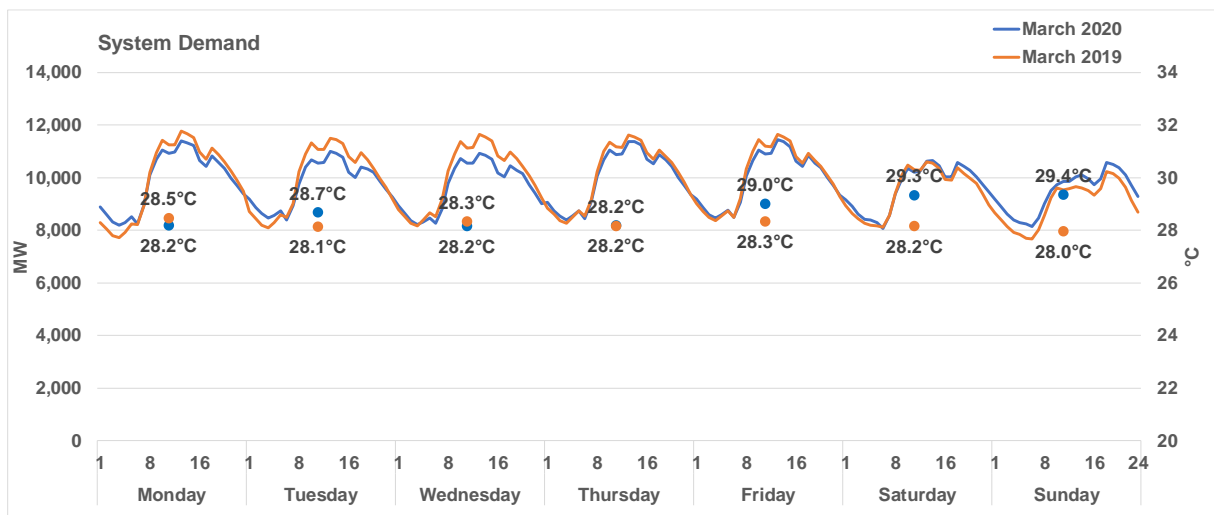


Figure 12. Average Hourly System Demand, Mar 2020 and Mar 2019

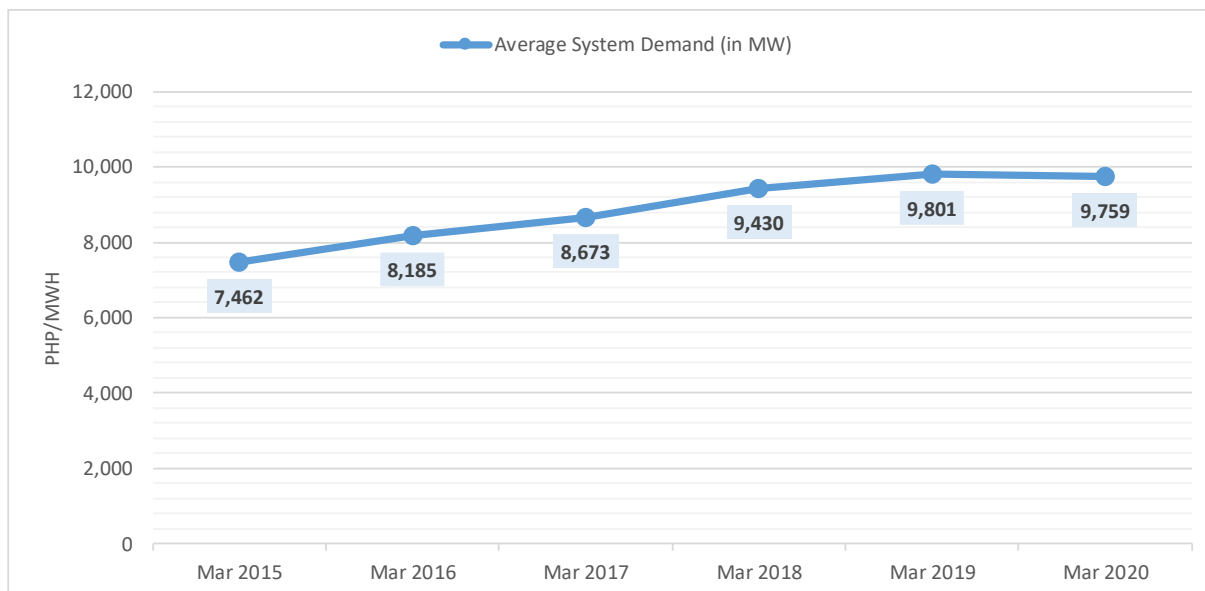


Figure 13. Average System Demand, March 2015-2020

3. Spot Transactions

3.1. Spot Exposure

- Spot quantities in March stood at 12.5 percent of the total metered quantities, lower than last month's 14.3 percent spot exposure.
- Spot exposure in off-peak hours averaged at 17 percent while it was 13 percent at peak hours.

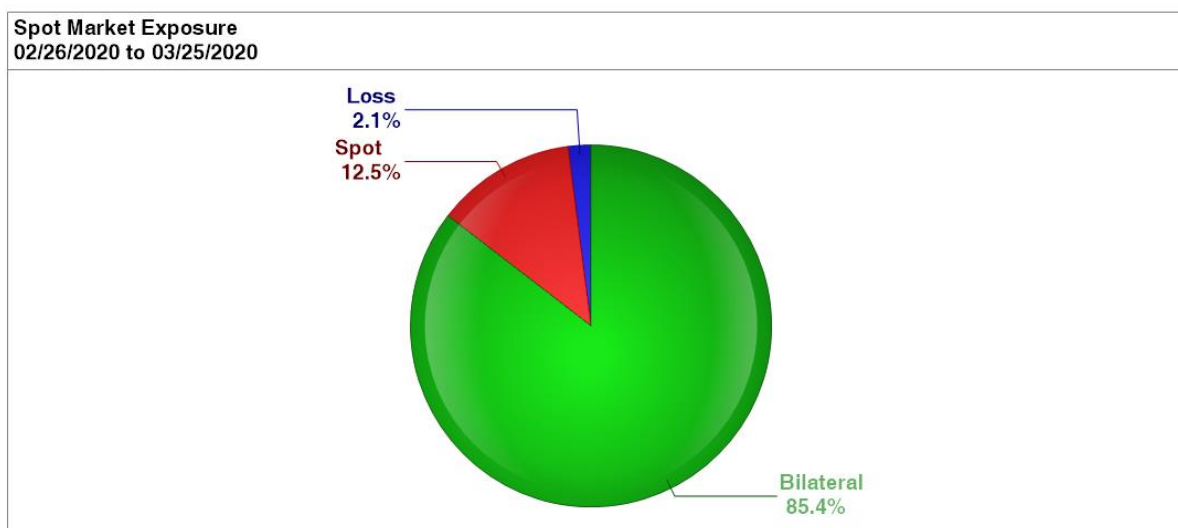


Figure 14. Spot Market Exposure, March 2020

- Average spot quantity during the ECQ, averaging at 1,345 MW, was consistent in level with that of March before the ECQ at an average of 1,334 MW

- The increase in percentage share of spot during ECQ was a consequence of the decrease in demand which resulted to a 20 percent decrease in average BCQ

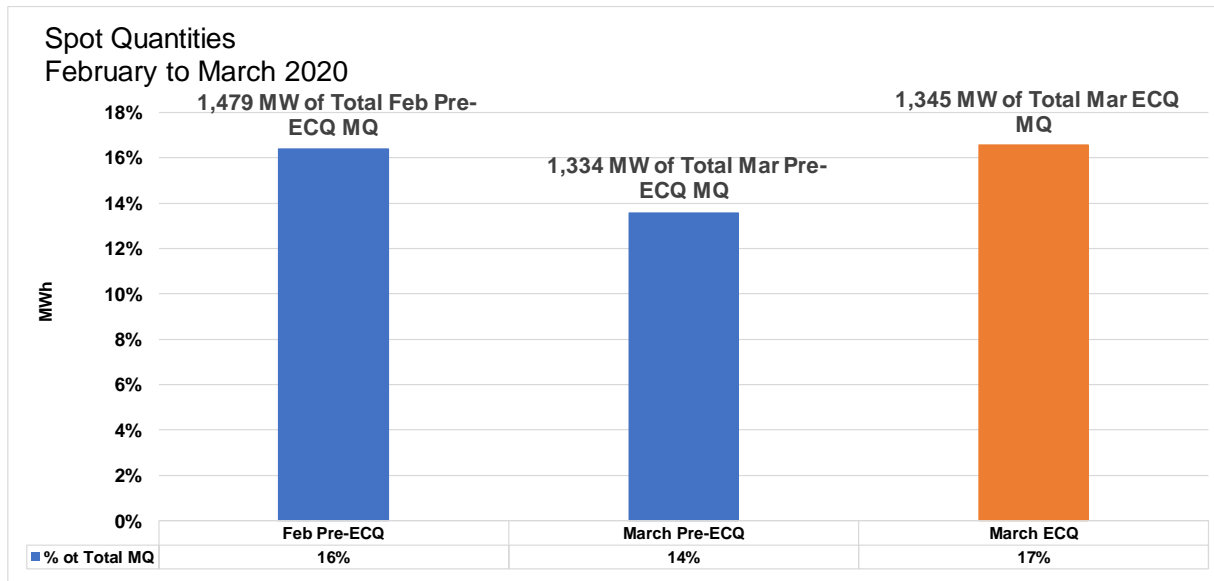


Figure 15. Spot Market Exposure, Before and During ECQ

- Average spot exposure saw a decline in trend, especially in peak hours, as more generators are sourcing revenues from BCQ rather than selling in the market since prices are in a downtrend.

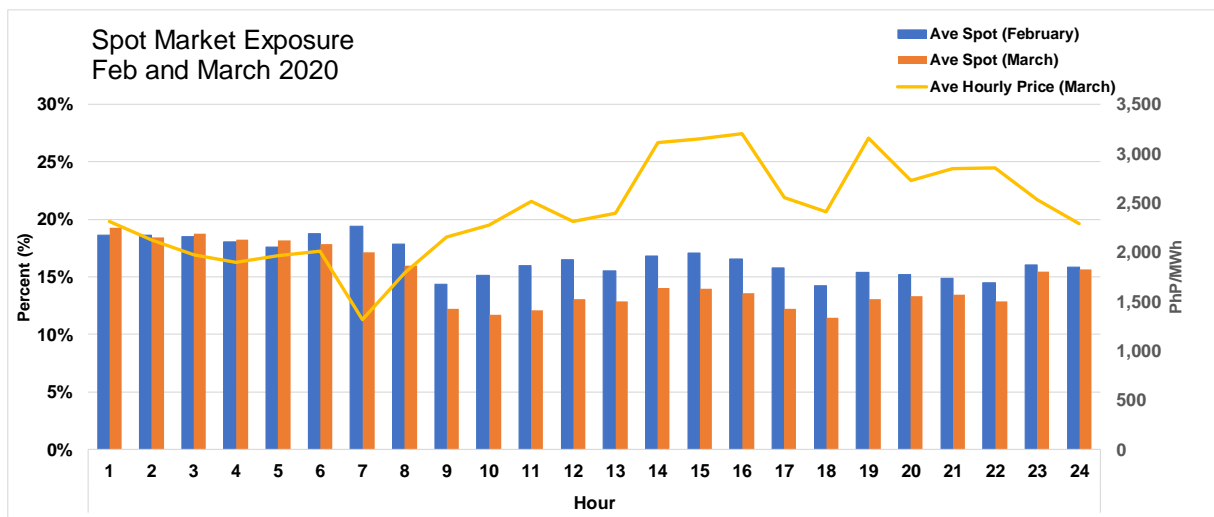


Figure 16. Hourly Spot Market Exposure, March 2020

- Based on the spot duration curve⁴, spot quantities fell below 20 MWh at about 90 percent of the time and are more concentrated on lower levels of spot quantities.

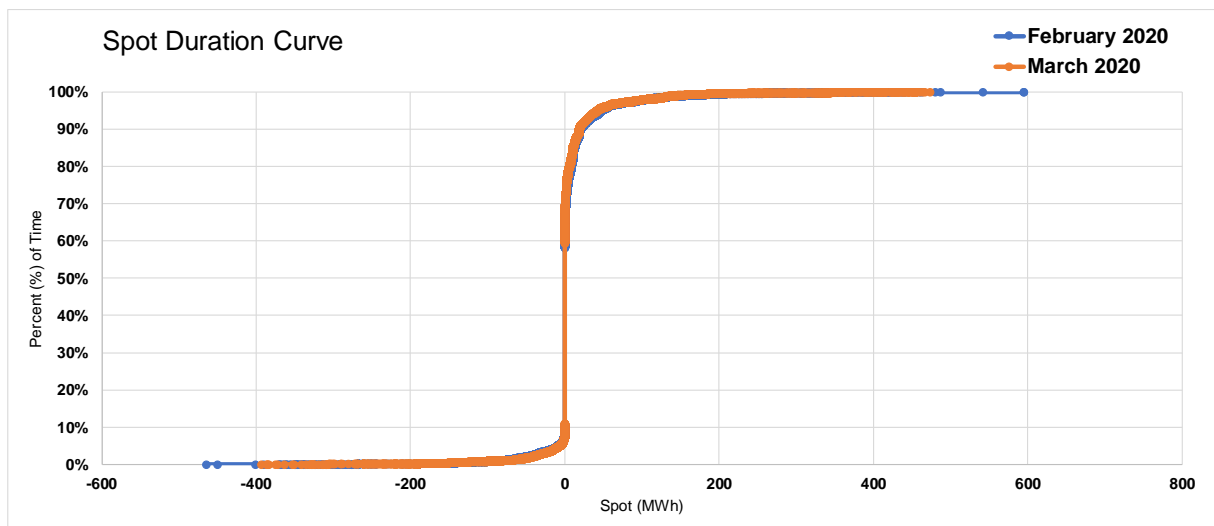


Figure 17. Spot Duration Curve, March 2020

3.2. Pivotal⁵ Plants

- Fewer trading intervals had a Residual Supply Index⁶ (RSI) below the 100 percent mark from 41 intervals in February to 21 intervals in March indicating better supply-demand situation
- More plants were considered as pivotal due to the supply and demand situation being tight on 03 March where the level of outage was recorded to be the highest in March with the continuous rise in demand
- However, during the ECQ, the market resulted to an RSI ranging from a high 114 to 150 percent indicating that supply was abundant to satisfy the demand

⁴ 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

⁵ 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 is pivotal for a period.

⁶ 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

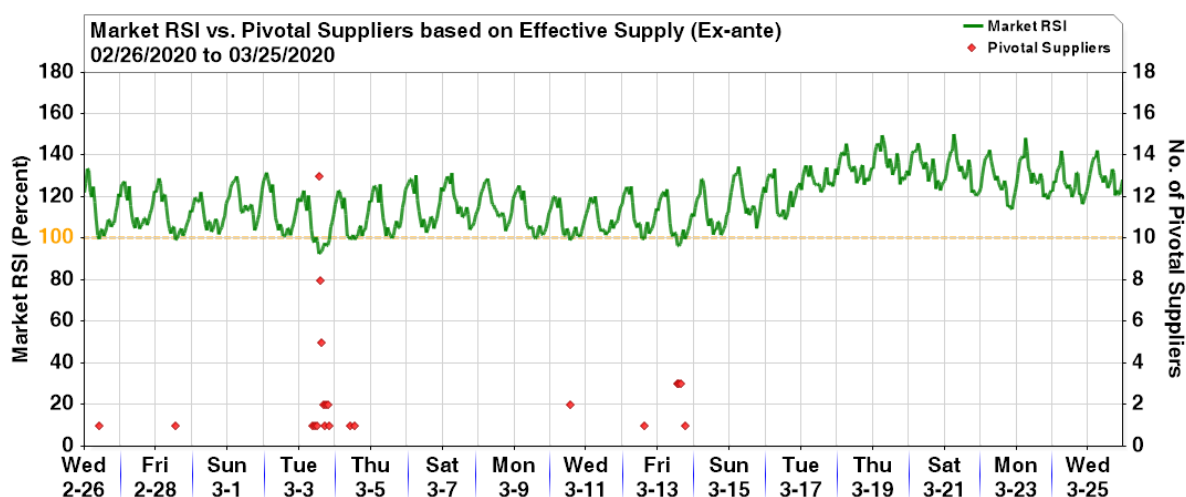


Figure 18. Market RSI vs Pivotal Suppliers, March 2020

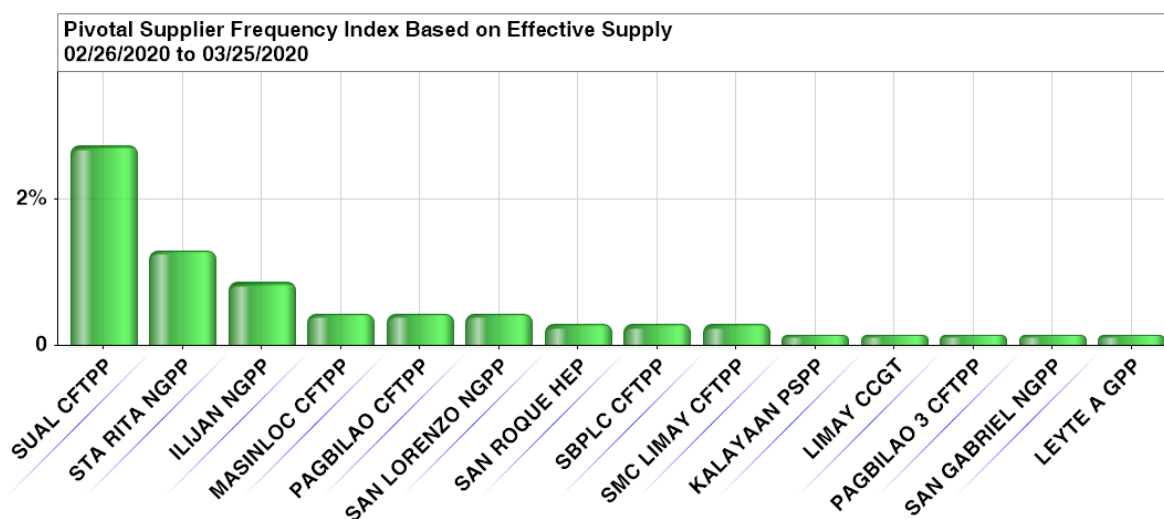


Figure 19. Top Pivotal Plants, March 2020

3.3. Total Trading Amount⁷ (TTA) Share

- First Gen Corporation (FGC), Power Sector Assets and Liabilities Management Corporation (PSALM), and Millennium Energy, Inc. (MEI) held the highest TTA share with approximately 18.8 percent, 18.3 percent, and 18.2 percent, respectively, or a cumulative 55.4 percent of the entire TTA during the billing month
- Likewise, FGC and PSALM had the highest spot exposure share, with FGC having the highest at around 22 percent, followed by PSALM at 20 percent
- Even though MEI had only 8 percent of share in terms of spot exposure, it held the 3rd spot in terms of TTA
- This month's list was joined by Aboitiz Power Corporation (AP) and Universal Robina Corporation (URC), bumping off Ayala Corporation (AC) and SPC Power Corporation (SPC) off the list from last month

⁷ 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

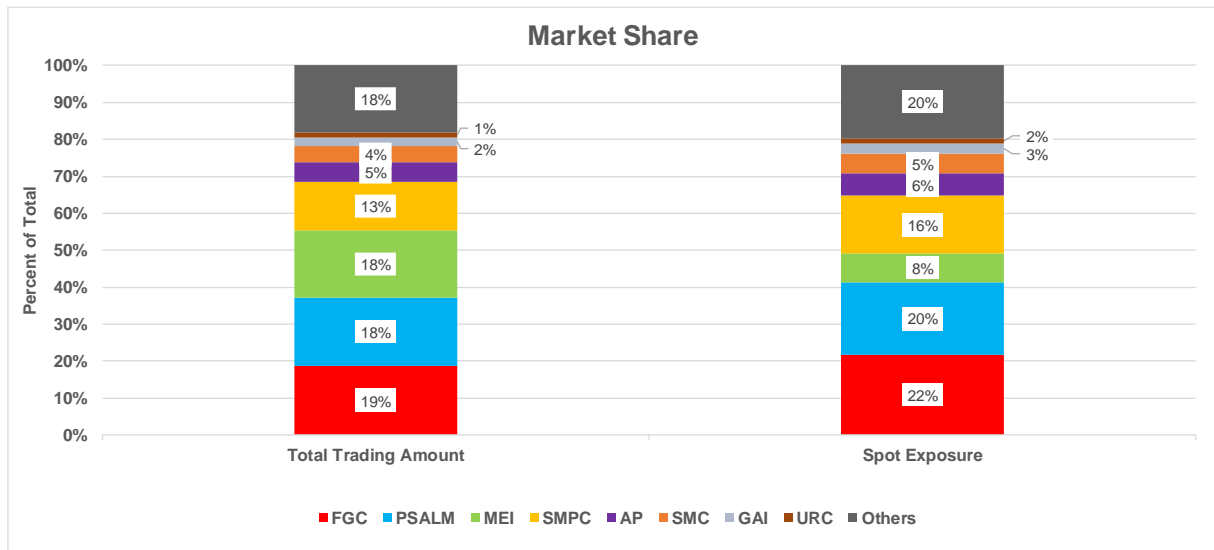


Figure 20. Total Trading Amount and Spot Exposure Share, March 2020

Annex A. List of Major Plant Outages

Region	Plant Type	Plant/ Unit Name	Capacity (MW)	Date Out	Date In	Duration (Days)	Outage Type	Remarks	Date Commissioned/ Commercial Operation
LUZON	GEO	Makban 6	55	04/11/2013 22:44			Deactivated Shutdown	Conducted gas compressor test	Apr 1979
VISAYAS	GEO	PGPP2 Unit 4	20	06/27/2014 6:07			Forced Outage	Steam being utilized by Nasulo plant	Aug 1983
LUZON	GEO	Makban 5	55	02/08/2019 16:08			Forced Outage	Low Steam Supply. Divert Steam Supply to unit 3	Apr 1979
LUZON	OIL	Malaya 1	300	05/03/2019 18:21			Forced Outage	Declared unavailable due to motorization of unit generator caused by the non-open	Aug 1975
LUZON	COAL	Calaca 2	300	10/17/2019 23:49	03/03/2020 0:01	137.01	Planned Outage	Maintenance Outage until 02 March 2020	Sep 1984
LUZON	GEO	Tiwi 1	59	10/31/2019 23:54			Forced Outage	Low steam supply. Divert steam supply to unit 2	Jan 1979
VISAYAS	GEO	Upper Mahiao 3	32	12/05/2019 0:07	03/24/2020 0:10	110.00	Forced Outage	Emergency shutdown requested by customer to facilitate rotor transfer to Unit 2	Jul 1997
VISAYAS	COAL	TPC Sangi 1	60	12/17/2019 6:05			Forced Outage	Generator differential trip	Dec 2013
VISAYAS	COAL	CEDC 2	82	12/21/2019 8:53			Maintenance Outage	SAF motor replacement	Jun 2010
LUZON	COAL	GN Power 2	316	01/07/2020 0:12	03/03/2020 0:01	55.99	Planned Outage	Planned Outage until 23 February 2020	May 2013
VISAYAS	GEO	Upper Mahiao 4	32	02/02/2020 14:27	03/07/2020 14:52	34.02	Forced Outage	Emergency cut-out.	Jul 1997
VISAYAS	GEO	Mahanagdong A1	5	02/04/2020 0:11			Forced Outage	Annual PMS of 230KV bus bar.	Jul 1997
LUZON	COAL	SMC 4	150	02/10/2020 23:25	03/09/2020 14:15	27.62	Planned Outage	Maintenance outage until 02 March 2020	Sep 2018
LUZON	HYD	Kalayaan 1	180	02/13/2020 23:01	03/06/2020 23:11	22.01	Forced Outage	Declared unavailable due to heavy water leak at penstock	Aug 1982
LUZON	HYD	Kalayaan 2	180	02/13/2020 23:01	03/06/2020 21:05	21.92	Forced Outage	Declared unavailable due to heavy water leak at penstock	Aug 1982
VISAYAS	GEO	Upper Mahiao 2	32	02/14/2020 16:04			Forced Outage	cut-in to the system	Jul 1997
LUZON	COAL	SLPGC 2	150	02/19/2020 23:57			Planned Outage	Maintenance outage.	Jan 2015
LUZON	COAL	Pagbilao 1	382	02/20/2020 19:31	02/26/2020 23:07	6.15	Forced Outage	Tripped off due to Boiler tube leak.	Mar 1996
LUZON	COAL	SLTEC 1	121	02/21/2020 23:50	03/06/2020 2:51	13.13	Planned Outage	Maintenance Outage until 07 March 2020	Sep 2014
LUZON	OIL	Limay 1	60	02/23/2020 10:47	02/29/2020 17:28	6.28	Forced Outage	Combustion problem.	May 1993
LUZON	COAL	SMC 2	150	02/25/2020 12:41	02/26/2020 1:49	0.55	Forced Outage	Emergency shutdown to rectify the observed hotspot on the connectors of SCPC Unit	Mar 2017
LUZON	COAL	Sual 1	647	02/26/2020 3:03	02/26/2020 13:27	0.43	Forced Outage	Tripped at 343MW load. System Frequency at 59.28hz	Oct 1999
VISAYAS	COAL	PEDC 1	83.7	02/27/2020 4:33	02/29/2020 11:02	2.27	Forced Outage	Due to possible boiler tube leak	Nov 2010
LUZON	HYD	Binga 2	35	02/27/2020 7:01	03/01/2020 18:28	3.48	Planned Outage	Maintenance Outage until 02 March 2020	Jan 1960
LUZON	HYD	Binga 3	35	02/27/2020 7:01	02/27/2020 11:50	0.20	Maintenance Outage	Maintenance Outage	Jan 1960
LUZON	HYD	Binga 4	35	02/27/2020 7:01	02/27/2020 11:50	0.20	Maintenance Outage	Maintenance Outage	Jan 1960
VISAYAS	GEO	Mahanagdong B1	5	02/27/2020 10:55	02/27/2020 11:06	0.01	Forced Outage	Under assessment	Jul 1997
LUZON	COAL	QPPL	460	02/28/2020 3:33	03/01/2020 21:54	2.76	Forced Outage	Initial report-- air heater problem	May 2000
VISAYAS	COAL	THVI 2	169	02/28/2020 5:30	02/29/2020 10:07	1.19	Forced Outage	AFFECTED BY TRIPPING OF 230KV THVI-MAGDUGO LINE 2	Dec 2017
VISAYAS	OIL	Bohol 2	4	02/28/2020 10:33	03/07/2020 9:35	7.96	Forced Outage	High jacket water cooling temperature	Sep 1978
VISAYAS	OIL	Bohol 1	4	02/28/2020 10:45	03/07/2020 9:34	7.95	Forced Outage	High jacket water cooling temperature	Sep 1978
LUZON	COAL	GN Power 1	316	02/29/2020 0:16	03/01/2020 10:06	1.41	Forced Outage	Emergency shutdown due to Steam leak at main steam line going to MSV 2	May 2013
LUZON	COAL	QPPL	460	03/02/2020 2:41	03/04/2020 3:50	2.05	Forced Outage	Suspected tube leak at economizer and feed water trouble	May 2000
LUZON	OIL	Limay 2	60	03/02/2020 23:45	03/03/2020 0:37	0.04	Forced Outage	Starting failure	May 1993
LUZON	NATG	Ilijan A1	190	03/02/2020 23:57	03/03/2020 18:25	0.77	Forced Outage	Tripping of boiler feed pump	Jun 2002
LUZON	NATG	Ilijan A2	190	03/02/2020 23:57	03/03/2020 21:28	0.90	Forced Outage	Tripping of boiler feed pump	Jun 2002
LUZON	NATG	Ilijan A3	220	03/02/2020 23:57	03/03/2020 20:06	0.84	Forced Outage	Tripping of boiler feed pump	Jun 2002
LUZON	COAL	GN Power 2	316	03/03/2020 0:02	03/04/2020 16:04	1.67	Forced Outage	Planned Outage. Extended outage from 23 February 2020 to 05 March 2020 (RECLAS	May 2013
LUZON	COAL	Calaca 2	300	03/03/2020 0:02	03/25/2020 19:31	22.81	Forced Outage	Maintenance Outage until 02 March 2020. Extended shutdown from 03 March 2020	Sep 1984
LUZON	OIL	Limay 1	60	03/03/2020 3:30	03/03/2020 4:30	0.04	Forced Outage	Rotor problem	May 1993
LUZON	NATG	Ilijan B1	190	03/03/2020 11:23	03/03/2020 16:09	0.20	Forced Outage	Blade path temperature large variation trip	Jun 2002
LUZON	NATG	Ilijan B1	190	03/03/2020 21:34	03/05/2020 11:44	1.59	Forced Outage	Tripped due to Gas Turbine Trouble	Jun 2002
LUZON	NATG	Ilijan B3	220	03/04/2020 5:38	03/04/2020 13:08	0.31	Forced Outage	Emergency shutdown for the isolation of Block-2 Main Transformers to facilitate insp	Jun 2002
LUZON	NATG	Ilijan B2	190	03/04/2020 5:49	03/04/2020 11:59	0.26	Forced Outage	Emergency shutdown for the isolation of Block-2 Main Transformers to facilitate insp	Jun 2002
LUZON	HYD	Binga 1	35	03/04/2020 8:06	03/04/2020 12:24	0.18	Maintenance Outage	Maintenance Outage	Jan 1960
LUZON	HYD	Binga 2	35	03/04/2020 8:06	03/04/2020 12:24	0.18	Maintenance Outage	Maintenance Outage	Jan 1960
LUZON	HYD	Binga 3	35	03/04/2020 8:06	03/08/2020 17:15	4.38	Planned Outage	Planned Outage until 08 March 2020	Jan 1960
LUZON	HYD	Binga 4	35	03/04/2020 8:06	03/04/2020 12:24	0.18	Maintenance Outage	Maintenance Outage	Jan 1960
LUZON	OIL	Limay 7	60	03/05/2020 0:41	03/05/2020 10:53	0.43	Forced Outage	Declared unavailable due to Main Fuel Oil Pump	Dec 1994
LUZON	OIL	Limay 2	60	03/05/2020 5:16	03/06/2020 0:01	0.78	Forced Outage	Tripped due to temperature after turbine trouble..	May 1993
LUZON	NATG	Ilijan B1	190	03/05/2020 12:14	03/05/2020 14:04	0.08	Forced Outage	Control steam valve problem.	Jun 2002
LUZON	NATG	Ilijan B1	190	03/06/2020 15:21	03/06/2020 18:35	0.13	Forced Outage	Fuel gas valve problem.	Jun 2002
LUZON	HYD	Binga 1	35	03/07/2020 8:07	03/07/2020 10:40	0.11	Maintenance Outage	Maintenance Outage	Jan 1960
LUZON	HYD	Binga 2	35	03/07/2020 8:08	03/07/2020 11:47	0.15	Maintenance Outage	Maintenance Outage	Jan 1960
LUZON	HYD	Binga 4	35	03/07/2020 8:08	03/07/2020 10:40	0.11	Maintenance Outage	Maintenance Outage	Jan 1960
LUZON	HYD	Kalayaan 3	180	03/07/2020 8:45	03/07/2020 9:17	0.02	Forced Outage	Thrust Bearing trouble	May 2004
LUZON	NATG	Ilijan B1	190	03/07/2020 15:57	03/08/2020 4:22	0.52	Forced Outage	Tripped at 126MW. Initial cause of tripping is the fluctuation of fuel gas main control	Jun 2002
LUZON	COAL	SMC 3	150	03/10/2020 23:35			Planned Outage	Maintenance outage.	Nov 2017
VISAYAS	GEO	PGPP2 Unit 1	20	03/12/2020 11:14	03/12/2020 13:05	0.08	Forced Outage	Auto-tripped. On going investigation	Aug 1983
LUZON	OIL	Masinloc 1	315	03/12/2020 15:53	03/16/2020 14:20	3.94	Forced Outage	Boiler tubeleak.	Jun 1998
VISAYAS	OIL	Bohol 1	4	03/12/2020 17:23	03/13/2020 2:06	0.36	Forced Outage	Tripped due to loss of DC supply.	Sep 1978
LUZON	OIL	SLPGC 3	25	03/12/2020 21:01	03/23/2020 0:01	10.13	Forced Outage	Unavailable due to Diesel oil accumulation.	Mar 2017
LUZON	OIL	SLPGC 4	25	03/12/2020 21:01	03/23/2020 0:01	10.13	Forced Outage	Unavailable due to Diesel oil accumulation.	Mar 2017
LUZON	GEO	Makban 3	63	03/13/2020 22:04	03/14/2020 1:36	0.15	Forced Outage	Affected by the tripping of Bay-Makban 230kV L1 and L2	Apr 1979
LUZON	GEO	Makban 4	63	03/13/2020 22:04	03/14/2020 4:43	0.28	Forced Outage	Affected by the tripping of Bay-Makban 230kV L1 and L2	Apr 1979
LUZON	GEO	Makban 7	20	03/13/2020 22:04			Forced Outage	Affected by the tripping of Bay-Makban 230kV L1 and L2	Apr 1979
LUZON	GEO	Makban 8	20	03/13/2020 22:04			Forced Outage	Affected by the tripping of Bay-Makban 230kV L1 and L2	Apr 1979
LUZON	GEO	Makban Ormat 1	3	03/13/2020 22:04	03/14/2020 0:46	0.11	Forced Outage	Affected by the tripping of Bay-Makban 230kV L1 and L2	Apr 1979
LUZON	GEO	Makban Ormat 2	3	03/13/2020 22:04	03/14/2020 0:46	0.11	Forced Outage	Affected by the tripping of Bay-Makban 230kV L1 and L2	Apr 1979
LUZON	GEO	Tiwi 5	57	03/15/2020 15:04	03/16/2020 23:53	1.37	Forced Outage	Affected by tripping of unit 6 main tranformer.	Jan 1979
LUZON	GEO	Tiwi 6	57	03/15/2020 15:04	03/15/2020 21:10	0.25	Forced Outage	Tripping of unit 6 main tranformer.	Jan 1979
LUZON	OIL	Limay 5	60	03/19/2020 1:27	03/19/2020 2:01	0.02	Forced Outage	Turbine trouble	Dec 1994
LUZON	COAL	SMC 4	150	03/19/2020 23:07			Forced Outage	Repair of ESP Transformer	Sep 2018
LUZON	HYD	Binga 2	35	03/19/2020 23:51	03/20/2020 0:27	0.03	Forced Outage	Tripped by differential	Jan 1960
LUZON	COAL	GN Power 2	316	03/21/2020 0:14			Forced Outage	Emergency Shutdown to perform Trim Balancing of LP Turbine	May 2013
LUZON	GEO	Tiwi 6	57	03/21/2020 1:18	03/22/2020 20:40	1.81	Forced Outage	Emergency Shutdown due to Steam Leak	Jan 1979
LUZON	COAL	SMC 1	150	03/21/2020 9:27	03/21/2020 10:59	0.06	Forced Outage	Steam drum level low.	Nov 2016
LUZON	COAL	SMC 1	150	03/21/2020 11:06	03/21/2020 14:45	0.15	Forced Outage	High reheater temperature.	Nov 2016
VISAYAS	GEO	Leyte 3	40.2	03/21/2020 11:42	03/21/2020 12:50	0.05	Forced Outage	Low condenser vacuum trip relay activation affected by tripping of LRPV (Liquid Ring	Jun 1983
LUZON	GEO	Tiwi 2	59	03/23/2020 8:47	03/23/2020 12:24	0.15	Forced Outage	Tripping of unit transformer	Jan 1979
VISAYAS	COAL	PEDC 3	150	03/23/2020 15:16	03/23/2020 16:17	0.04	Forced Outage	Internal trouble	Aug 2016
VISAYAS	COAL	THVI 2	169	03/23/2020 15:54			Forced Outage	EMERGENCY CUT-OUT. TO CONDUCT INSPECTION OF ALL COAL CILO	Dec 2017
VISAYAS	COAL	PEDC 2	83.7	03/23/2020 17:31			Forced Outage	Internal trouble	Apr 2011
LUZON	COAL	SLPGC 1	150	03/23/2020 17:44			Forced Outage	Tripped due to boiler tube leak	Jan 2015
LUZON	GEO	Bacman 1	60	03/23/2020 19:15	03/23/2020 23:55	0.19	Forced Outage	Emergency Shutdown due to Inlet Valve trouble	Sep 1993
VISAYAS	GEO	Upper Mahiao 3	32	03/24/2020 0:11			Forced Outage	Reserved shutdown	Jul 1997
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	Mar 2019
LUZON	NATG	Sta. Rita 3	265.5	03/24/2020 1:39	03/24/2020 12:01	0.43	Forced Outage	Generator unit protection tripped	Oct 2001
LUZON	COAL	ANDA 1	72	03/25/2020 1:15			Forced Outage	Emergency shutdown due to furnace trouble.	Apr 2015