Monthly Market Assessment Report

26 November 2020 to 25 December 2020

JANUARY 2021

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

The information contained in this document is based on data that are subject to continuous verification by the Philippine Electricity Market Corporation (PEMC). The same information is subject to change as updated figures come in.

Table of Contents

List of Tables

List of Figures

Monthly Market Assessment Report for December 2020 Billing Month

1. ASSESSMENT OF THE MARKET

- Normal pricing condition in the Luzon region consisted about 96 percent of the total trading intervals in December 2020, higher than last month's monthly percent share of 90 percent. On the contrary, a slight decline in percentage share was noted from last month in the Visayas region from 93 percent to 92 percent.
- Price Substitution Methodology (PSM) was applied to 16 intervals or 2 percent of the total outcomes both in the Luzon and Visayas regions.
    - For both regions, 15 of the PSM-applied intervals was the result of the constraint in the Samboan – Amlan line 1 that connects the Cebu and Negros islands. Meanwhile, the constraint in the Leyte – Cebu interconnection accounted for the remaining 1 interval.
- Prices with errors not caused by congestion occurred around 11 intervals or 2 percent of the time for Luzon and 39 intervals or 5 percent for Visayas, noting that some reasons for the pricing error may be coincident in an interval.
    - In Luzon, a total of 11 intervals were caused by inappropriate input data which affected both regions' prices and schedules whereas only 5 intervals were due to localized transformer constraints in Sta Rosa (4 intervals) and Angat (1 interval).
    - In Visayas, there were also 11 intervals with pricing errors caused by inappropriate input data while localized transformer constraint reasons constituted 33 intervals. Of the 33 intervals, 28 were because of the Palinpinon transformer constraints.
- None of the intervals were imposed with administered prices and secondary price caps this month.

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

Pricing Condition	No. of Intervals			
	Luzon	% of Time	Visayas	% of Time
Normal	693	96.3%	665	92.4%
Congestion	16	2.2%	16	2.2%
Pricing Error Notice	11	1.5%	39	5.4%
Administered Price	0	0%	0	0%
Secondary Cap	0	0%	0	0%
Total	**720**	**100%**	**720**	**100%**

- Despite the generally low level of market prices this month because of the low system demand effects of the on-going community quarantine, and cooler recorded temperatures all throughout the month, average price was still an uptick from last month. The month-on-month increase was mainly influenced by the declining supply as outages observed the highest average for the whole year.

Notable Highlight:

1. *Unusual level of demand*
   - *Observance of low level of demand due to imposed community quarantine and weather conditions during the cool dry season*
2. *Highest average outage capacity for the whole year*
   - *Existence of high level of outage capacity from large generating power plants prior the December billing month*

2. MARKET OUTCOME

2.1 Price[1]

2.1.1 Price and Supply Margin

- On 19 August, the GCQ was reinstated, coming from MECQ declaration from 4 to 18 August, and was continuously imposed throughout the December billing month. While quarantine protocols continue to be implemented, there were no episodes of price spikes as compared with last month.
- Since the implementation of the community quarantine in March 2020, most months had an unusually high level of average monthly supply margin which resulted to low WESM prices.
- Similar to the pattern in other months this year as an effect of the community quarantine, the December billing month reached the highest hourly level of supply margin at 4,996 MW on 25 December 2020, 1000H and the lowest at 754 MW on 23 December 2020, 1400H.
- Historical data showed that the cool dry season, especially the December and January billing months, resulted in the highest monthly average supply margin.
- December 2020 was comparable to December 2018 in terms of average supply margin but did not deviate much from previous years' results.
- The steeper decline in supply of electricity, as an outcome of the high outage capacity from power plants, drove the slight increase in resulting prices this December.

[1] The market prices were represented by the following: (i) ex-ante load weighted average price (LWAP) for trading intervals without pricing error during ex-ante, (ii) ex-post LWAP for trading intervals with pricing error during ex-ante but without pricing error during ex-post, (iii) LWAP based on the market re-run result for trading intervals with pricing error both during ex-ante and ex-post, and (iv) estimated load reference price (ELRP) for trading intervals where the ERC-approved Price Substitution Mechanism (PSM) was applied.

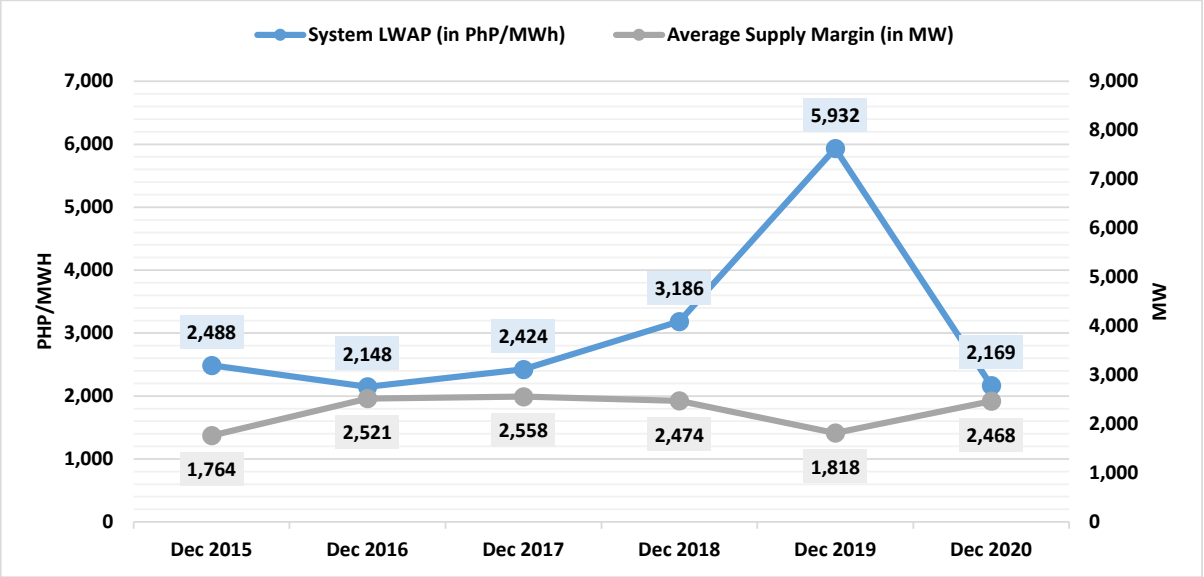


Figure 1. System LWAP and Supply Margin, December 2015-2020

- Monthly load weighted average price (LWAP) grew by 9.7 percent from PHP1,978/MWh in November to PHP2,169/MWh in December.
    - Monthly average peak prices rose by 6.3 percent from PHP2,486/MWh to PHP2,642/MWh.
    - Monthly average off-peak prices likewise climbed by 16.8 percent from PHP1,481 to PHP1,729/MWh.
- The average supply margin narrowed by 4.2 percent from 2,576 MW in November to 2,468 MW in December.
- Despite recording the highest monthly average outage capacity for the year, market prices remained stable as lower demand was observed during the cool dry season and the community quarantine period.

Table 2. System LWAP and Supply Margin, November and December 2015-2020

Year	Month	Average Supply Margin	% Change in Average Supply Margin	System LWAP	% Change in System LWAP
2015	November	1,348	31%	3,249	-23%
	December	1,764		2,488	
2016	November	2,084	21%	2,296	-6%
	December	2,521		2,148	
2017	November	1,750	46%	3,298	-26%
	December	2,558		2,424	
2018	November	2,273	9%	3,324	-4%
	December	2,474		3,186	
2019	November	1,825	-0.4%	5,114	16%
	December	1,818		5,932	
2020	**November**	**2,576**	**-4%**	**1,978**	**10%**
	December	**2,468**		**2,169**	

- Hourly resolution of LWAP saw the highest level at PHP13,847/MWh due to one of the highest levels of demand plus reserve schedule at 12,390 MW and the effective supply at 13,347 MW on 11 December 2020, 1800H. This interval recorded one of the lowest supply margins for December 2020 at 957 MW.
- About 83 percent of the time, the hourly system LWAP was below the PHP2,000/MWh level.
- Prices during the weekdays averaged at PHP2,429/MWh while during weekends it was at PHP1,938/MWh. Meanwhile, prices during the holidays (Bonifacio Day on 30 November, Feast of the Immaculate Concepcion on 08 December, Christmas Eve on 24 December, and Christmas Day on 25 December) averaged at PHP1,314/MWh.
    - Weekday – Off-peak: PHP1,881/MWh; Peak: PHP2,811/MWh
    - Weekend – Off-peak: PHP1,826/MWh; Peak: PHP2,156/MWh
    - Holiday – Off-peak: PHP1,136/MWh; Peak: PHP1,924/MWh
- The highest average price by interval was noted on 1800H at PHP3,165/MWh and the lowest was on 0700H at PHP1,205/MWh regardless of the day type (i.e. weekday or weekend). Comparing this to last month, the highest and lowest was still on 1800H at PHP3,293/MWh and on 0700H at PHP1,207/MWh, respectively.
- Generally, market prices were consistent except for intervals with few upticks during low supply margin conditions.

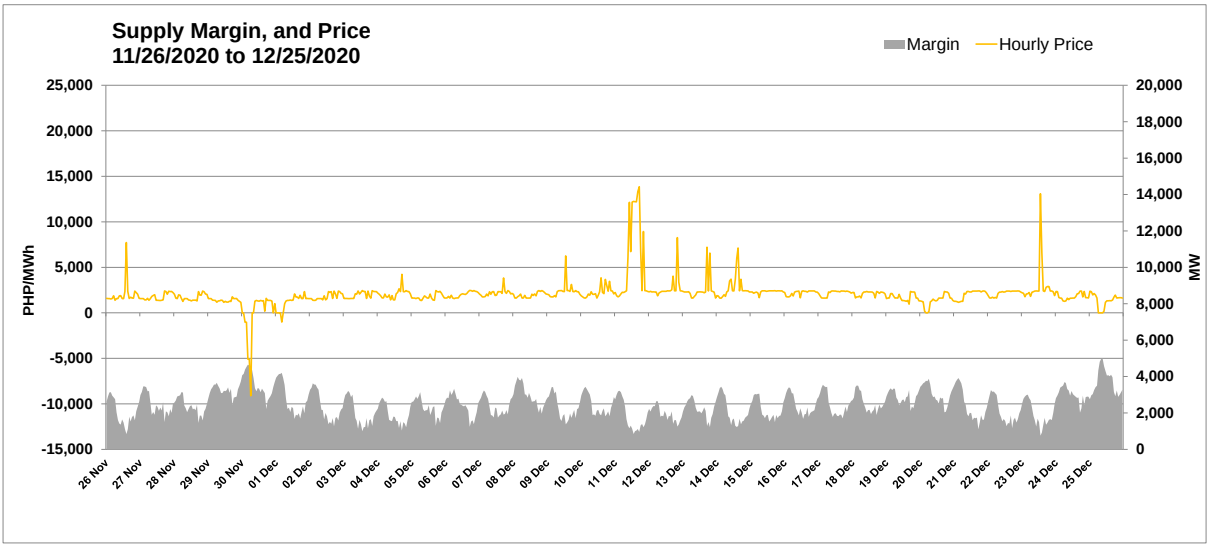


Figure 2. Hourly Supply Margin and Price, December 2020

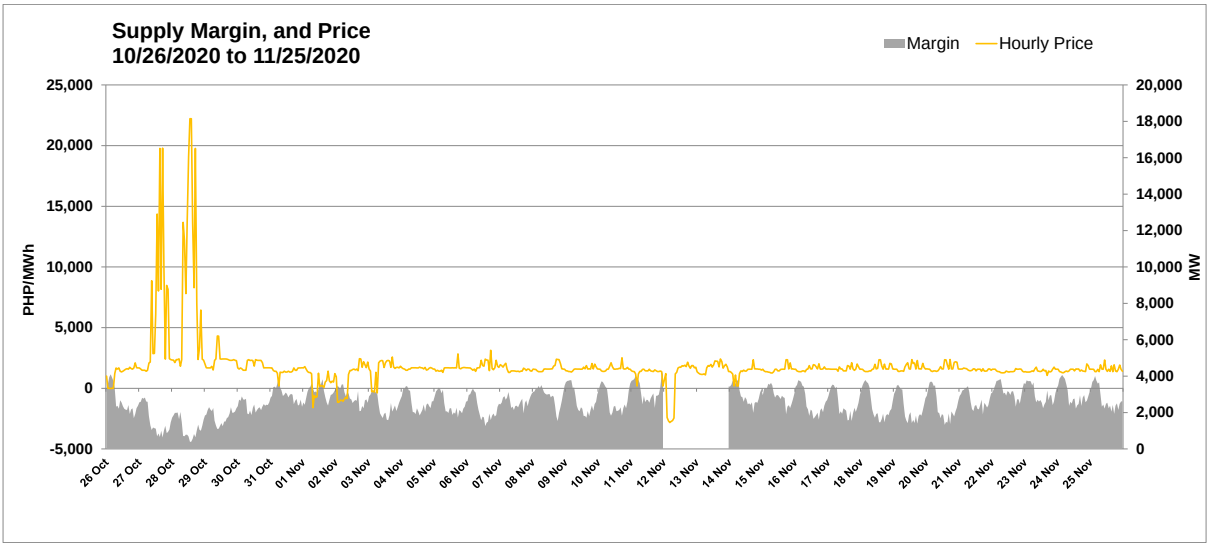


Figure 3. Hourly Supply Margin and Price, November 2020

2.1.2 Load Nodal Price Duration Curve[2]

- For peak[3] hours, about 90 percent of the load nodal prices fell below PHP2,569/MWh in December and PHP2,400/MWh in November while distribution of prices during the off-peak hours were seen below PHP2,358/MWh in December and PHP2,056/MWh in November in about the same percentage of time.
- Maximum off-peak and peak load nodal price reached PHP15,434/MWh and PHP32,000/MWh in December, respectively.

[2] Load nodal RTD prices under normal pricing condition are used.
[3] Peak and off-peak intervals differ between Luzon and Visayas regions.

- Bulk or 66 percent of the peak nodal prices were seen ranging from PhP2,000/MWh to PhP4,000/MWh while for off-peak nodal prices, majority or 57 percent was at the PHP0/MWh to PHP2,000/MWh range.
- Based on the graph below, the December peak price curve notably varied from last month's price curve around the PHP1,500/MWh to PHP2,000/MWh range, leading to an increase in monthly average peak price. Meanwhile, monthly comparison of off-peak price duration curves showed absence of prices above PHP15,500/MWh, but still with negative prices as low as PHP-9,000/MWh during December.
- In the peak hour price duration curve, the December billing month had existence of PHP32,000/MWh nodal prices due to the localized constraint in the Bacolod transformers in the Visayas region which affected load-end Bacolod nodes on 12 December 2021, 1800H.

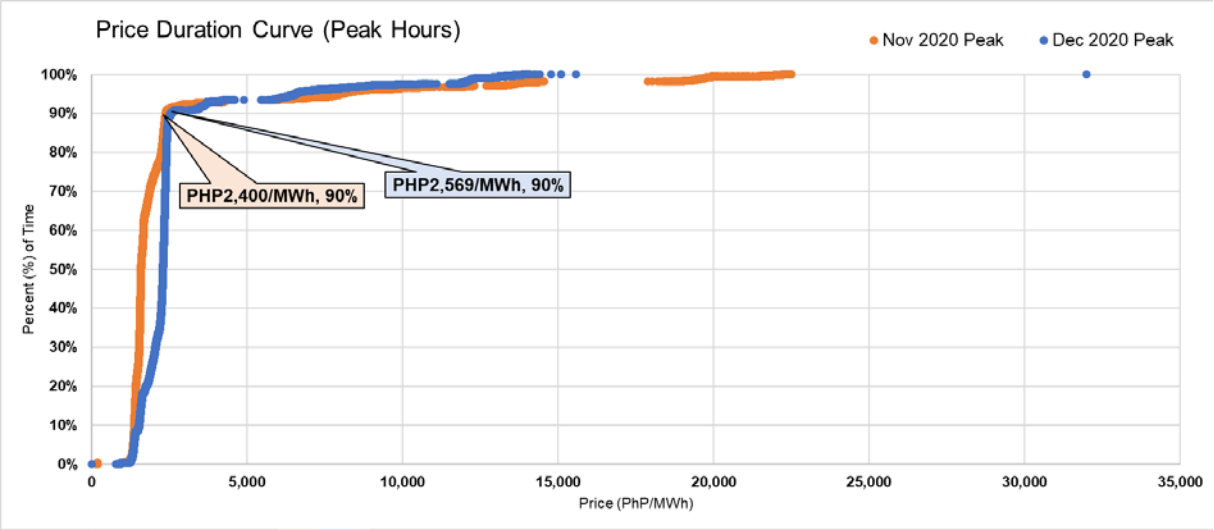


Figure 4. Load Nodal Price Duration Curve (Peak), November and December 2020

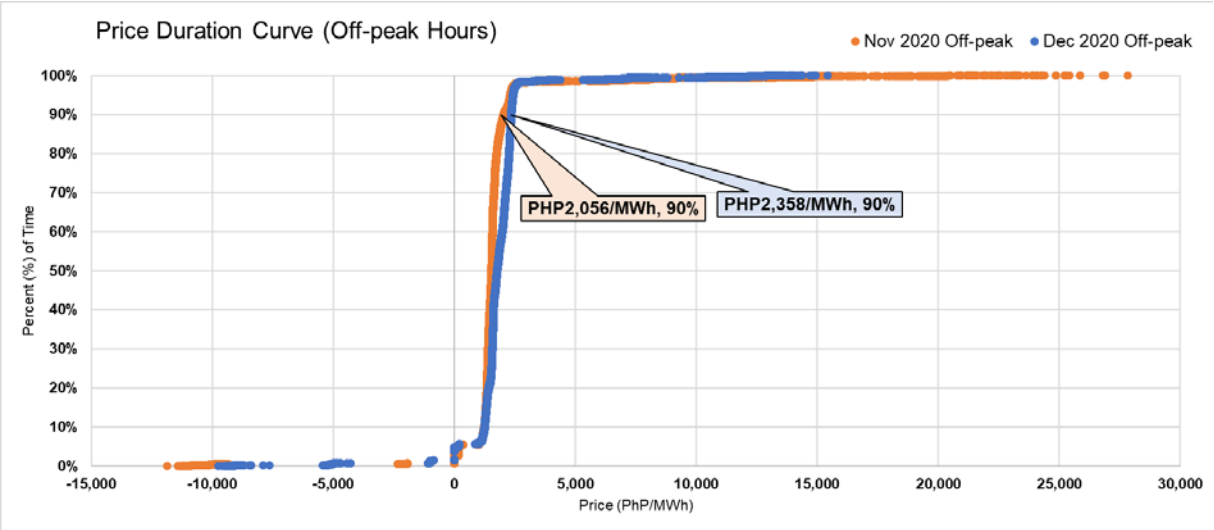


Figure 5. Load Nodal Price Duration Curve (Off-peak), November and December 2020

2.2 Supply

- An increase of 15 MW in the WESM registered capacity was recorded this month from a total of 20,858.57 MW to 20,873.57 MW owing to:
    - Increase in capacity of PWEI Nabas Wind plant from 36 MW to 51 MW effective 09 December
- Available capacity[4] constituted an average of 14,870 MW or 71 percent of the total registered capacity.
- Capacity not offered comprised an average of 2,414 MW or 12 percent.
- Outage capacity accounted for an average of 3,584 MW or 17 percent.

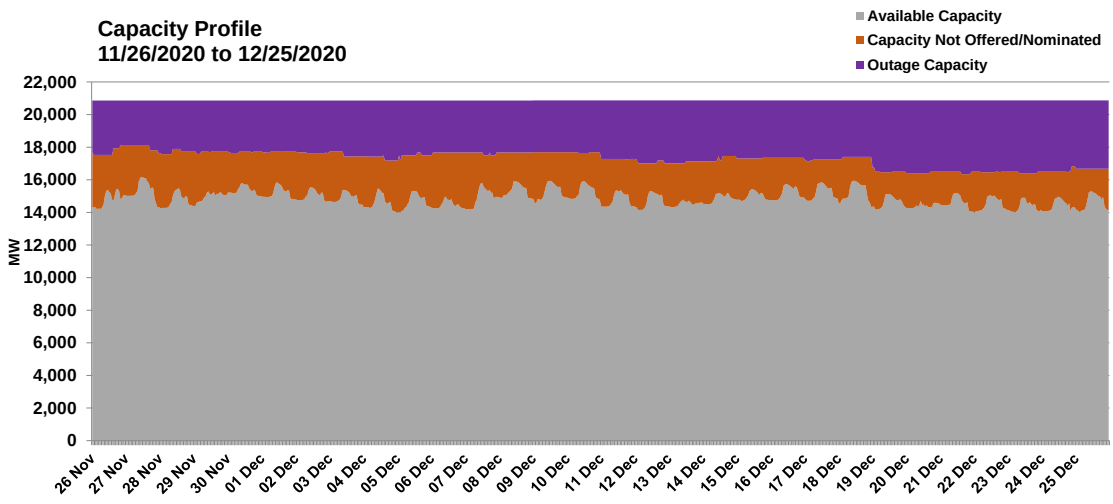


Figure 6. Capacity Profile, December 2020

2.2.1 Outage Capacity[5]

- Outage capacity surged by 21 percent from an average of 2,963 MW last month to an average of 3,584 MW this month, placing December as the highest monthly average outage capacity for the year 2020.
- Planned outages rose to 647 MW on average or 18 percent of the total outages. Majority or about 71 percent was composed of forced outages averaging at 2,556 MW, and maintenance outages at 336 MW or 9 percent of the total outages. Meanwhile, deactivated shutdown accounted for only about 55 MW on average or 2 percent of the outages.

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

[5] Notable plants on outage are detailed in the Annex

- Total outage capacity for the month closed at 4,191 MW, considerably higher than its opening level at 3,146 MW.
- Coal plants majorly contributed to the level of all outage categories except deactivated shutdown, in which geothermal plants remained to be the only type accounted.

Table 3. Outage Factor by Plant Type and Outage Category, December 2020

Plant Type	Planned Outage (18%)	Forced Outage (71%)	Maintenance Outage (9%)	Deactivated Shutdown (2%)
Coal	88%	58%	45%	0%
Natural Gas	0%	17%	23%	0%
Geothermal	3%	7%	29%	100%
Hydro	9%	7%	0%	0%
Oil-based	0%	12%	3%	0%
TOTAL	**100%**	**100%**	**100%**	**100%**

- Planned outages level jumped from last month, averaging at 647 MW this month from 244 MW last month as influenced by outages from large coal power plants in the middle of the month.
- On the other hand, forced outages almost retained its monthly average level from 2,552 MW to 2,556 MW.
- Maintenance outages were kept at a low level but still saw an increase from last month's average of 202 MW to this month's 336 MW.
- Total outages were generally above 3,000 MW throughout the month with no notable resumption in operations from large generating power plants.
- The highest hourly outage this month at 4,530 MW was noted on 21 December from 1600H to 2200H.

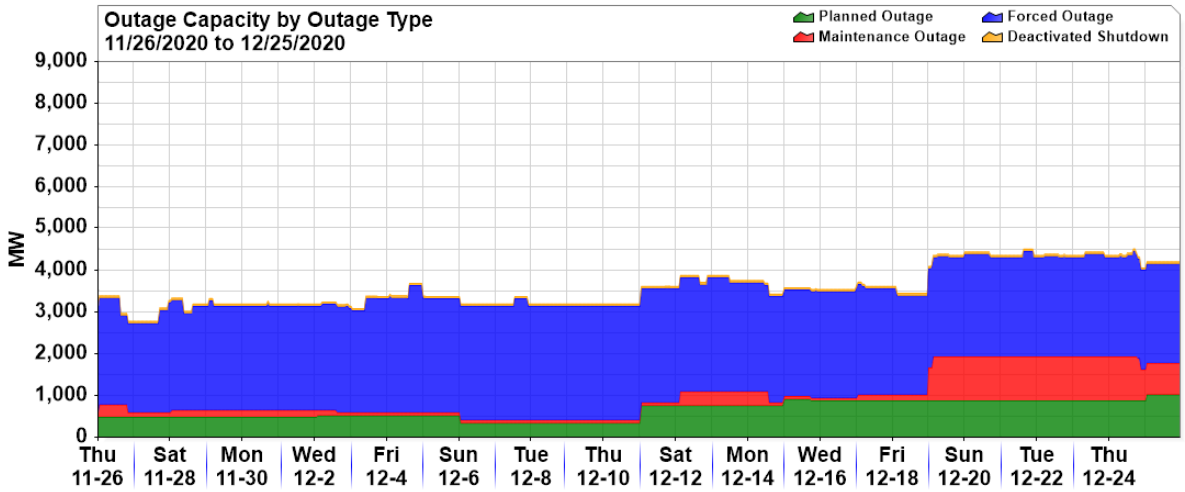


Figure 7. Outage Capacity by Outage Category, December 2020

Table 4. Outage Summary by Outage Category, November and December 2020

Outage Category	Dec 2020 (in MW)			Nov 2020 (in MW)		
	Max	Min	Average	Max	Min	Average
Planned	1,020	339	647	600	60	244
Maintenance	1,056	70	336	466	109	202
Forced	3,046	2,139	2,556	6,794	1,681	2,552
Deactivated Shutdown	55	55	55	55	55	55
TOTAL	**4,514**	**2,783**	**3,594**	**7,406**	**2,047**	**3,053**

- In terms of type of power plants, coal generators accounted for more than half of the outages at 61 percent from 40 percent last month as outage level kept increasing until the end of the month. Only coal and hydro plants registered increases in outage while the rest noted the opposite. With this, natural gas plants ended with 14 percent of the total outages, geothermal plants with 10 percent, oil-based plants followed with 9 percent, and hydro plants with the lowest at 6 percent.
- The December billing month opened with a high level of outage capacity due to the unavailability of the following large generators prior to the billing month: forced outages of San Gabriel NGPP (420 MW) since 05 September, Sual CFTPP unit 2 (647 MW) since 16 September, Masinloc CFTPP unit 3 (335 MW) since 24 November, SLTEC CFTPP unit 1 (123 MW), and Pagbilao CFTPP unit 3 (420 MW) since 25 November; planned outage of Calaca CFTPP unit 1 (300 MW) since 25 November. All outages of the aforementioned plants, except for Pagbilao CFTPP unit 3 which resumed operations the day after, persisted until the end of the billing month.
- The prior existing outages were further inflated during the month upon the forced outage of Calaca CFTPP unit 2 (300 MW) on 03 December, planned outage of Pagbilao CFTPP unit 3 (420 MW) on 11 December, and maintenance outages of Sual CFTPP unit 1 (647 MW) and San Lorenzo NGPP unit 1 (265 MW) on 18 December and from 19 to 24 December, respectively.

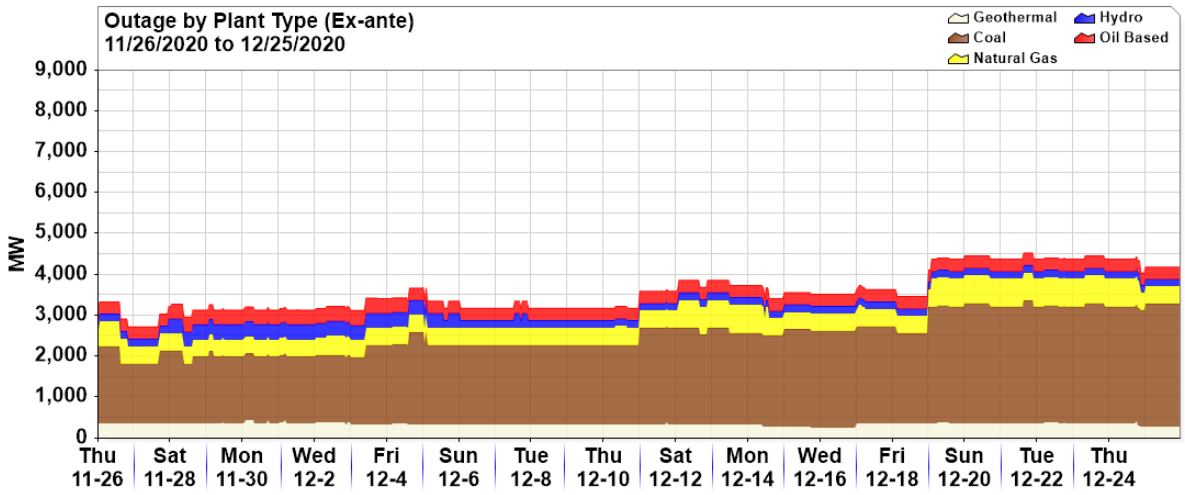


Figure 8. Outage Capacity by Plant Type, December 2020

Table 5. Outage Summary by Plant Type, November and December 2020

Plant Type	Dec 2020 (in MW)			Nov 2020 (in MW)		
	Max	Min	Average	Max	Min	Average
Coal	3,009	1,465	2,195	2,582	707	1,190
Natural Gas	686	420	500	2,544	420	746
Geothermal	438	244	345	859	270	455
Hydro	370	180	230	888	0	202
Oil-based	370	300	313	467	300	370
TOTAL	**4,530**	**2,726**	**3,584**	**6,840**	**1,990**	**2,963**

2.3 System Demand

- Monthly system demand dropped to an average of 9,365 MW with cooler recorded temperatures compared to last month as an effect of the season, and presence of several holidays. This was a minimal 0.1 percent reduction from last month's average of 9,375 MW.
- The December billing month noted the 4th lowest average system demand during the whole year, with still the lowest in April where the country fully experienced the strict implementation of the community quarantine.
- In comparison to last month, the average off-peak demand at 8,583 MW this period saw a 0.9 percent ascent whereas a 0.1 percent cut in the average peak demand at 10,381 MW was recorded.
- Maximum system demand in December reached 11,597 MW for peak hours on 09 December, Wednesday and 10,261 MW for off-peak hours on 13 December, Sunday.
- Minimum system demand in December was at 8,526 MW for peak hours and 6,733 MW for off-peak hours which transpired during 19 December, Saturday and 25 December, Friday, respectively.
- For the year 2020, the highest recorded hourly system demand was on 10 March 2020, 1400H at 13,162 MW, prior the enforcement of the community quarantine on 15 March 2020.

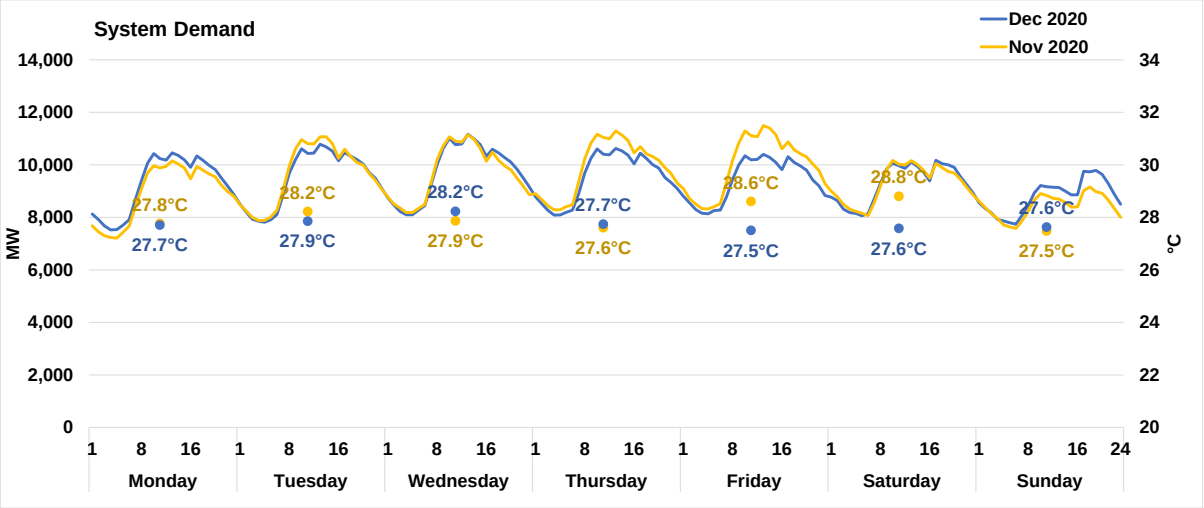


Figure 9. Average Hourly System Demand, November and December 2020

- On a yearly comparison, the demand was down by 3.3 percent from 9,684 MW in 2019 to 9,365 in 2020, owing to the community quarantine.
- The downturn in average demand was attributable to the 3.2 percent decrease during off-peak hours from 8,864 MW to 8,583 MW and a likewise decline during the peak hours by 4.5 percent from last year from 10,875 MW to 10,381 MW.
- The average temperatures per weekday in December this year were almost the same as last year.

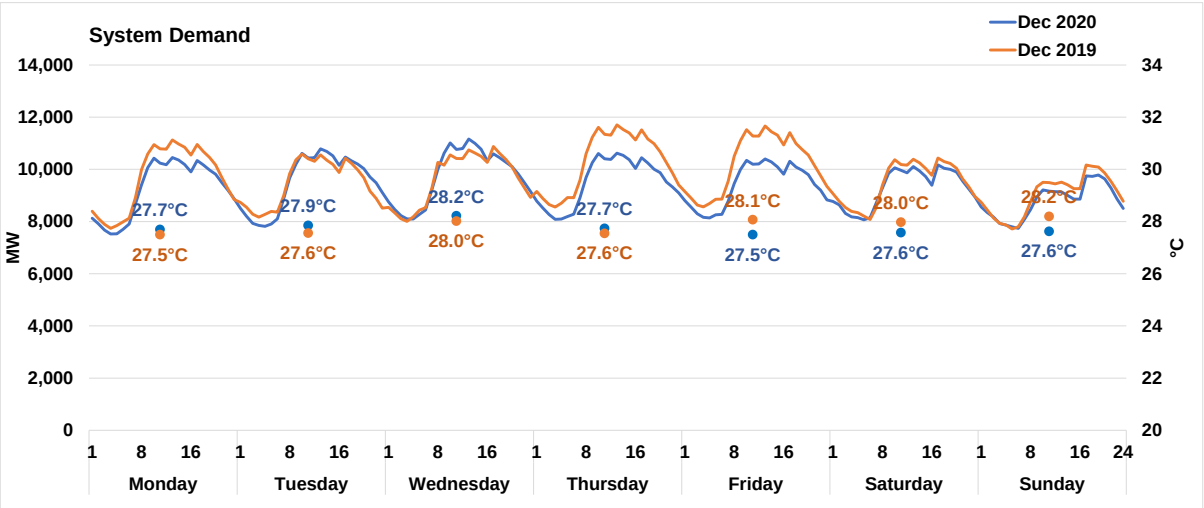


Figure 10. Average Hourly System Demand, December 2019 and 2020

- Year 2020 was exempt from the consistent annual pattern of increasing demand every December, which deviant trend was primarily because of the community quarantine period.
- The all-time highest hourly system demand was still on 21 June 2019, 1400H at 13,378 MW.

- Similar with previous billing months under the community quarantine where this year's average level of demand was lower than their previous 1 to 2 years of average demand, the December billing month was no different in pattern.

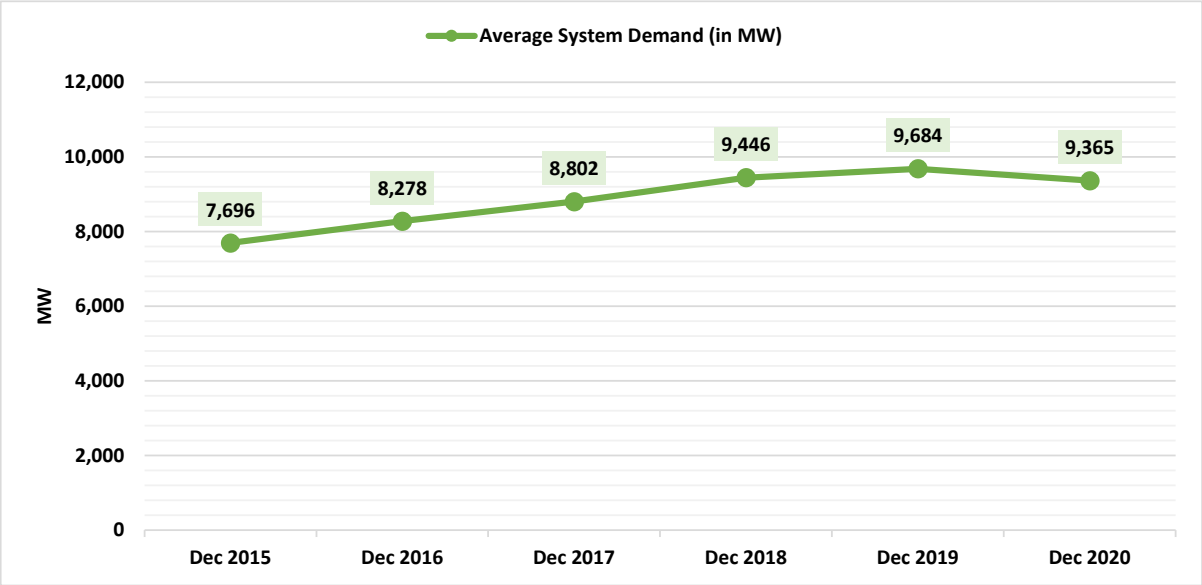


Figure 11. Average System Demand, December 2015-2020

3. SPOT TRANSACTIONS

3.1 Spot Exposure

3.1.1 Load

- Spot quantities[6] of load participants in December stood at 11.6 percent of the total metered quantities, lower than last month's 12.7 percent spot exposure, which signaled that consumers had less reliance on the market in sourcing their energy needs despite low prices this month.
- Most of the load quantities at around 86.8 percent of their total consumption, an increase from last month's 85.6 percent, were still transacted outside the spot market and were contracted with generators.

[6] 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.

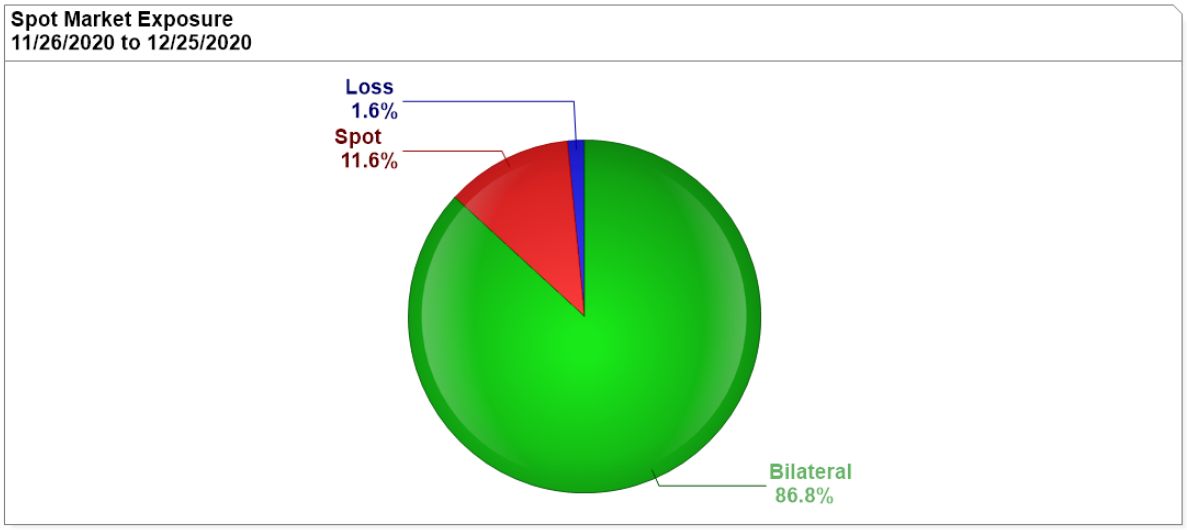


Figure 12. Spot Market Exposure, December 2020

3.1.2 Generator

- Average hourly spot exposure of generators resulted to a significant drop in all hours except for 1700H.
- Spot exposure in off-peak hours averaged at 14.4 percent while it was 12.2 percent during peak hours. Both spot exposures in off-peak and peak hours fell from last month's 15.6 percent and 13.4 percent, respectively.
- Higher spot percentage were observed during the morning off-peak hours than other intervals, where generally, lower spot prices were evident.

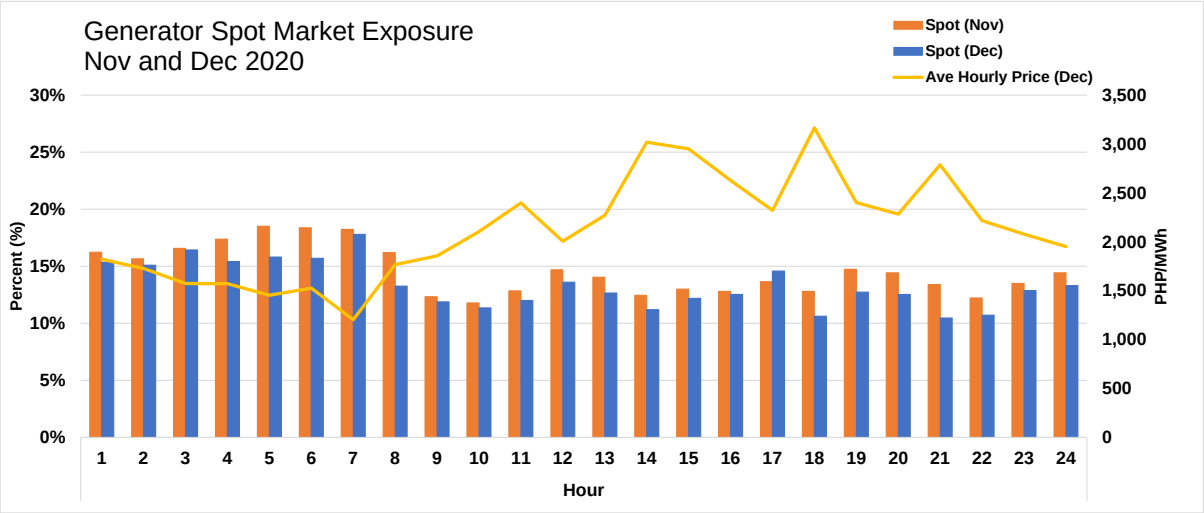


Figure 13. Hourly Generator Spot Market Exposure, November and December 2020

- A low generator market exposure, at around 8 percent, occurred during the high daily price on 11 December. The low spot exposure resulted from limited generator

quantities, caused by high plant outage, that were prioritized to serve their bilateral contract obligations.

- Generator spot exposure shot up during the Christmas holiday with market prices below PHP2,000/MWh.

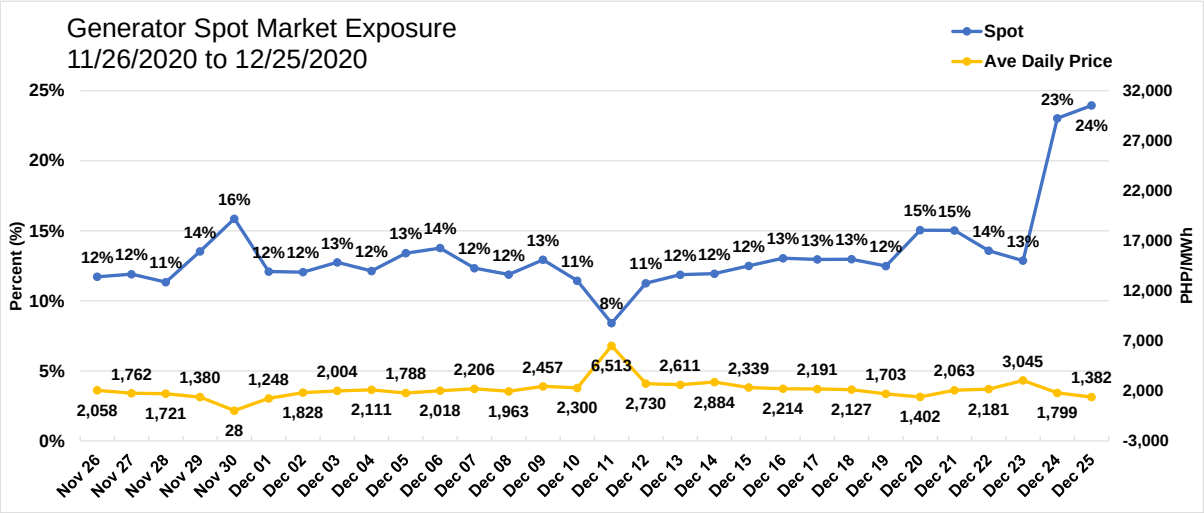


Figure 14. Daily Generator Spot Market Exposure, December 2020

- Based on the spot quantity duration curve[7] of December billing month, hourly spot quantities of generators were 36 MWh or less at about 90 percent of the time with maximum and minimum spot quantities at 604 MWh and -537 MWh, respectively.
- Additionally, all generator spot quantities sold in the market did not exceed 647 MWh, highest possible spot quantity of a generating unit for a single interval that can be sold.
- Spot quantities bought in the market to serve bilateral contracts did not exceed 600 MWh.

[7] 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. Positive spot values indicate quantities sold in the market while negative values are quantities bought.

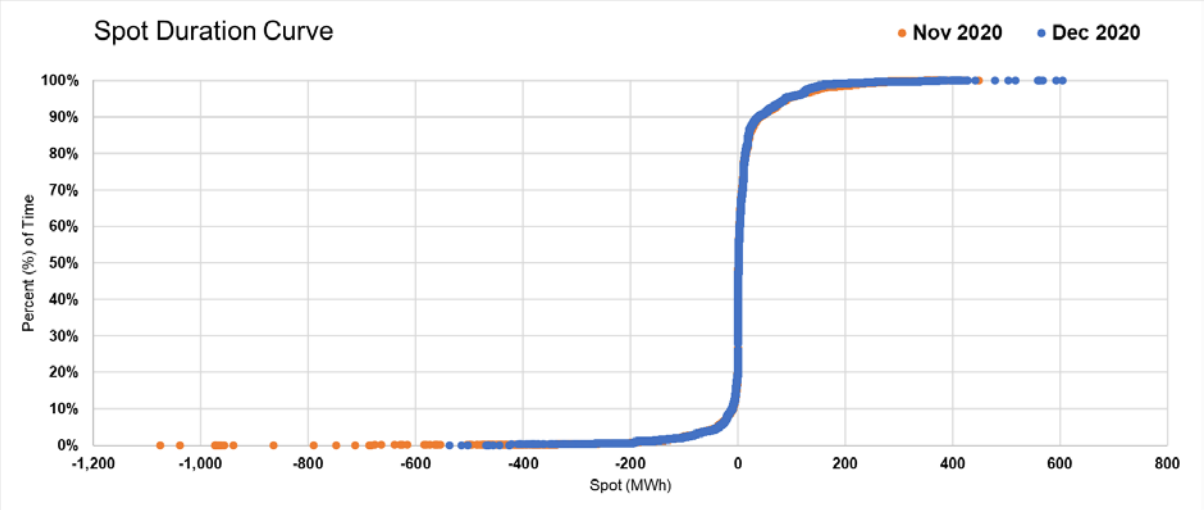


Figure 15. Spot Duration Curve, November and December 2020

- In reference to the figure below, the resulting BCQ to MQ ratio of 0 demonstrates that the entire capacity of generators was being fully sold in the market at around 48 percent of the total generator trading intervals.
- About 17 percent was on the account of partial allocation of BCQ with respect to the generator's MQ.
- Meanwhile, about 16 percent of the total generator trading intervals had a BCQ to MQ ratio of 1 which resulted from all metered quantities being allocated to serve bilateral contract obligations.
- About 9 percent was the result of BCQ being greater than MQ, reaching up to twice the MQ.
- Presence of BCQ/MQ ratios greater than 2 or 200%, consisting about 3% of the total, was the result of very small MQs (<1MWh) as compared to their BCQ, such that dividing by a very small number yields an extremely high number.
- The remaining 7 percent, however, were accounted for by generators which fully bought energy in the market to serve their bilateral contract obligations because of no generated MQ.
- The duration curves of both November and December billing months were similar in pattern.

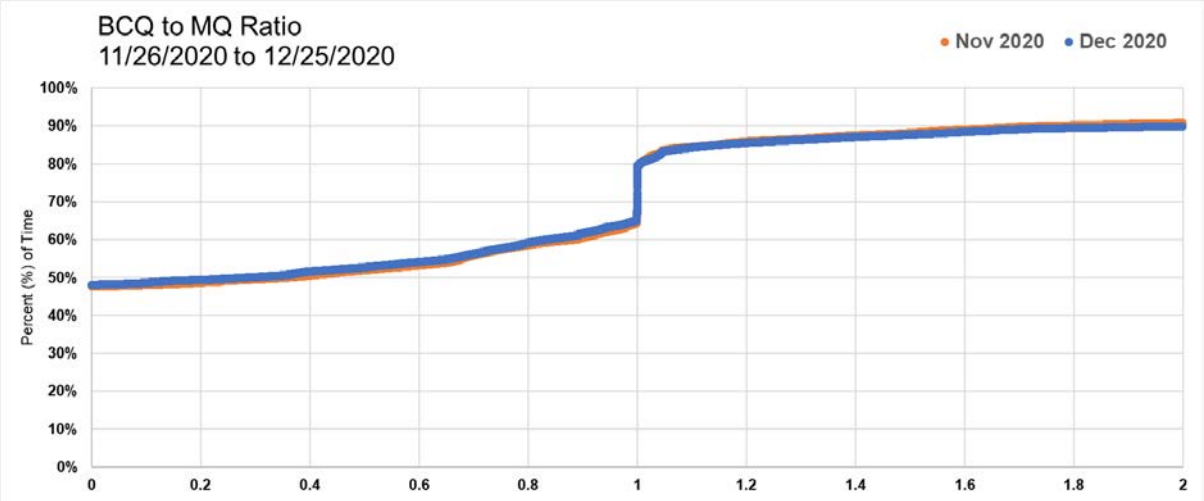
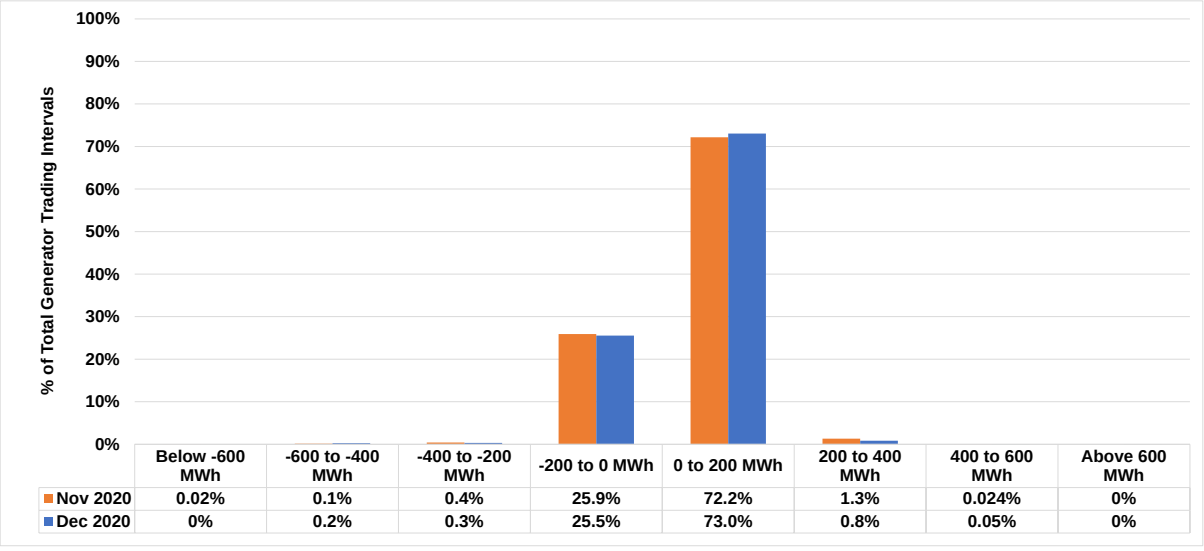


Figure 16. BCQ to MQ Ratio, November and December 2020

- Generator spot quantities for November and December billing months were much more concentrated on the -200 MWh to 200 MWh range and were almost identical in distribution except for the evident spot transactions below -600 MWh (energy bought) in November.
- About 73.9 percent of the total generator spot transactions in December was on the account of energy being sold in the market (positive MWh quantity). Last month's November billing period was observed to have the same trend wherein most of the generator spot quantities were sold in the market instead of being bought at 73.5 percent of the total.



	Below -600 MWh	-600 to -400 MWh	-400 to -200 MWh	-200 to 0 MWh	0 to 200 MWh	200 to 400 MWh	400 to 600 MWh	Above 600 MWh
Nov 2020	0.02%	0.1%	0.4%	25.9%	72.2%	1.3%	0.024%	0%
Dec 2020	0%	0.2%	0.3%	25.5%	73.0%	0.8%	0.05%	0%

Figure 17. Spot Frequency Distribution Table, November and December 2020

3.2 Pivotal[8] Plants

- Out of the 720 trading intervals in December 2020 billing month, only 61 intervals had a Residual Supply Index[9] (RSI) below the 100 percent mark from 15 intervals in November, indicating the more frequent presence of pivotal suppliers.
- The presence of pivotal suppliers was more evident as a result of higher outages this month, leading to the tightening of the supply margin.
- The market resulted in an average RSI of 111 percent indicating that supply was still generally abundant to satisfy the demand.
- Intervals with RSI below 100 percent had an LWAP of PHP4,820/MWh from last month's PHP14,950/MWh while those with RSI above 100 resulted in a slightly higher LWAP of PHP1,883/MWh from last month's PHP1,677/MWh.
- Despite more intervals with RSI above 100 this month, which in turn resulted to presence of pivotal suppliers, only three (3) power plants were pivotal during the period with all in the Luzon region.
- During the December billing month, the market resulted in an RSI ranging from 95 to 151 percent with the presence of higher RSIs during the holidays.

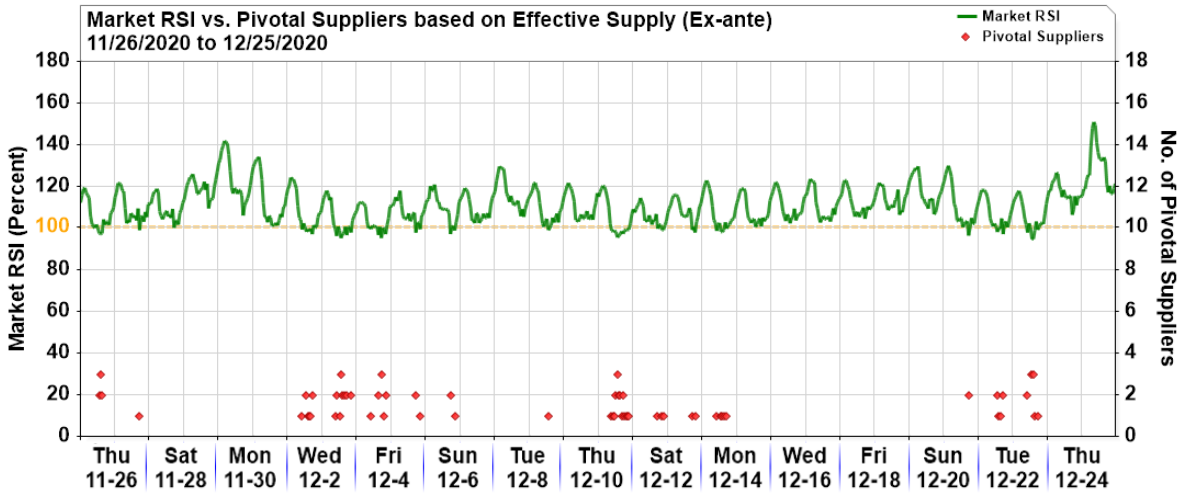


Figure 18. Market RSI vs Pivotal Suppliers, December 2020

[8] 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.

[9] 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.

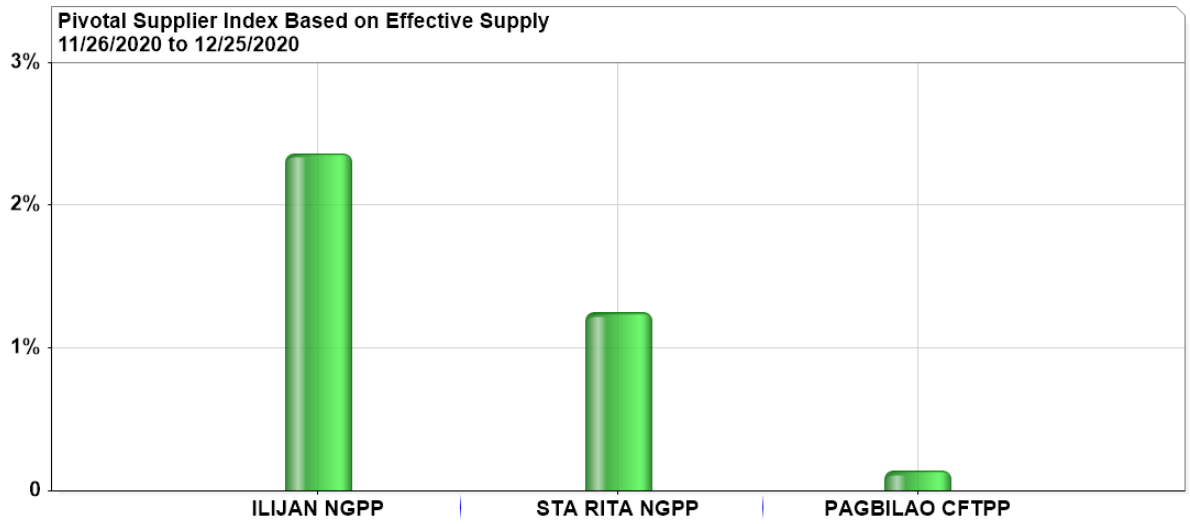


Figure 19. Top Pivotal Plants, December 2020

3.3 Total Trading Amount (TTA)[10] Share

- Power Sector Assets and Liabilities and Management (PSALM) took the top spot this month, recording the highest TTA share of sellers in the market with approximately 29.5 percent. Aboitiz Power (AP) went down to second spot, from previously ranking first, with 18.0 percent. Semirara Mining and Power Corporation (SMPC) remained third in the list with 17.7 percent. The top 3 sellers noted a cumulative 65.1 percent share during the billing month.
- Meanwhile, the top 3 highest TTA shares also had incurred the highest spot shares at around 30.0 percent for PSALM, 20.7 percent for AP, and 18.8 for SMPC.
- Global Business Power Corporation (GBPC) maintained its rank, placing fourth in terms of TTA share despite garnering the fifth in spot share in the list this month.
- San Miguel Corporation (SMC) joined the list, placing fifth based on TTA while securing the fourth spot in terms of spot share.
- Gregorio Araneta, Inc. (GAI) went up by one spot, placing sixth spot this month in terms of TTA share while also retaining the same spot in terms of spot share.
- Meanwhile, Universal Robina Corporation (URC) and SPC Power Corporation (SPC) took the seventh and eighth place in terms of TTA and spot share, respectively.
- Meanwhile, seven generator trading participants registered negative TTAs which resulted from being net buyers in the spot market.

[10] 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

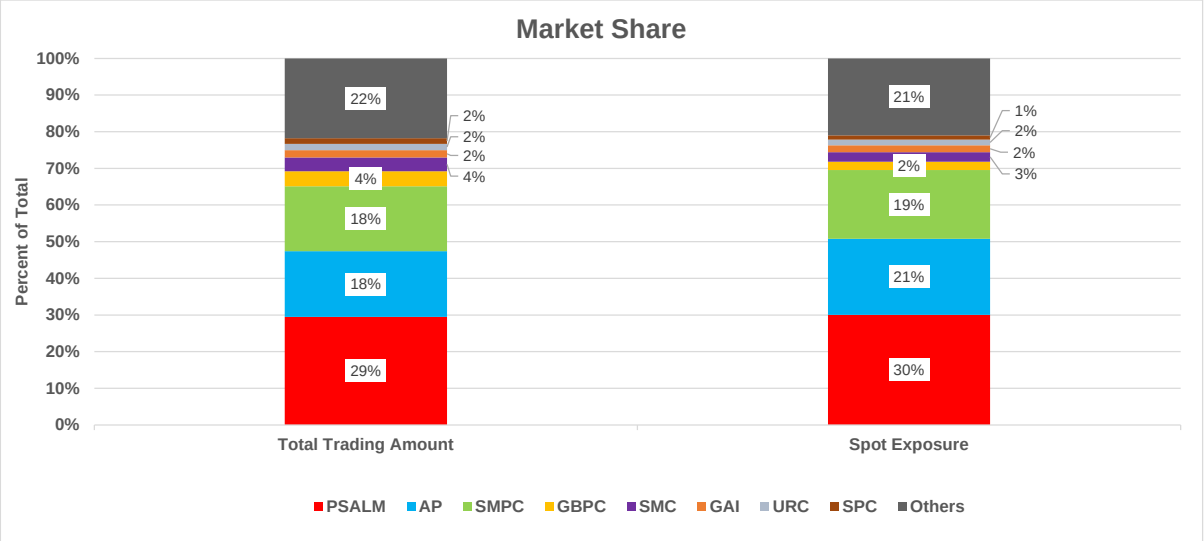


Figure 20. Total Trading Amount and Spot Exposure Share, December 2020

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/ Commerical Operation
LUZON	GEO	Makban 6	55	04/11/2013 22:44			Deactivated Shutdown	Conducted gas compressor test	Apr 1979
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	Aug 1975
VISAYAS	COAL	TPC Sangi 1	60	12/17/2019 6:05			Forced Outage	Generator differential trip	Dec 2013
LUZON	GEO	Tiwi 1	60	05/27/2020 0:02			Forced Outage	Low steam supply. Divert steam supply to unit 2	Jan 1979
VISAYAS	GEO	Upper Mahiao 3	32	07/22/2020 17:01			Maintenance Outage	Trip with Loss of Excitation. Economic Shutdown	Jul 1997
LUZON	NATG	San Gabriel	420	09/05/2020 17:14			Forced Outage	Tripped at 211MW load. System Frequency is 59.401hz.	Mar 2016
LUZON	COAL	Sual 2	647	09/16/2020 14:45			Forced Outage	Tripped due to high turbine vibration	Oct 1999
VISAYAS	GEO	Leyte 2	39.3	09/19/2020 1:58	12/02/2020 1:29	73.98	Maintenance Outage	Corrective maintenance. data gathering for the high vibration (0200H-0600H)	Jun 1983
VISAYAS	GEO	PGPP1 Unit 1	37.5	09/19/2020 23:47			Maintenance Outage	Offline due to scheduled maintenance.	Aug 1983
LUZON	GEO	Tiwi 5	57	10/31/2020 20:11			Forced Outage	On houseload operation as contingency measures for incomming Typhoon ROLLY	Jan 1979
LUZON	GEO	Tiwi 2	60	11/01/2020 3:33	12/14/2020 10:55	43.31	Forced Outage	On houseload operation as contingency measures for incomming Typhoon ROLLY	Jan 1979
LUZON	GEO	Tiwi 6	57	11/01/2020 5:58	12/03/2020 0:08	31.76	Forced Outage	On houseload operation as contingency measures for incomming Typhoon ROLLY	Jan 1979
LUZON	GEO	Makban 8	20	11/14/2020 8:24			Forced Outage	Defective cooling tower fan	Apr 1979
LUZON	HYD	Kalayaan 3	180	11/24/2020 0:01	12/06/2020 0:01	12.00	Planned Outage	Maintenance Outage	May 2004
LUZON	COAL	Masinloc 3	335	11/24/2020 20:20			Forced Outage	Excitation Trouble	Mar 2019
LUZON	COAL	Calaca 1	300	11/25/2020 0:44			Planned Outage	Maintenance Outage until 09 Jan 2021	Sep 1984
LUZON	COAL	Pagbilao 3	420	11/25/2020 15:39	11/26/2020 12:20	0.86	Forced Outage	Inspection and repair of governor valve	Jul 2017
LUZON	COAL	SLTEC 2	122.9	11/25/2020 21:05	12/13/2020 9:55	17.53	Forced Outage	Turbine bearing vibration high	Aug 2015
LUZON	NATG	Ilijan A1	190	11/26/2020 0:44	11/26/2020 19:53	0.80	Maintenance Outage	For battery replacement of the unit	Jun 2002
LUZON	COAL	Pagbilao 3	420	11/26/2020 12:24	11/26/2020 14:30	0.09	Forced Outage	Tripped at 10MW load.	Jul 2017
LUZON	COAL	GN Power 1	316	11/27/2020 16:04	11/28/2020 8:53	0.70	Forced Outage	Rotor earth fault indication.	May 2013
LUZON	HYD	Kalayaan 4	180	11/27/2020 22:01			Forced Outage	Excessive Oil Leak at Pothead conductors.	May 2004
LUZON	OIL	Limay 5	60	11/28/2020 0:01	12/02/2020 14:30	4.60	Maintenance Outage	Maintenance Outage.	Dec 1994
VISAYAS	COAL	THVI 1	169	11/28/2020 14:11	12/12/2020 15:02	14.04	Forced Outage	AUTO TRIPPED WITH INDICATION FURNACE PRESSURE HIGH HIGH	Dec 2017
VISAYAS	COAL	PALM 1	135	11/29/2020 1:16	11/29/2020 4:41	0.14	Forced Outage	Steam failure	Mar 2016
VISAYAS	GEO	Malitbog 2	72	11/30/2020 16:24	11/30/2020 17:10	0.03	Forced Outage	Under assessment	Jul 1997
VISAYAS	OIL	TPC Carmen 4	10	12/01/2020 12:24	12/01/2020 13:25	0.04	Forced Outage	ASPA - GEN. PROBLEM	Mar 1979
VISAYAS	GEO	Leyte 2	39.3	12/02/2020 1:30	12/15/2020 17:26	13.66	Planned Outage	PMS	Jun 1983
LUZON	NATG	Avion 1	50.3	12/02/2020 4:31	12/02/2020 22:01	0.73	Forced Outage	Transformer differential protection actuated and scheduled as RR.	Aug 2015
VISAYAS	OIL	TPC Carmen 4	10	12/02/2020 20:24	12/03/2020 17:12	0.87	Forced Outage	AUTO TRIPPED DUE TO OVERSPEED	Mar 1979
LUZON	COAL	Calaca 2	300	12/03/2020 9:01			Forced Outage	Generator stator earth fault	Sep 1984
LUZON	GEO	Tiwi 6	57	12/04/2020 1:59	12/04/2020 2:19	0.01	Forced Outage	False actuation of Hydrogen gas and seal oil system failure.	Jan 1979
VISAYAS	GEO	PGPP2 Unit 2	20	12/04/2020 2:31	12/04/2020 13:34	0.46	Forced Outage	Auto tripped.	Aug 1983
LUZON	COAL	Masinloc 1	315	12/04/2020 14:25	12/04/2020 23:45	0.39	Forced Outage	Emergency trip due to AVR trouble	Jun 1998
LUZON	HYD	Botocan 1	10	12/04/2020 23:33	12/05/2020 1:16	0.07	Forced Outage	Affected by the tripping of Caliraya-Fleco-Lumban 69kV Line	Jan 1947
LUZON	HYD	Kalayaan 3	180	12/07/2020 12:05	12/07/2020 21:01	0.37	Forced Outage	Spherical valve trouble	May 2004
LUZON	COAL	Pagbilao 3	420	12/11/2020 0:55			Planned Outage	Maintenance outage (GOP)	Jul 2017
VISAYAS	OIL	TPVI 5	6.8	12/11/2020 16:07	12/11/2020 20:15	0.17	Forced Outage	Heavy fuel leak	Aug 1977
LUZON	NATG	Sta. Rita 3	265.5	12/12/2020 2:57	12/14/2020 13:03	2.42	Maintenance Outage	Maintenance Outage until 14 December 2020	Oct 2001
VISAYAS	COAL	THVI 1	169	12/12/2020 20:44	12/18/2020 2:09	5.23	Forced Outage	GENERATOR WINDING TEMP HIGH	Dec 2017
LUZON	COAL	SLTEC 2	122.9	12/13/2020 9:58	12/13/2020 11:16	0.05	Forced Outage	Manually tripped due to turbine valve trouble.	Aug 2015
LUZON	COAL	SMC 2	150	12/14/2020 23:48			Planned Outage	Maintenance Outage until 04 January 2021	Mar 2017
VISAYAS	GEO	PGPP2 Unit 1	20	12/15/2020 20:36	12/15/2020 21:28	0.04	Forced Outage	Auto-tripped due to Hotwell pump stop indication	Aug 1983
LUZON	NATG	Avion 1	50.3	12/16/2020 23:40	12/17/2020 5:52	0.26	Forced Outage	Tripped due to mis-operation of transformer fire protection.	Aug 2015
LUZON	NATG	Avion 2	50.3	12/16/2020 23:40	12/17/2020 3:52	0.18	Forced Outage	Tripped due to mis-operation of transformer fire protection.	Aug 2015
VISAYAS	GEO	PGPP1 Unit 2	37.5	12/17/2020 0:12			Maintenance Outage	Offline due to planned corrective maintenance.	Aug 1983
VISAYAS	GEO	PGPP1 Unit 3	37.5	12/17/2020 0:24	12/24/2020 18:46	7.77	Maintenance Outage	Offline due to Planned Corrective Maintenance.	Aug 1983
LUZON	COAL	Sual 1	647	12/18/2020 23:34			Maintenance Outage	To rectify erratic movement of HP turbine governing valve of HPGV 1	Oct 1999
LUZON	HYD	Ambuklao 3	35	12/19/2020 1:59	12/19/2020 2:45	0.03	Forced Outage	Excitation problem.	Dec 1956
LUZON	NATG	San Lorenzo 1	264.8	12/19/2020 2:41	12/24/2020 20:05	5.72	Maintenance Outage	Maintenance outage.	Sep 2002
VISAYAS	GEO	Upper Mahiao 1	32	12/19/2020 5:09	12/19/2020 13:26	0.35	Forced Outage	under assessment	Jul 1997
VISAYAS	COAL	PEDC 1	83.7	12/19/2020 23:45	12/20/2020 16:46	0.71	Forced Outage	Due to internal trouble	Nov 2010
LUZON	COAL	SMC 3	150	12/21/2020 14:35	12/21/2020 21:21	0.28	Forced Outage	Tripped at 150MW load. System Frequency is 59.51hz.	Nov 2017
VISAYAS	GEO	Upper Mahiao 2	32	12/22/2020 4:15	12/22/2020 14:29	0.43	Forced Outage	To facilitate replacement of PLC Analog Module (M12)	Jul 1997
VISAYAS	GEO	Upper Mahiao 2	32	12/22/2020 17:43	12/22/2020 18:30	0.03	Forced Outage	Under assessment.	Jul 1997
VISAYAS	COAL	PEDC 1	83.7	12/23/2020 7:04	12/23/2020 20:52	0.57	Forced Outage	Repair feed water line leak	Nov 2010
LUZON	HYD	Ambuklao 1	35	12/24/2020 6:22	12/24/2020 7:24	0.04	Forced Outage	broken shear pin.(RECLASSIFIED FROM FORCE. OMC OUTAGE)	Dec 1956
LUZON	HYD	Ambuklao 2	35	12/24/2020 7:42	12/24/2020 8:24	0.03	Forced Outage	Broken shear pin.	Dec 1956
LUZON	GEO	Tiwi 2	60	12/24/2020 11:47	12/24/2020 14:13	0.10	Forced Outage	Transformer breaker 8-01CB08TWAopen w.o indcation	Jan 1979
LUZON	GEO	Tiwi 6	57	12/24/2020 14:08	12/24/2020 18:08	0.17	Forced Outage	DUE TO SCRUBBER LEVEL HIGH C.O MR. BONGGAY	Jan 1979
LUZON	HYD	Magat 2	97	12/24/2020 15:40	12/24/2020 17:40	0.08	Forced Outage	due tripping caused by Rotor Earth fault	Aug 1983
VISAYAS	COAL	PEDC 3	150	12/25/2020 0:35			Planned Outage	PMS	Aug 2016
LUZON	COAL	SMC 4	150	12/25/2020 23:20			Maintenance Outage	Planned Outage (GOP).	Sep 2018