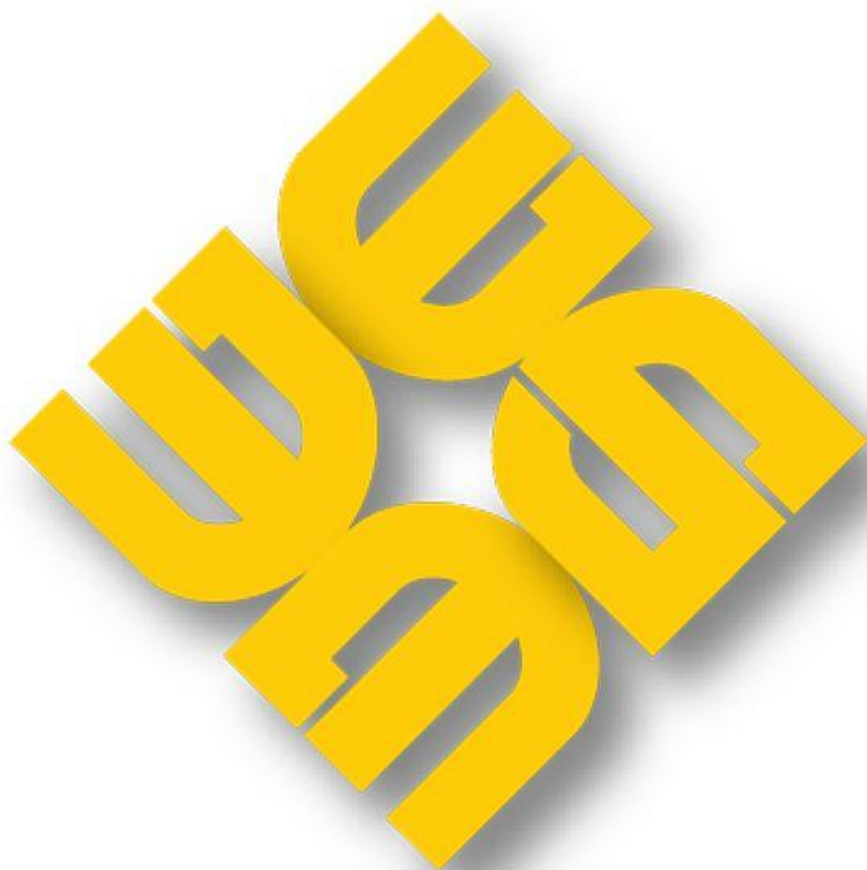


**MAG-MMAR-2020-01**

# **MONTHLY MARKET ASSESSMENT REPORT**

For the Billing Period 26 December 2019 to 25 January 2020



**PHILIPPINE  
ELECTRICITY  
MARKET  
CORPORATION**

**MARKET ASSESSMENT GROUP  
(MAG)**

## Monthly Market Assessment Report for January 2020 Billing Month

### 1. Assessment of the Market

- Majority of the market price outcomes in January 2020 was a result of normal pricing condition
- The remainder, however, required other forms of pricing methodologies
  - Less than a quarter was applied price substitution which majority was due to frequent congestion events on Sta. Rita – Batangas line 2 and Samboan-Amlan line 1
  - About 14% of Luzon prices was administered during the Taal Volcano eruption on 12 January 1900H to 17 January 0400H
  - Prices under pricing error constituted around 2%-4% of the time
- There was no secondary price cap imposition

**Table 1. Summary of Pricing Conditions (Ex-ante)**

Pricing Condition	No. of Intervals			
	January 2020			
	Luzon	% of Time	Visayas	% of Time
Normal	471	63%	553	74%
Congestion	140	19%	174	24%
Administered Price	106	14%	0	0%
Pricing Error Notice	27	4%	17	2%
Secondary Cap	0	0%	0	0%
<b>Total</b>	<b>744</b>	<b>100%</b>	<b>744</b>	<b>100%</b>

- For those intervals under normal condition, a significant downtrend in the price pattern has been observed
- Demand and supply situation have likewise improved at the beginning of the year
- Overall, the market appeared to have regained normalcy in January 2020 coming from an unusually high December prices

#### Special Feature:

1. Widening margin of nodal price spread
  - Analysis of the anatomy of WESM locational marginal prices showed that the transmission loss component has grown overtime, even exceeding the trigger factor in the PSM
2. Extremely high bilateral contract declaration
  - Observance of BCQ declaration of a small-scale solar power plant on 11 peak intervals

## 2. Market Outcome

### 2.1. Price

#### 2.1.1. Price and Supply Margin

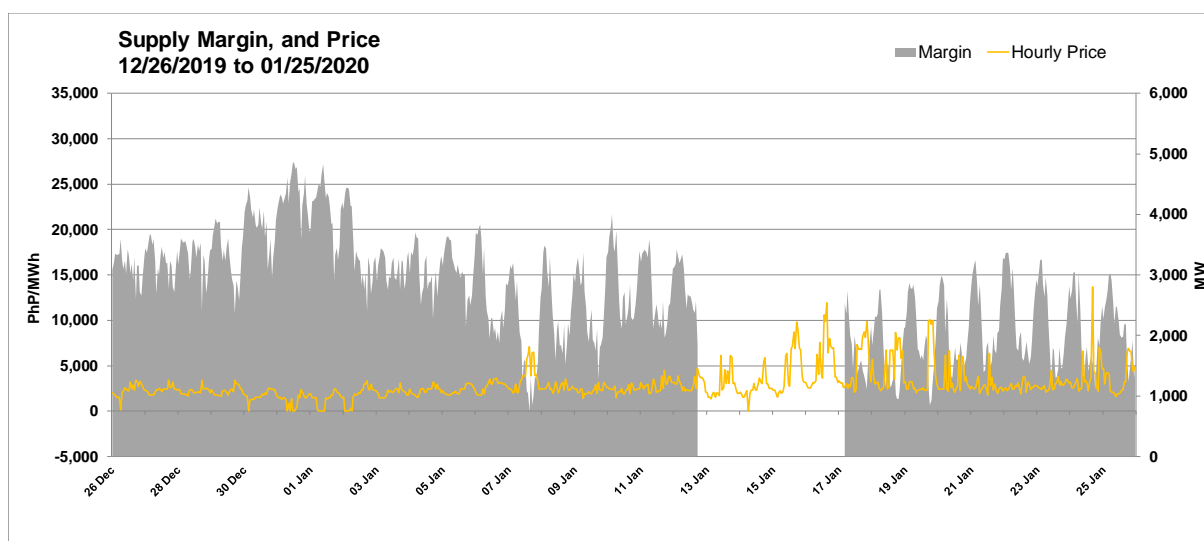
- Load weighted average price (LWAP) decreased by 51.6%
- Average peak prices decreased by 63%
- Average off-peak prices decreased by 27%
- No price spikes<sup>1</sup> recorded in January 2020 billing month
- Average supply margin widened by 51.5% from 1,818 MW to 2,754 MW
- A dip in supply margin on 07 January was the result of the outage of GN Power CFTPP unit 2 (316 MW), and QPPL CFTPP (460 MW) which resulted to an LWAP of PhP3,842/MWh
- LWAP during the holiday season (26 December to 01 January) was pegged at PhP1,977/MWh following the wide supply margin during the period while last year was at PhP1,247/MWh

**Table 2. System Load Weighted Average Price**

Region	January 2020 (in PhP/Mwh)			December 2019 (in PhP/Mwh)		
	Max	Min	Average	Max	Min	Average
Luz-Vis	13,686	-0.2	2,871	32,748	-1,955	5,937

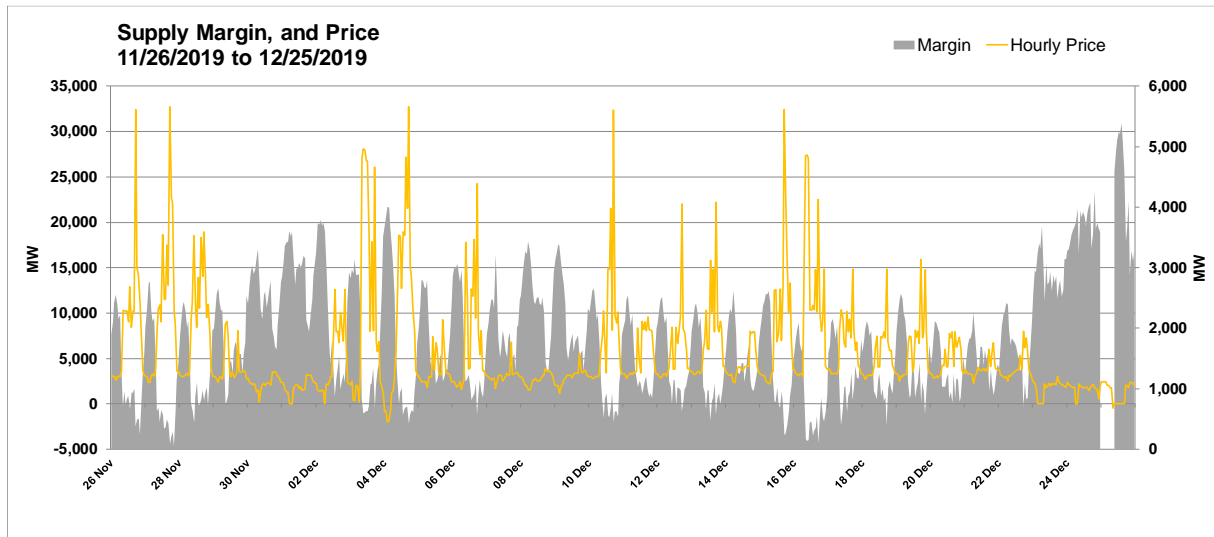
**Table 3. Supply Margin**

Region	January 2020 (in MW)			December 2019 (in MW)		
	Max	Min	Average	Max	Min	Average
Luz-Vis	4,862	740	2,754	5,382	44	1,818



**Figure 1. Supply Margin and Price, January 2020**

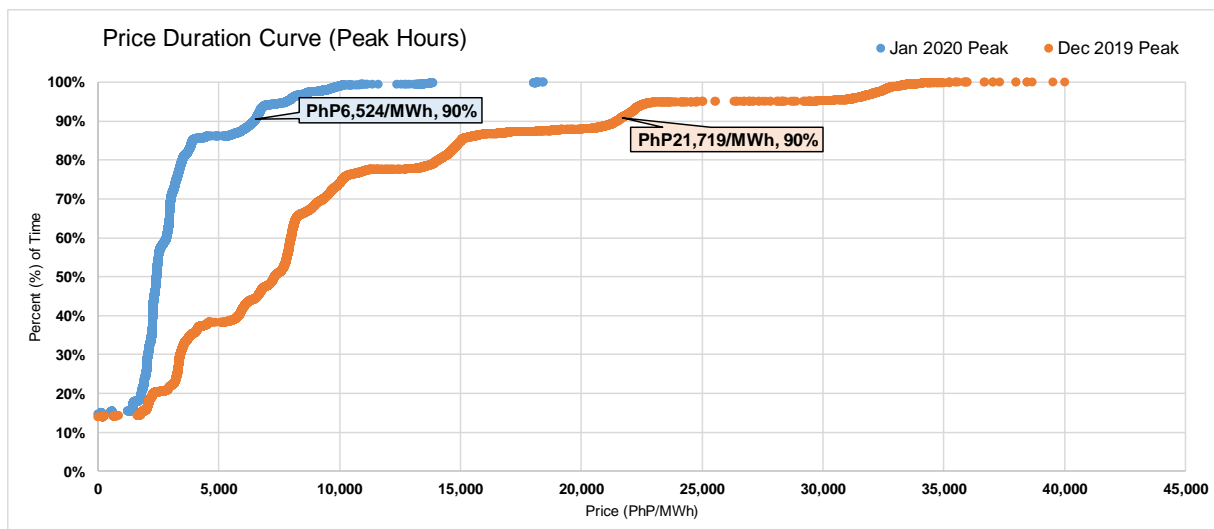
<sup>1</sup> Market price triggers on price spikes are regularly monitored with thresholds of PhP27,000/MWh for peak hours and PhP16,000/MWh for off-peak hours



**Figure 2. Supply Margin and Price, December 2019**

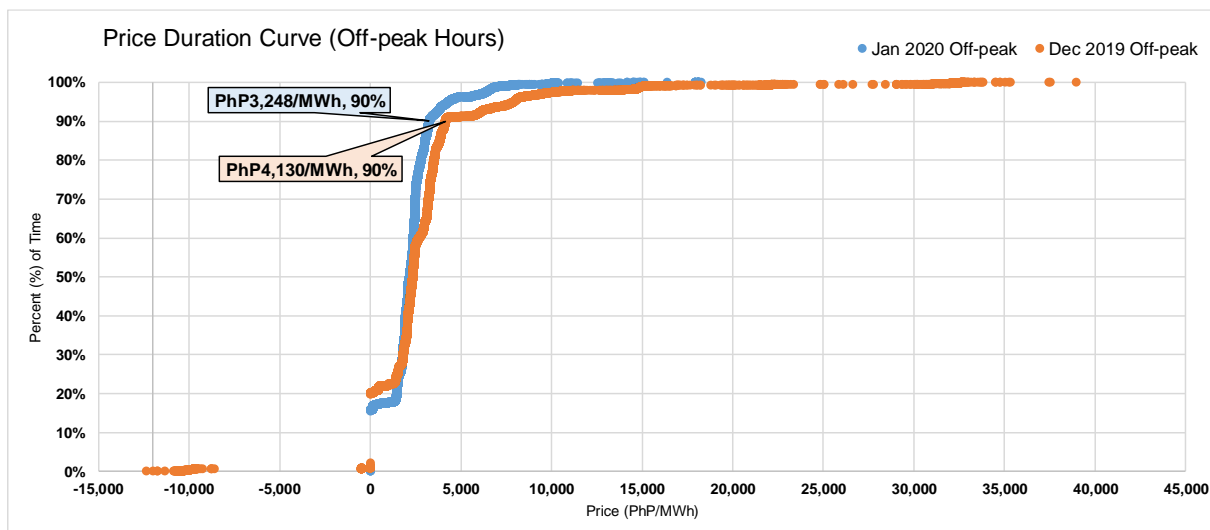
### 2.1.2. Price Duration Curve<sup>2</sup>

- Bulk of the peak and off-peak load prices are concentrated on the lower price range of PhP0/MWh to PhP5,000/MWh during the January billing month
- 136 generator peak trading intervals and 57 generator off-peak trading intervals were settled above PhP18,000/MWh and were all found to be in the zone of Bohol
- Maximum off-peak and peak load nodal price reached PhP18,240/MWh and PhP18,429/MWh, respectively



**Figure 3. Load Nodal Price Duration Curve (Peak), Jan 2020 and Dec 2019**

<sup>2</sup> Nodal prices without pricing errors and pricing substitution were considered to reflect near-to-real prices distribution in the market.



**Figure 4. Load Nodal Price Duration Curve (Off-peak), Jan 2020 and Dec 2019**

### 2.1.3. Price Separation

- The Price Trigger Factor<sup>3</sup> (PTF) was computed on intervals without pricing errors or pricing substitution and the results which exceeded the threshold of 1.2 with the corresponding market clearing price were showed on the table below
- Of the normal-priced intervals, majority of high nodal price separation events in 2019 occur on low market clearing prices (MCP) ranging from PhP0/MWh to PhP5,000/MWh and still, is evident in the January billing month
- Review of the PSM Manual may be required in order to assess the appropriateness of the current PTF as this may be low enough to have the effect of tagging supposed normal market results as pricing errors when network congestion occurs in the current market situation

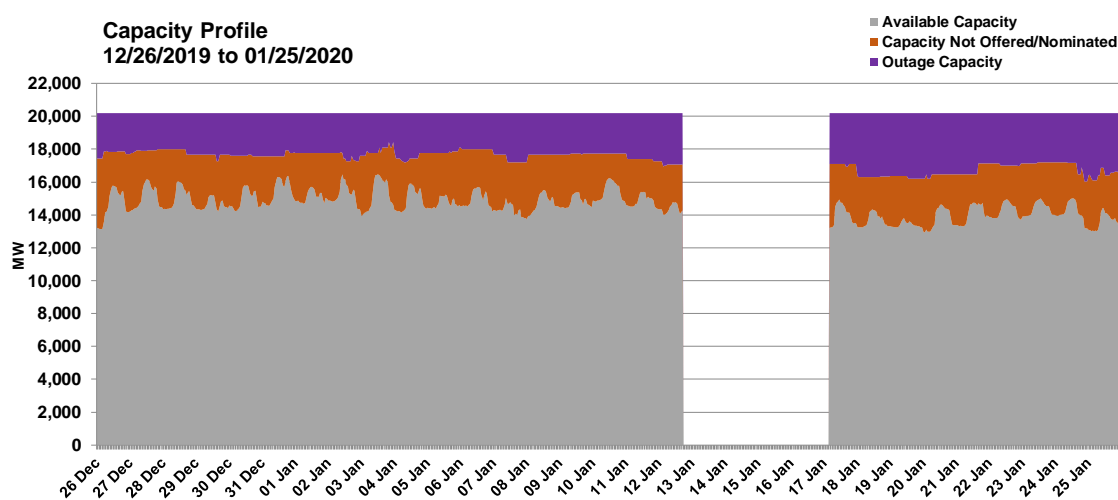
**Table 4. Frequency of Price Separation**

MCP Range (PhP/MWh)	2019 (8760 intervals)		Jan 2020 (744)	
	Freq	% of Time	Freq	% of Time
0 and below	0	0.0%	0	0.0%
0 to 5,000	1222	13.9%	87	11.7%
5,000 to 10,000	143	1.6%	9	1.2%
10,000 to 15,000	44	0.5%	0	0.0%
15,000 to 25,000	59	0.7%	0	0.0%
More than 25,000	34	0.4%	0	0.0%

<sup>3</sup> The Price Trigger Factor determines price separation in intervals with a high difference between the highest locational marginal price and highest market clearing price. Initially set at 1.2 based on ERC Decision (16 February 2009) in ERC Case No. 2008-51RC but is subject for periodic review. PTF exceeding the current threshold indicates high price separation among market nodes

## 2.2. Supply

- No additional capacity registered in the WESM
- Available capacity<sup>4</sup> constituted an average of 14,587 MW out of the total capacity of 20,182 MW or 72.3 percent
- Capacity not offered comprised an average of 2,761 MW or 13.7 percent
- Outage capacity accounted for an average of 2,833 MW or 14.0 percent
- Although the Taal Volcano eruption did not affect the total outage capacity, it adversely affected power plants near the area resulting to reduction in their scheduled generation



**Figure 5. Capacity Profile**

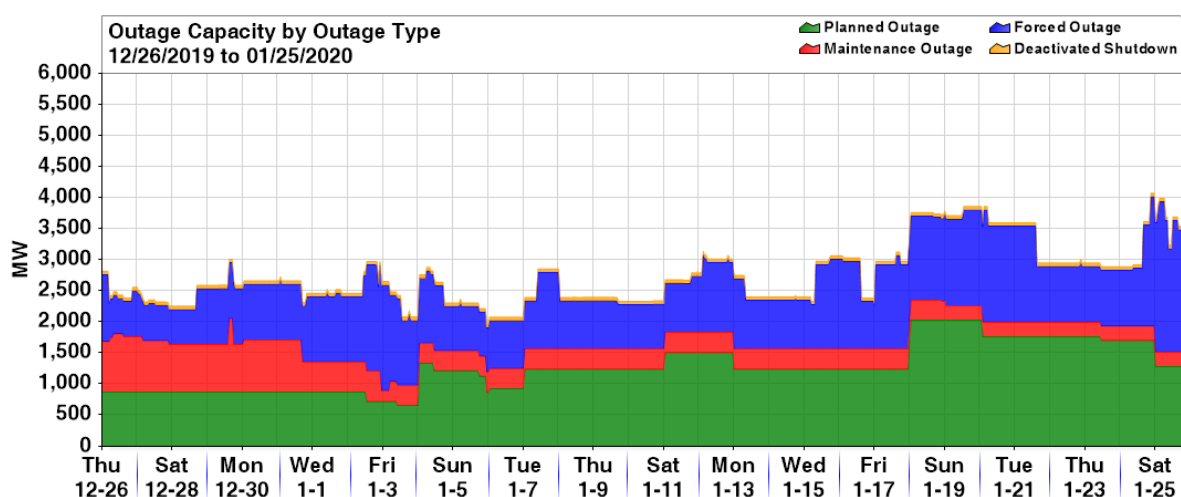
### 2.2.1. Outage Capacity

- Outage capacity significantly improved to an average of 2,822 MW this month from an average of 3,955 MW last month
- Planned outage had the largest share which comprised 46 percent of the total outages, 38 percent is composed of forced outage, and maintenance outage constituted 15 percent of the total outages
  - Notable plants on planned outage: Calaca CFTPP unit 2 (300 MW), SLTEC CFTPP unit 2 (123 MW), SMC CFTPP unit 2 (150 MW), SLPGC CFTPP unit 1 (150 MW), and San Gabriel NGPP (420 MW), QPPL CFTPP (460 MW)
  - Notable plants on forced outage: Masinloc CFTPP unit 3 (335 MW), PEDC CFTPP unit 3 (150 MW), Sual CFTPP unit 1 (647 MW), SMC CFTPP unit 2 (150 MW)
  - Notable plants on maintenance outage: Masinloc CFTPP unit 1 (315 MW), Anda CFTPP (72 MW), SMC CFTPP unit 1 (150 MW)
- Planned and forced outages were on a downtrend coming into January, effectively improving supply condition throughout the period in review
- An increase in planned outage on the latter part of the month consisted of the planned outage of QPPL CFTPP (460 MW) and Sta Rita NGPP

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

unit 4 (264 MW) on 18 January, and forced outage due to isolation of Calaca CFTPP unit 1 (300 MW), SLPGC CFTPP unit 2 (150 MW), SLTEC CFTPP units 1 and 2 (244 MW) as a result of the tripping of Calaca-Sta Rita 230 kV line 1 on 24 January

- Maintenance outage was seen to be consistent in level/trend starting 03 January with an average of 296 MW as operations of oil plants (400 MW), geothermal plants (146 MW), natural gas plant (420 MW), and coal plant (315 MW) resumed prior 03 January



**Figure 6. Outage Capacity by Outage Category**

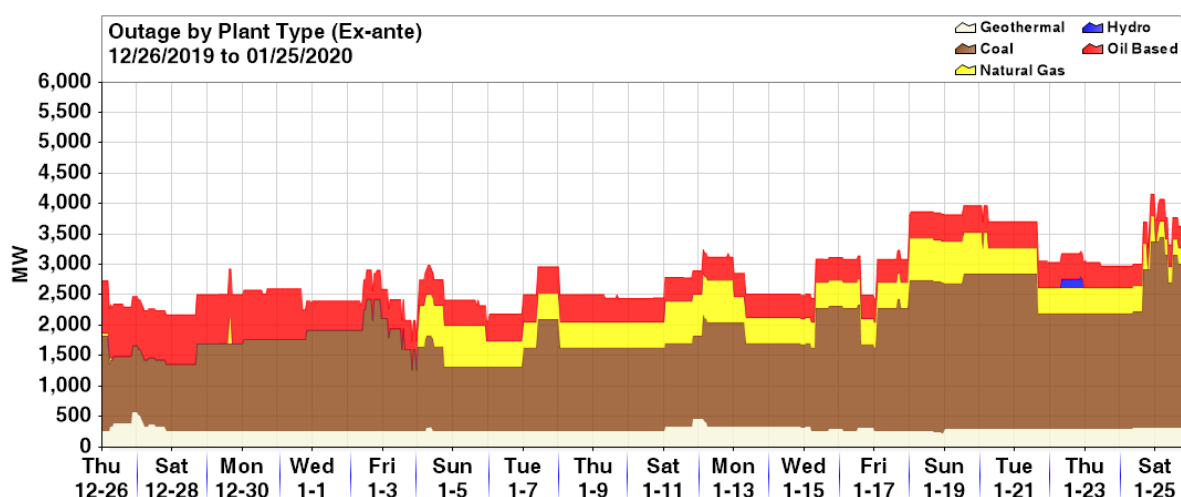
**Table 5. Outage Summary by Outage Category, Jan 2020 and Dec 2019**

Outage Category	January 2020			December 2019		
	Max	Min	Average	Max	Min	Average
Planned	2,030	663	1,267	2,588	873	2,034
Maintenance	1,187	174	407	703	50	373
Forced	2,419	563	1,041	3,331	625	1,637

- In terms of type of power plants, coal generators accounted for the highest percentage of outage at 60 percent despite a 32 percent decrease from last month's outage, followed by oil-based generators at 17 percent, natural gas and geothermal generators closely came after at 12 percent and 10 percent, respectively, while hydro plants recorded almost no outage during the month
  - Notable coal plants on outage: SLTEC CFTPP units 1 and 2 (244 MW), SMC CGTPP unit 2 (150 MW), Masinloc CFTPP unit 3 (335 MW), Anda CFTPP (72 MW), Sual CFTPP unit 1 (647 MW), SLPGC CFTPP unit 2 (150 MW), and SBPL CFTPP (455 MW)
  - Notable natural gas plants on outage: Avion NGPP unit 2 (50.3 MW), and San Gabriel NGPP (420 MW)
  - Notable geothermal plants on outage: Leyte NGPP – Mahanagdong B1 and Malitbog 1 (77 MW), and Makban GPP unit D (40 MW)
  - Notable oil-based plants on outage: Power Barge 102 units 1 and 4 (12 MW), Limay CCGT unit 2 (60 MW), Limay CCGT unit 4 (90

MW), SLPGC GTPP units 1 and 2 (50 MW), Malaya TPP unit 2 (350 MW)

- Natural gas plants outage, on the other hand, was mainly attributed to the planned outage of San Gabriel plant from 04 to 24 January
- Meanwhile, oil-based plants were consistent in outage, having almost the same as that of last month
- Geothermal plants recorded a 35 percent decline in outage coming into January



**Figure 7. Outage Capacity by Plant Type**

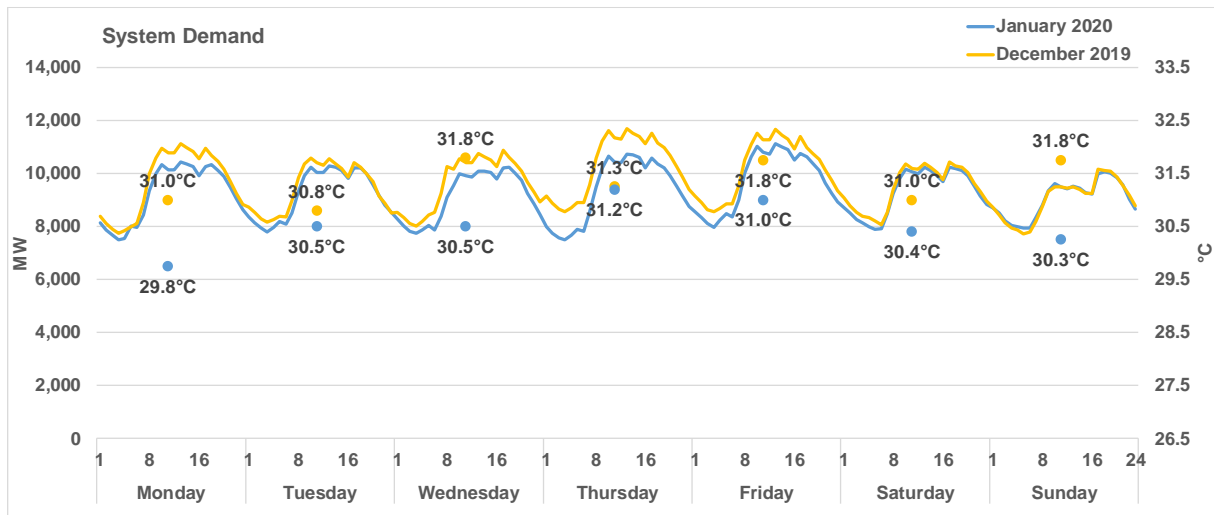
**Table 6. Outage Summary by Plant Type, Jan 2020 and Dec 2019**

Plant Type	January 2020			December 2019		
	Max	Min	Average	Max	Min	Average
Coal	3,136	1,005	1,686	3,448	1,098	2,560
Natural Gas	686	0	346	1,670	50	226
Geothermal	570	231	296	888	258	473
Hydro	183	0	3	388	0	179
Oil-based	862	330	492	831	456	516

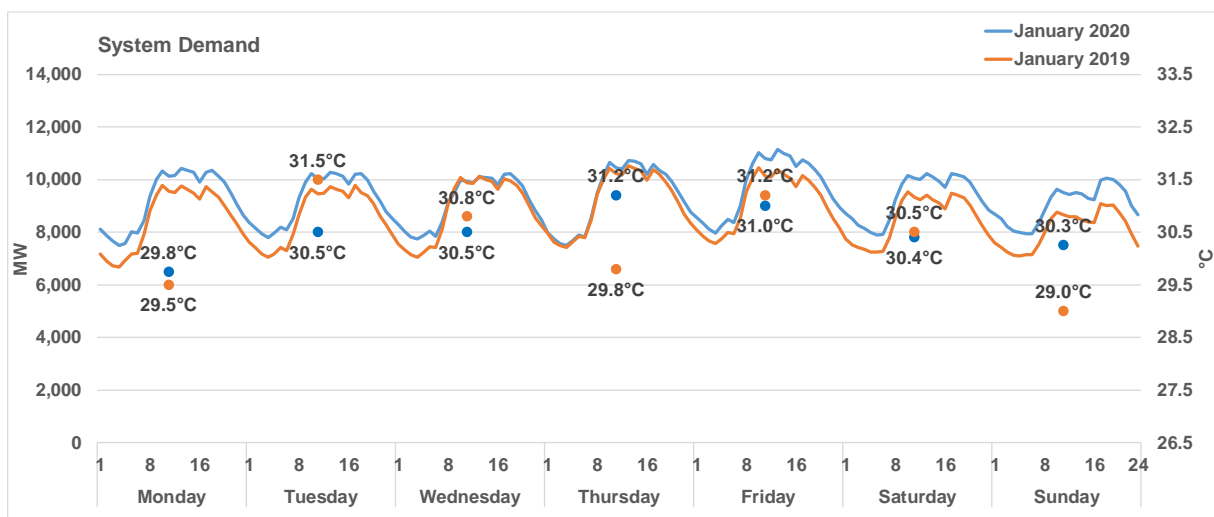
### 2.3. Demand

- On a monthly comparison, both peak and off-peak demand decreased by 4.9 percent and 2.8 percent on average, respectively, due to the onset of the holiday season and observance of cooler temperatures
- It was the opposite trend for the year-on-year where both peak and off-peak demand went up by 4.3 percent and 9.5 percent on average, respectively, as a result of higher economic activities from consumers
- Maximum system demand in January reached 11,692 MW for peak hours and 10,523 MW for off-peak hours
- Minimum system demand in January reached 6,942 MW for peak hours and 6,543 MW for off-peak hours





**Figure 8. Average Hourly System Demand, Jan 2020 and Dec 2019**



**Figure 9. Average Hourly System Demand, Jan 2020 and Jan 2019**

### 3. Spot Transactions

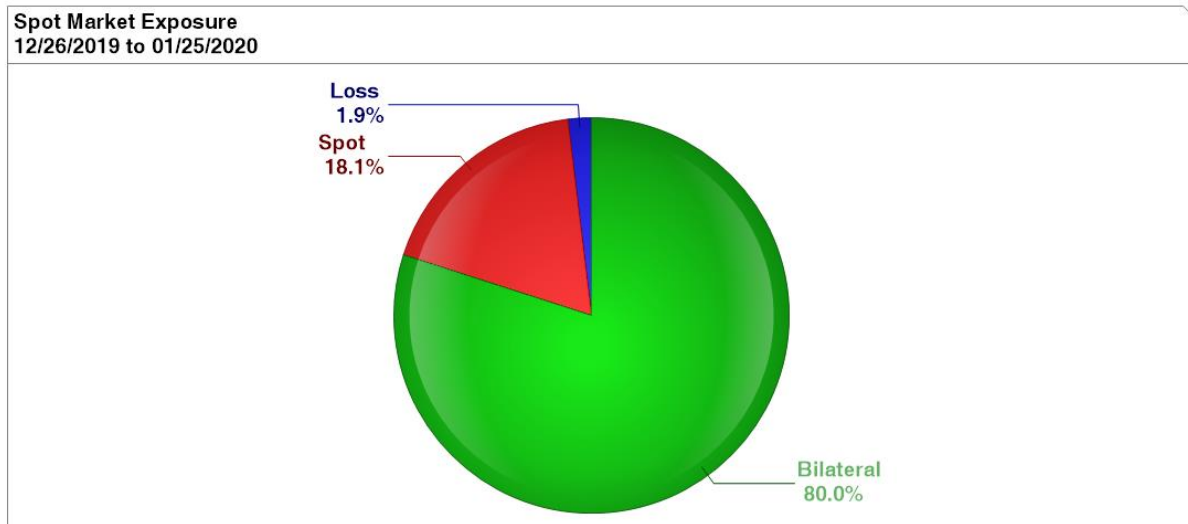
#### 3.1. Spot Exposure

- Spot quantities in January stood at 18.1 percent of the total metered quantities, 34 percent higher than last month's 13.5 percent spot exposure
- Spot exposure in off-peak hours averaged at 23 percent while 18 percent in peak hours
- Based on the spot duration curve<sup>5</sup>, 90 percent of the time, spot quantities fell below 48 MWh
- Notable in December 2019 was the extremely high BCQ declaration of a small capacity solar plant around 2,000 MWh for 11 peak intervals on 16 December as shown in the duration curve below. This was noted to be

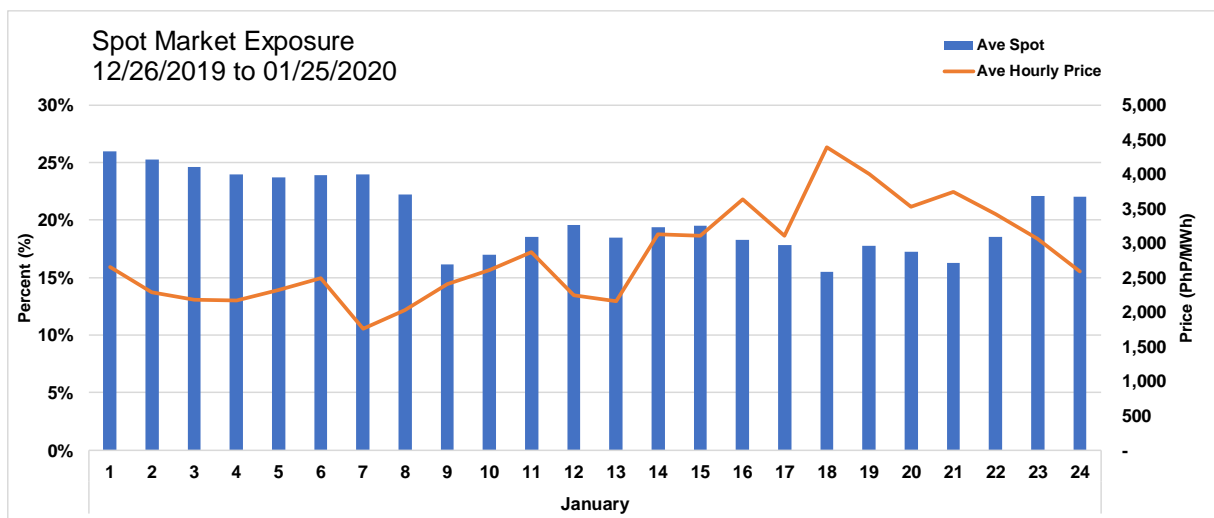
<sup>5</sup> The spot duration curve utilizes data on a per generator trading interval, meaning, all the data consisted of spot quantities of every generator per interval for the period considered

unusual for the concerned solar facility as this greatly exceeded its usual BCQ declaration. On the average, a 278,765 percent deviation in the BCQ from the metered quantity was observed during these intervals.

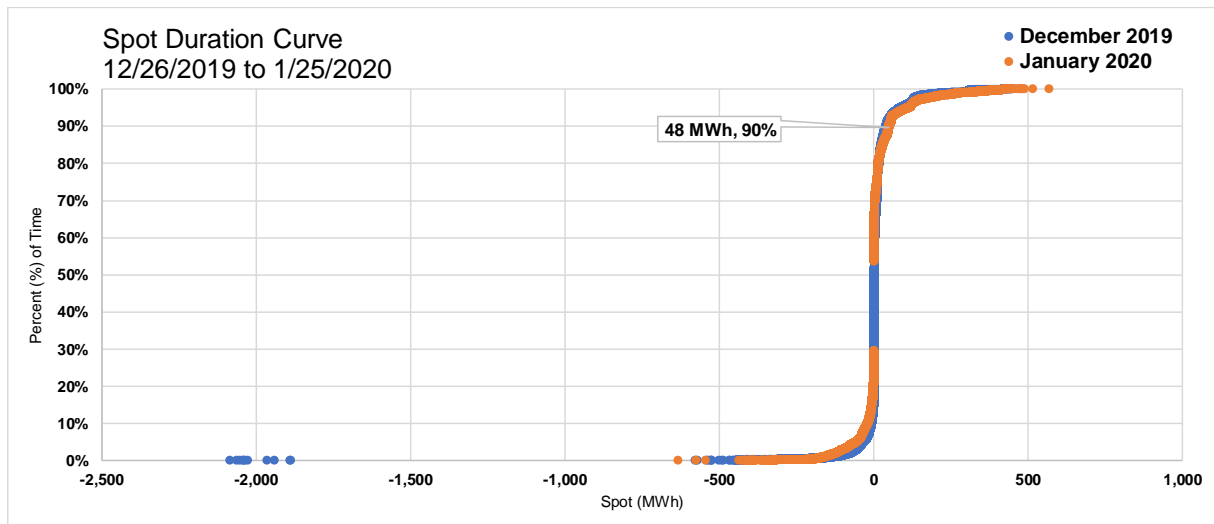
- Based on IEMOP's analysis of the incident, the plant operator was not able to convert the value from kWh to MWh. Notwithstanding, the payables were offset with the receivable of the contracted party.



**Figure 10. Spot Market Exposure**



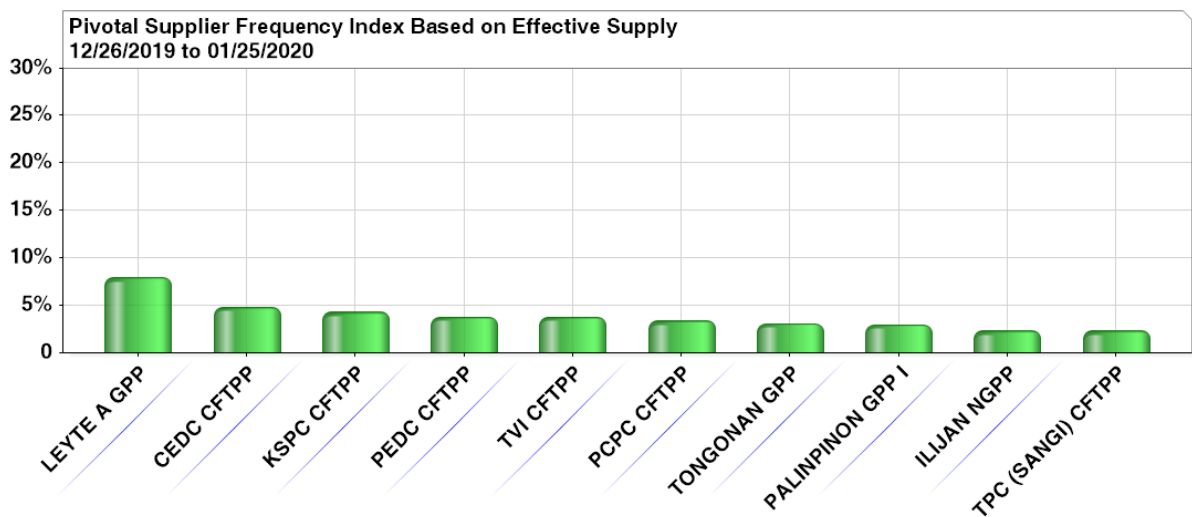
**Figure 11. Hourly Spot Market Exposure**



**Figure 12. Spot Duration Curve**

### 3.2. Pivotal<sup>6</sup> Plants

- Generators in Visayas were observed to be the most frequent pivotal suppliers as the market intervention in Luzon caused the RSI computation inapplicable for the region
- Of the 26 pivotal plants during the January billing month, 9 out of the top 10 most frequent pivotal suppliers are in Visayas (1<sup>st</sup> to 8<sup>th</sup>, 10<sup>th</sup>)



**Figure 13. Top Pivotal Plants**

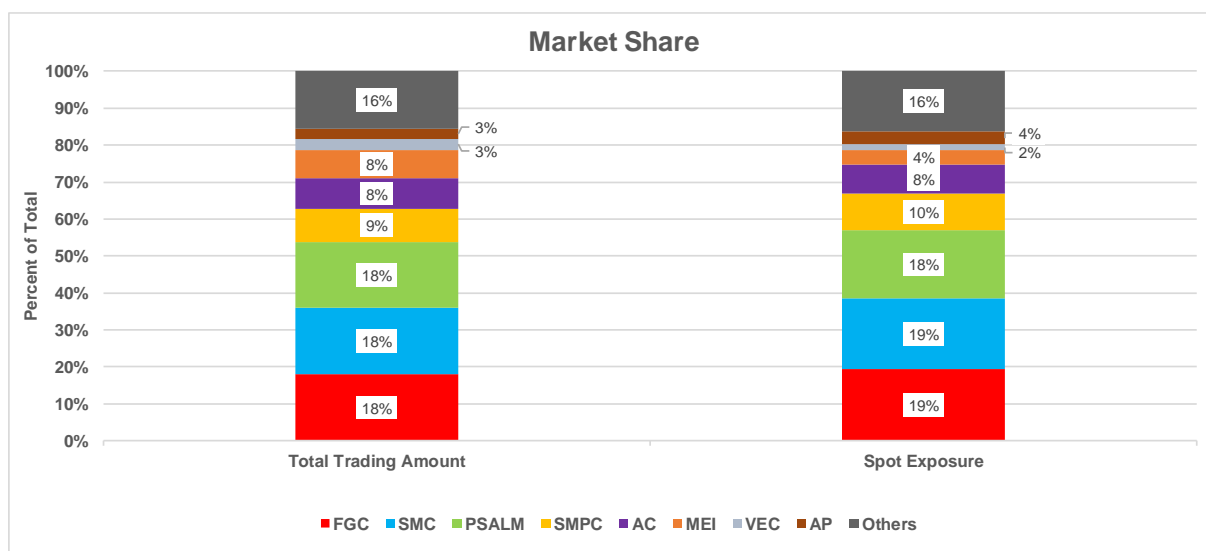
<sup>6</sup> The Pivotal Supply Index (PSI) measures how critical a generator is in meeting the total demand at a time. It is a binary variable (1 for pivotal and 0 for not pivotal) which measures the frequency that a generating is pivotal for a period.

**Table 7. Pivotal Supplier Frequency Index, Jan 2020**

Top Pivotal Suppliers				
Rank	Plant	Major Participant Group	Frequency	% of Time
1	LEYTE A GPP	PSALM	59	7.9%
2	CEDC CFTPP	GBPC	36	4.8%
3	KSPC CFTPP	SPC	32	4.3%
4	PEDC CFTPP	GBPC	28	3.8%
5	TVI CFTPP	AP	28	3.8%
6	PCPC CFTPP	PCPC	25	3.4%
7	TONGONAN GPP	FGC	23	3.1%
8	PALINPINON GPP I	FGC	22	3.0%
9	TPC (SANGI) CFTPP	GBPC	17	2.3%
10	ILIJAN NGPP	SMC	17	2.3%

### 3.3. Total Trading Amount<sup>7</sup> (TTA) Share

- First Gen Corporation (FGC), San Miguel Corporation (SMC), and Power Sector Assets and Liabilities Management Corporation (PSALM) held the highest TTA share with approximately 18 percent each or a cumulative 54 percent of the entire TTA during the billing month
- Likewise, they had the highest spot exposure share



**Figure 14. Total Trading Amount and Spot Exposure Share, Jan 2020**

<sup>7</sup> 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

## 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
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
VISAYAS	OIL	PB102 Unit 1	6	04/28/2019 18:16	01/08/2020 16:39	254.93	Forced Outage	Internal fault	Apr 1981
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	NATG	Avion 2	50.3	08/16/2019 0:01	12/26/2019 10:15	132.43	Forced Outage	Gas turbine trouble	Aug 2015
LUZON	COAL	Calaca 2	300	10/17/2019 23:49			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
LUZON	OIL	Limay 2	60	11/09/2019 0:05	01/03/2020 9:20	55.39	Planned Outage	Planned Outage	May 1993
LUZON	COAL	SLTEC 2	122.9	11/18/2019 0:01	01/04/2020 10:29	47.44	Planned Outage	Planned Outage until 22 December 2019 (GOP).	Aug 2015
LUZON	OIL	Limay 4	90	11/18/2019 0:01	01/05/2020 17:48	48.74	Planned Outage	Maintenance Outage until 18 December 2019	May 1993
VISAYAS	GEO	Mahanagdong B1	5	11/19/2019 10:41	12/27/2019 19:35	38.37	Forced Outage	Due to condenser level high.	Jul 1997
VISAYAS	GEO	Upper Mahiao 3	32	12/05/2019 0:07			Forced Outage	Emergency shutdown requested by customer to facilitate rotor transfer to Unit 2	Jul 1997
LUZON	COAL	SMC 2	150	12/06/2019 2:15	01/02/2020 12:13	27.42	Planned Outage	Planned Outage until 20 December 2019.(GOP)	Mar 2017
LUZON	GEO	Makban 7	20	12/07/2019 21:33	01/18/2020 16:52	41.80	Forced Outage	High Turbine Bearing vibration.	Apr 1979
LUZON	GEO	Makban 8	20	12/10/2019 18:10	01/18/2020 21:39	39.15	Maintenance Outage	Maintenance outage.	Apr 1979
LUZON	OIL	SLPGC 3	25	12/11/2019 23:00	12/26/2019 14:00	14.63	Maintenance Outage	Maintenance outage until December 27 2019	Mar 2017
LUZON	OIL	SLPGC 4	25	12/11/2019 23:53	12/26/2019 14:01	14.59	Maintenance Outage	Maintenance outage until December 27 2019	Mar 2017
LUZON	OIL	Malaya 2	350	12/13/2019 0:01	12/31/2019 16:01	18.67	Maintenance Outage	Maintenance outage until 31 December 2019	Apr 1979
LUZON	COAL	SLPGC 1	150	12/13/2019 0:04			Planned Outage	Maintenance Outage	Jan 2015
VISAYAS	OIL	PB102 Unit 4	6	12/16/2019 17:51	01/02/2020 19:01	17.05	Forced Outage	High exhaust gas temperature	Apr 1981
VISAYAS	COAL	TPC Sangi 1	60	12/17/2019 6:05			Forced Outage	Generator differential trip	Dec 2013
LUZON	COAL	Masinloc 1	315	12/19/2019 23:53	01/02/2020 22:01	13.92	Maintenance Outage	Maintenance outage until December 24 2019	Jun 1998
VISAYAS	COAL	CEDC 2	82	12/21/2019 8:53			Maintenance Outage	SAF motor replacement	Jun 2010
VISAYAS	GEO	Mahanagdong A2	5	12/25/2019 10:31			Forced Outage	Under assessment	Jul 1997
LUZON	COAL	SBPL	455	12/25/2019 19:36	12/26/2019 4:33	0.37	Forced Outage	Manually tripped due to Air Heater Trouble	Apr 2019
LUZON	GEO	Makban 4	63	12/26/2019 5:23	12/27/2019 21:05	1.65	Maintenance Outage	Maintenance on Unit 4 and 5 main transformers and Plant B Switchyard	Apr 1979
LUZON	GEO	Makban 3	63	12/26/2019 7:21	12/27/2019 3:12	0.83	Maintenance Outage	Maintenance on Unit 4 and 5 main transformers and Plant B Switchyard	Apr 1979
LUZON	GEO	Tiwi 2	59	12/26/2019 20:34	12/27/2019 4:44	0.34	Forced Outage	On Island grid operation.	Jan 1979
LUZON	GEO	Tiwi 5	57	12/26/2019 20:34	12/27/2019 0:13	0.15	Forced Outage	Tripped at 45MW load.	Jan 1979
LUZON	GEO	Tiwi 6	57	12/26/2019 20:34	12/27/2019 2:58	0.27	Forced Outage	On House load operation	Jan 1979
VISAYAS	GEO	Upper Mahiao 2	32	12/27/2019 7:13	12/27/2019 12:16	0.21	Forced Outage	Reverse power protection activated	Jul 1997
LUZON	COAL	Masinloc 3	335	12/28/2019 16:02	01/03/2020 19:23	6.14	Forced Outage	Tripped at 125MW load. On commissioning Test.	Mar 2019
LUZON	NATG	San Gabriel	420	12/29/2019 14:27	12/29/2019 17:35	0.13	Maintenance Outage	To facilitate changeover of gas supply.	Mar 2016
LUZON	COAL	ANDA 1	72	12/29/2019 17:17	12/29/2019 18:14	0.04	Forced Outage	Tripped from 45.84MW load due to high turbine vibration.	Apr 2015
LUZON	COAL	ANDA 1	72	12/30/2019 0:06	01/19/2020 0:53	20.03	Maintenance Outage	Maintenance Outage until 19 January 2020.	Apr 2015
LUZON	GEO	Makban 3	63	12/31/2019 1:36	12/31/2019 2:47	0.05	Forced Outage	Tripped at 41 MW load	Apr 1979
VISAYAS	COAL	PEDC 3	150	12/31/2019 19:35			Forced Outage	Coal feeder A and B problem. Scheduled for APMS at 2001H	Aug 2016
LUZON	GEO	Bacman 2	60	01/01/2020 9:41	01/01/2020 10:38	0.04	Forced Outage	Malfunctioned of seal oil system	Sep 1993
LUZON	COAL	Masinloc 2	344	01/02/2020 10:24	01/02/2020 20:59	0.44	Forced Outage	Tripped at 160MW load. System frequency is 59.55Hz.	Jun 1998
LUZON	COAL	GN Power 1	316	01/02/2020 12:07	01/03/2020 4:22	0.68	Forced Outage	Excessive Oil Leak at Governor Valve	May 2013
LUZON	COAL	Masinloc 2	344	01/02/2020 21:29	01/03/2020 7:07	0.40	Forced Outage	Turbine protection actuated.	Jun 1998
LUZON	COAL	SMC 1	150	01/03/2020 4:27			Maintenance Outage	Maintenance Outage until 22 January 2020.	Nov 2016
LUZON	COAL	Masinloc 2	344	01/03/2020 7:22	01/03/2020 12:15	0.20	Forced Outage	Turbine protection actuated	Jun 1998
LUZON	HYD	Magat 2	97	01/03/2020 17:13	01/03/2020 18:07	0.04	Forced Outage	Shaft seal high temperature.	Aug 1983
LUZON	COAL	Masinloc 3	335	01/03/2020 19:49	01/04/2020 17:08	0.89	Forced Outage	Rotor earth fault tripped.	Mar 2019
LUZON	NATG	Sta. Rita 1	257.3	01/04/2020 0:29	01/05/2020 22:28	1.92	Planned Outage	Planned Outage until 07 January 2020.	Jun 2000
LUZON	NATG	San Gabriel	420	01/04/2020 0:48	01/24/2020 23:13	20.93	Planned Outage	Planned Outage until 18 January 2020.	Mar 2016
LUZON	GEO	Bacman 2	60	01/04/2020 5:13	01/04/2020 11:28	0.26	Forced Outage	Tripped at 60MW load.	Sep 1993
VISAYAS	GEO	Mahanagdong B1	5	01/05/2020 14:38	01/06/2020 21:02	1.27	Forced Outage	Under assessment.	Jul 1997
LUZON	OIL	Limay 1	60	01/06/2020 0:01			Planned Outage	Maintenance Outage until 20 February 2020	May 1993
LUZON	OIL	Limay 2	60	01/06/2020 0:05	01/09/2020 16:21	3.68	Forced Outage	Beraing 3 high vibration	May 1993
VISAYAS	GEO	Mahanagdong B1	5	01/06/2020 21:02			Forced Outage	AVR power fail indication.	Jul 1997
LUZON	COAL	GN Power 2	316	01/07/2020 0:12			Planned Outage	Planned Outage until 23 February 2020	May 2013
LUZON	COAL	QPPL	460	01/07/2020 9:01	01/08/2020 0:22	0.64	Forced Outage	High Pressure Heater 6 tube leak	May 2000
VISAYAS	OIL	PB102 Unit 1	6	01/08/2020 16:39	01/09/2020 15:00	0.93	Forced Outage	lube oil low pressure	Apr 1981
VISAYAS	OIL	Bohol 2	4	01/08/2020 16:59	01/15/2020 13:56	6.87	Forced Outage	Fuel oil leak on cylinder 4	Sep 1978
VISAYAS	OIL	TPC Carmen 4	10	01/10/2020 16:20	01/11/2020 13:40	0.89	Forced Outage	EMERGENCY CUT-OUT DUE TO LUBE OIL LINE LEAK PROBLEM	Mar 1979
LUZON	NATG	Sta. Rita 3	265.5	01/11/2020 0:22	01/12/2020 23:50	1.98	Planned Outage	Maintenance Outage until 12 January 2020	Oct 2001
VISAYAS	GEO	Malitbog 1	72	01/11/2020 0:31	01/15/2020 4:48	4.18	Forced Outage	To facilitate replacement of Main Stop Valve.	Jul 1997
LUZON	GEO	Bacman 1	60	01/11/2020 18:57	01/12/2020 5:35	0.44	Forced Outage	Transformer differential	Sep 1993
LUZON	GEO	Bacman 2	60	01/11/2020 18:57	01/12/2020 3:20	0.35	Forced Outage	Transformer differential	Sep 1993
VISAYAS	GEO	PGPP2 Unit 3	20	01/11/2020 22:11	01/11/2020 23:35	0.06	Forced Outage	Auto-tripped. ongoing investigation on cause of tripping.	Aug 1983
LUZON	COAL	Masinloc 2	344	01/12/2020 2:25	01/13/2020 7:39	1.22	Forced Outage	DCS failure.	Jun 1998
VISAYAS	GEO	PGPP2 Unit 2	20	01/14/2020 17:35	01/14/2020 18:13	0.03	Forced Outage	Auto-tripped. Cause of tripping under investigation.	Aug 1983
LUZON	COAL	Sual 1	647	01/15/2020 7:20	01/16/2020 14:57	1.32	Forced Outage	Emergency tripped due to Boiler tube leak.Lowest frequency is 58.856Hz	Oct 1999
VISAYAS	GEO	Upper Mahiao 2	32	01/15/2020 16:48	01/16/2020 2:56	0.42	Forced Outage	Under assessment	Jul 1997
LUZON	GEO	Tiwi 5	57	01/15/2020 17:02	01/16/2020 23:31	1.27	Forced Outage	Emergency shutdown due to steam leak.	Jan 1979
LUZON	COAL	Sual 1	647	01/17/2020 0:57	01/21/2020 14:12	4.55	Forced Outage	Emergency shutdown due to condenser tube leak	Oct 1999
LUZON	COAL	SMC 2	150	01/17/2020 14:57	01/17/2020 17:35	0.11	Forced Outage	Failure of main oil pump	Mar 2017
LUZON	COAL	QPPL	460	01/17/2020 23:58			Planned Outage	Planned outage as per GOP	May 2000
LUZON	OIL	Limay 5	60	01/18/2020 0:07	01/23/2020 10:45	5.44	Planned Outage	Planned outage as per GOP.	Dec 1994
LUZON	NATG	Sta. Rita 4	264	01/18/2020 0:19	01/20/2020 1:56	2.07	Planned Outage	Planned outage.	Oct 2001
LUZON	GEO	Makban 1	63	01/18/2020 23:08			Forced Outage	Low Steam Supply.	Apr 1979
LUZON	COAL	SMC 2	150	01/19/2020 12:57	01/25/2020 15:51	6.12	Forced Outage	Boiler Tube Leak.	Mar 2017
LUZON	NATG	Sta. Rita 4	264	01/20/2020 2:26	01/20/2020 5:09	0.11	Forced Outage	Tripped with 60MW load.	Oct 2001
LUZON	HYD	Bakun 1	38	01/22/2020 20:24	01/22/2020 21:43	0.05	Forced Outage	Tripped due to governor accumulator oil pressure low.	Feb 2001
VISAYAS	GEO	PGPP2 Unit 3	20	01/22/2020 20:44	01/22/2020 21:45	0.04	Forced Outage	Auto-tripped due to condenser vacuum very low.	Aug 1983
VISAYAS	GEO	Upper Mahiao 1	32	01/24/2020 8:45			Forced Outage	Emergency shutdown.	Jul 1997
LUZON	COAL	Calaca 1	300	01/24/2020 15:29	01/25/2020 6:28	0.62	Forced Outage	Isolated due to tripping of Calaca-Sta Rita 230kV L1	Sep 1984
LUZON	COAL	SLPGC 2	150	01/24/2020 15:29			Forced Outage	Isolated due to tripping of Calaca-Sta Rita 230kV L1	Jan 2015
LUZON	COAL	SLTEC 1	121	01/24/2020 15:29			Forced Outage	Isolated due to tripping of Calaca-Sta Rita 230kV L1	Sep 2014
LUZON	COAL	SLTEC 2	122.9	01/24/2020 15:29			Forced Outage	Isolated due to tripping of Calaca-Sta Rita 230kV L1	Aug 2015
LUZON	COAL	SBPL	455	01/24/2020 20:27	01/25/2020 8:46	0.51	Forced Outage	Emergency tripped due to air heater trouble.	Apr 2019
LUZON	NATG	Sta. Rita 1	257.3	01/25/2020 1:43			Forced Outage	Initiated by First Gas in coordination with SO to maintain N-1 compliancne for Batang	Jun 2000
VISAYAS	COAL	CEDC 3	82	01/25/2020 2:02	01/25/2020 18:15	0.68	Forced Outage	AFFECTED BY THE TRIPPING OF 138KV MAGDUGO-CEDC TL	Jan 2011
LUZON	COAL	SBPL	455	01/25/2020 11:26			Forced Outage	Air heater problem	Apr 2019
LUZON	NATG	San Gabriel	420	01/25/2020 20:33	01/25/2020 23:20	0.12	Forced Outage	Tripped with 410MW load.	Mar 2016