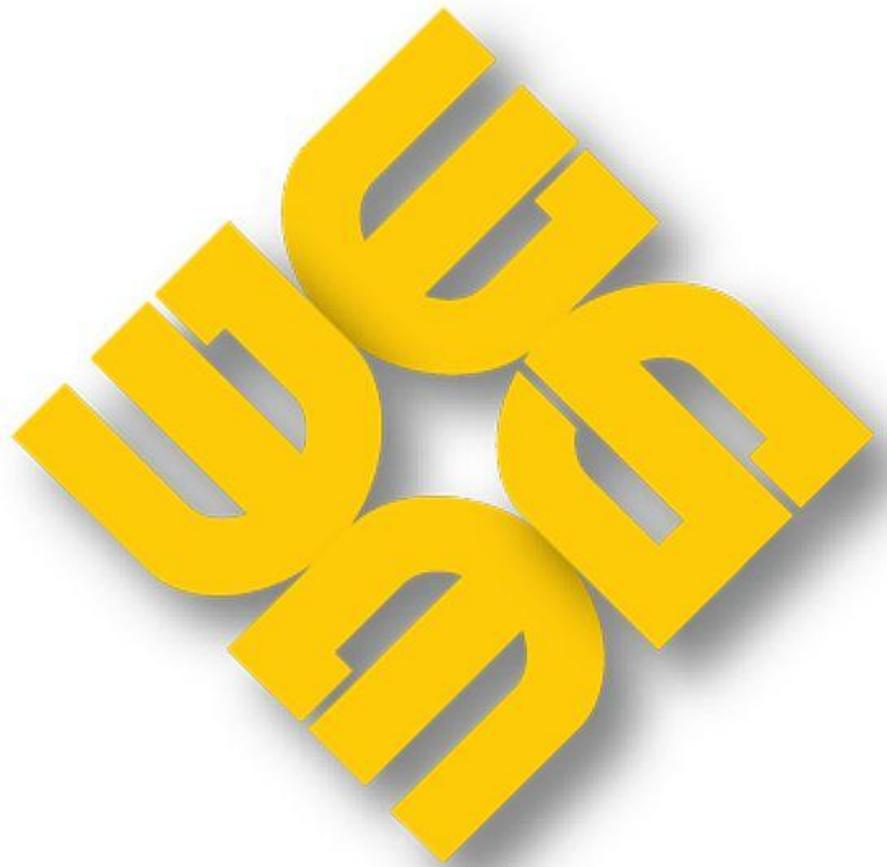


MAG-MMAR-2020-02

MONTHLY MARKET ASSESSMENT REPORT

For the Billing Period 26 January to 25 February 2020



**PHILIPPINE
ELECTRICITY
MARKET
CORPORATION**

**MARKET ASSESSMENT GROUP
(MAG)**

Monthly Market Assessment Report for February 2020 Billing Month

1. Assessment of the Market

- Majority of the market price outcomes in February 2020 was a result of normal pricing condition
- The remainder, however, required other forms of pricing methodologies
 - Almost close to half was applied price substitution which majority was due to frequent congestion events on Samboan-Amlan line 1
 - Prices with pricing error constituted around 2% 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), February 2020

Pricing Condition	No. of Intervals			
	Luzon	% of Time	Visayas	% of Time
Normal	429	58%	423	57%
Congestion	301	40%	307	41%
Pricing Error Notice	14	2%	14	2%
Administered Price	0	0%	0	0%
Secondary Cap	0	0%	0	0%
Total	744	100%	744	100%

- For those intervals under normal condition, a marginal growth in the price pattern has been observed
- Demand and supply situation have been observed to be tighter driven by slightly higher demand requirement this month causing increase in prices

2. Market Outcome

2.1. Price

2.1.1. Price and Supply Margin

- Load weighted average price (LWAP) increased by 14.2%
- Average peak prices increased by 19%
- Average off-peak prices increased by 5%
- No price spikes¹ recorded in February 2020 billing month
- Average supply margin narrowed by 7% from 2,754 MW to 2,560 MW
- Short episode of wide supply margin manifested starting January 31 through February 5 as outage capacity averaged at about 2,736 MW
- Corresponding LWAP during said episode was pegged at PhP2,307/MWh

Table 2. System Load Weighted Average Price

Region	February 2020 (In PhP/MWh)			January 2020 (In PhP/MWh)		
	Max	Min	Average	Max	Min	Average
Luz-Vis	11,941	1,336	3,280	13,686	-0.2	2,871

Table 3. Supply Margin

Region	February 2020 (in MW)			January 2020 (in MW)		
	Max	Min	Average	Max	Min	Average
Luz-Vis	4,325	759	2,560	4,862	740	2,754

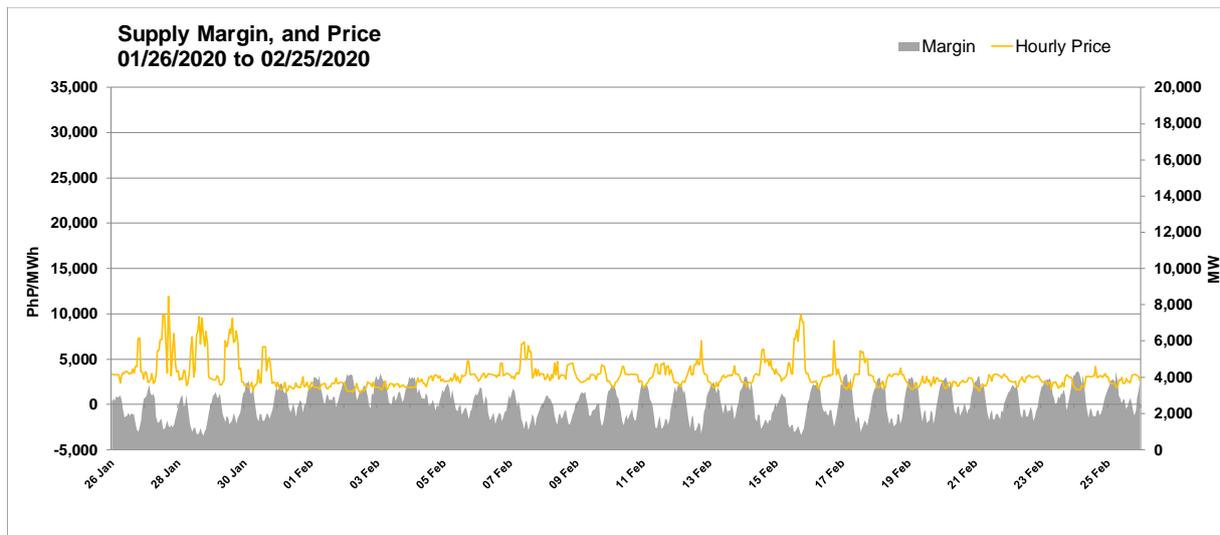


Figure 1. Supply Margin and Price, February 2020

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

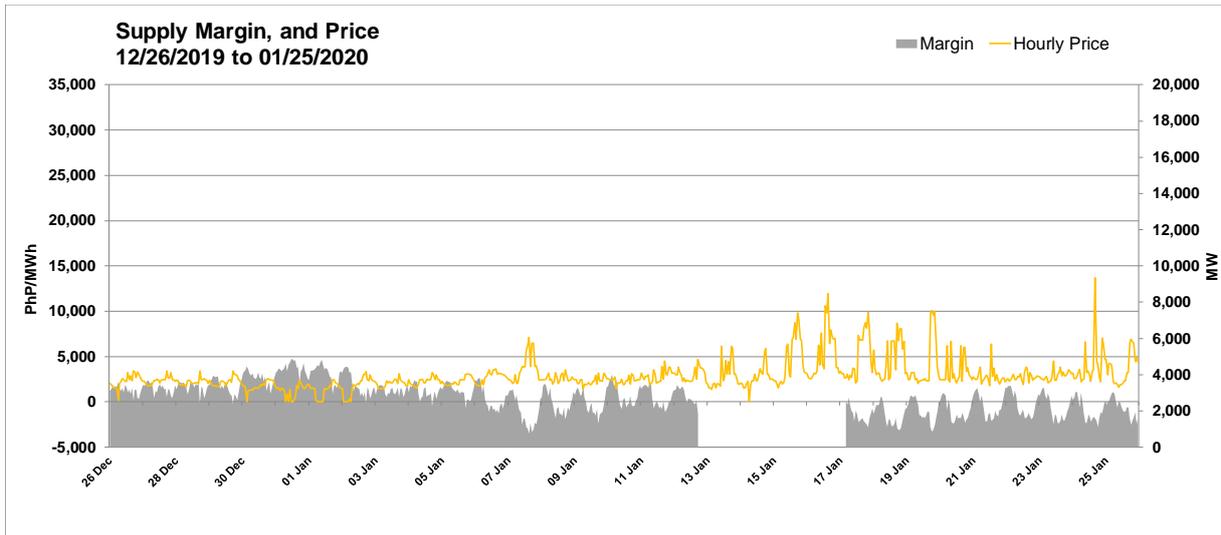


Figure 2. Supply Margin and Price, January 2020

2.1.2. Price Duration Curve²

- 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 February and January billing month
- 128 generator off-peak trading intervals and 57 generator peak trading intervals were settled above PhP17,000/MWh and were all found to be in the zone of Bohol
- Maximum off-peak and peak load nodal price reached PhP17,795/MWh and PhP21,618/MWh in February, respectively

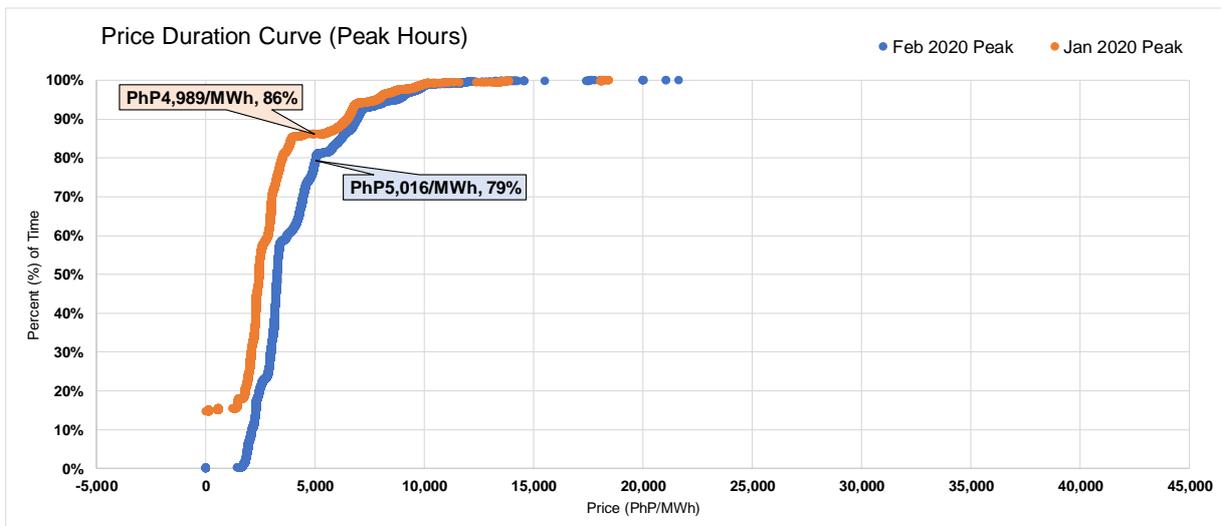


Figure 3. Load Nodal Price Duration Curve (Peak), Feb 2020 and Jan 2020

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

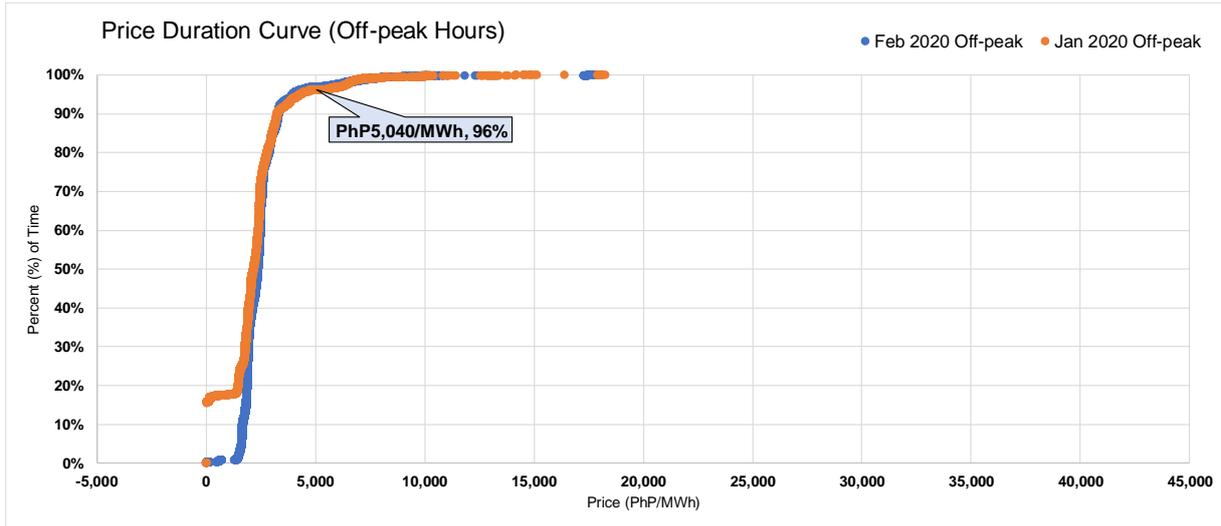


Figure 4. Load Nodal Price Duration Curve (Off-peak), Feb 2020 and Jan 2020

2.2. Supply

- No additional capacity registered in the WESM
- Available capacity³ constituted an average of 14,479 MW out of the total capacity of 20,182 MW or 71.7 percent
- Capacity not offered comprised an average of 2,575 MW or 12.8 percent
- Outage capacity accounted for an average of 3,128 MW or 15.5 percent which was also seen to decrease towards the end of the month

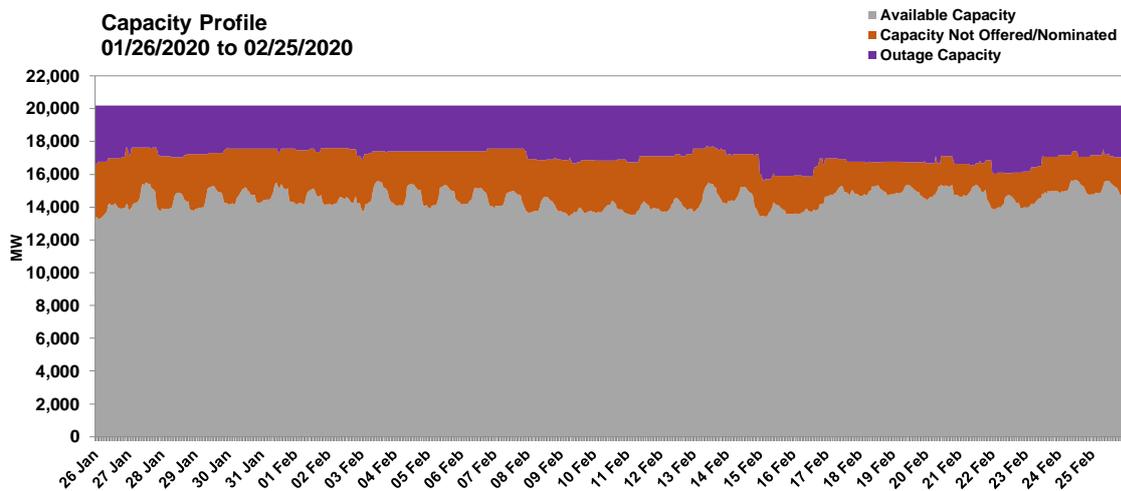


Figure 5. Capacity Profile, February 2020

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 slightly increased to an average of 3,128 MW this month from an average of 2,822 MW last month
- Planned outage had the largest share which comprised 46 percent of the total outages, 43 percent is composed of forced outage, and maintenance outage constituted 9 percent of the total outages. Meanwhile, deactivated shutdown accounted for only about 2 percent of the outages.
 - Notable plants on planned outage: Calaca CFTPP unit 2 (300 MW), SLTEC CFTPP unit 1 (121 MW), SMC CFTPP unit 4 (150 MW), SLPGC CFTPP unit 1 and 2 (300 MW), QPPL CFTPP (460 MW), GN Power CFTPP unit 2 (316 MW), San Roque HEP unit 3 (145 MW), and Masinloc CFTPP unit 3 (335 MW)
 - Notable plants on forced outage: PEDC CFTPP unit 3 (150 MW), SBPL CFTPP (455 MW), CENPRI DPP unit 3 (4.2 MW), Makban GPP unit 1 (63 MW), SLPGC CFTPP unit 2 (150 MW), SLTEC CFTPP unit 2 (123 MW), Masinloc CFTPP unit 2 (344 MW), GN Power CFTPP unit 1 (316 MW), Kalayaan HEP unit 3 (180 MW), Anda CFTPP (72 MW)
 - Notable plants on maintenance outage: CEDC CFTPP unit 2 (82 MW), SMC CFTPP unit 1 (150 MW), Caliraya HEP (28 MW), Sta Rita NGPP unit 1 (257 MW), Sual CFTPP unit 2 (647 MW)
 - Notable plant on deactivated shutdown: Makan GPP unit 6 (55 MW)
- Planned and forced outages were on an uptrend coming into February, although contributing a minimal change in effective supply throughout the period in review
- A sudden increase in outage on 14 to 15 February consisted of the following outages:
 - Forced outage of Kalayaan HEP units 1, 2, and 3 (540 MW), and Masinloc CFTPP unit 3 (335 MW) due to problems encountered in the generator while Kalayaan HEP unit 4 (180 MW) was isolated owing to the tripping of San Juan – Lumban 230 kV lines 1 and 2
 - Maintenance outage of Sual CFTPP unit 1 (647 MW), and Sta Rita NGPP unit 1 (257 MW)
- On 22 February, the increase in level of outage was mainly attributed to maintenance outage of Sual CFTPP unit 2 (647 MW) and planned outage of SLTEC CFTPP unit 1 (121 MW)
- Level of total outages was on a downtrend towards the end of the billing period, opening the month with 3,460 MW and closing with 2,721 MW

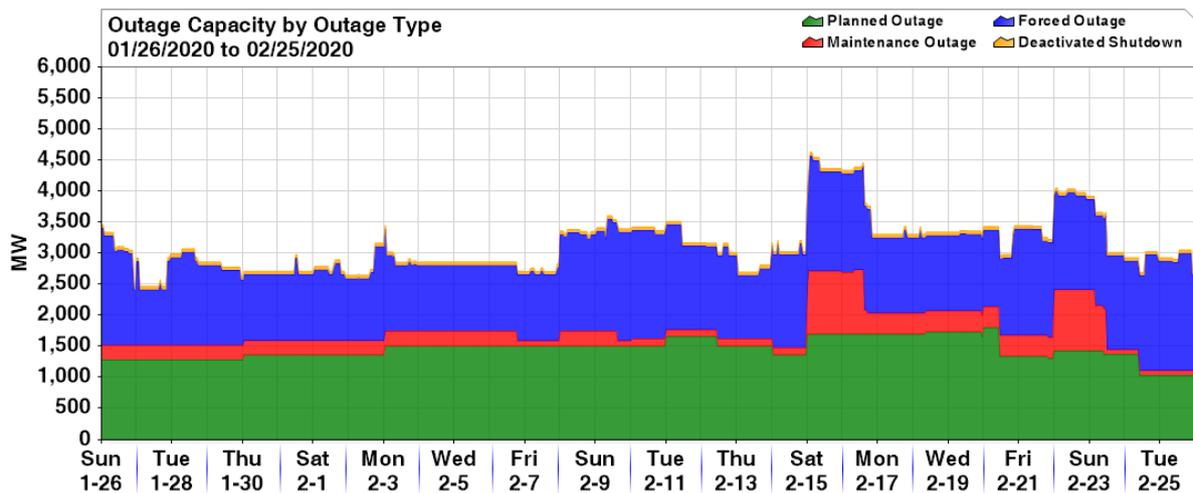


Figure 6. Outage Capacity by Outage Category, February 2020

Table 4. Outage Summary by Outage Category, Feb 2020 and Jan 2020

Outage Category	February 2020			January 2020		
	Max	Min	Average	Max	Min	Average
Planned	1,806	1,037	1,463	2,030	663	1,267
Maintenance	1,037	82	286	1,187	174	407
Forced	1,887	899	1,345	2,419	563	1,041
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 69 percent with a corresponding 27 percent increase from last month’s outage, followed by oil-based generators at 12 percent, geothermal and hydro generators came after at 9 percent and 8 percent, respectively, with hydro plants recording a significant increase in average from 3 MW to 240 MW, while natural gas plants posted only 2 percent in total outage
 - Notable coal plants on outage: SLPGC CFTPP unit 1 (150 MW), CEDC CFTPP units 2 and 3 (164 MW), PEDC CFTPP unit 3 (150 MW), SMC CFTPP units 1 and 4 (300 MW MW), GN Power CFTPP units 1 and 2 (632 MW MW), QPPL CFTPP (460 MW), SBPL CFTPP (455 MW), Masinloc CFTPP units 2 and 3 (679 MW), Anda CFTPP (72 MW), TPC Sangi CFTPP unit 2 (85 MW)
 - Notable natural gas plant on outage: Sta Rita NGPP unit 1 (257 MW)
 - Notable geothermal plants on outage: Leyte NGPP – Mahanagdong A2, B1 and Upper Mahiao 1, 2, and 4 (106 MW), and Makban GPP units 1, 5, and 6 (173 MW), Tiwi GPP unit 1 (59 MW)
 - Notable oil-based plants on outage: Limay CCGT unit 1 (60 MW), CENPRI DPP unit 3 (4.2 MW), SLPGC GTPP unit 4 (25 MW), and Malaya TPP unit 1 (300 MW)
- Natural gas plants outage, even with second highest share in terms of registered capacity, posted a low level of outage from an average of 346 MW last month to 75 MW this month

- Average outage of oil-based plants at about 379 MW this month majorly consisted of the prolonged outage of Malaya TPP unit 1 at 300 MW due to problems in the unit generator since 03 May 2019
- Geothermal plants recorded a minimal decline in outage of about 2 percent coming into February

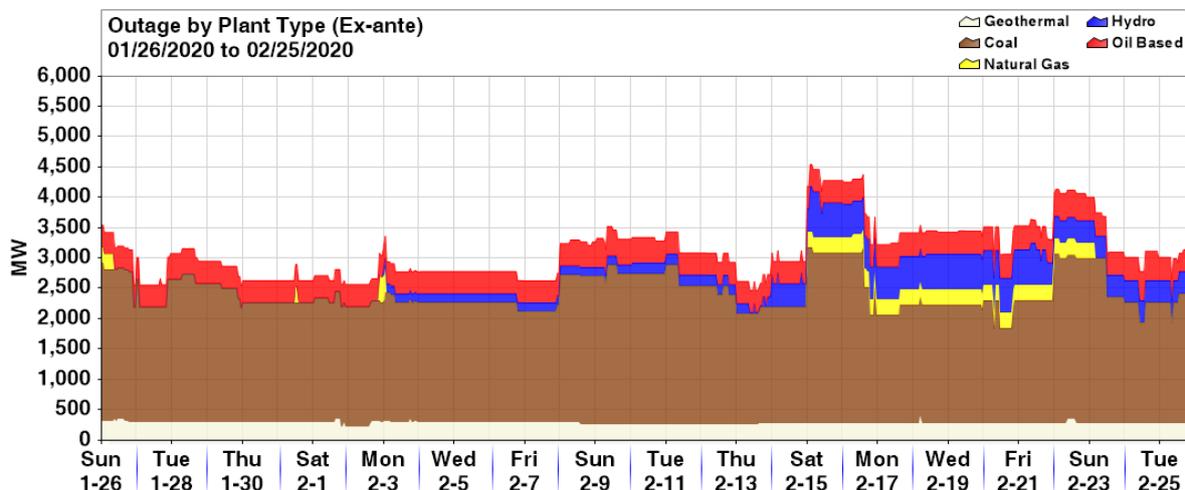


Figure 7. Outage Capacity by Plant Type, February 2020

Table 5. Outage Summary by Plant Type, Feb 2020 and Jan 2020

Plant Type	February 2020			January 2020		
	Max	Min	Average	Max	Min	Average
Coal	2,887	1,552	2,145	3,136	1,005	1,686
Natural Gas	420	0	75	686	0	346
Geothermal	416	231	289	570	231	296
Hydro	748	0	240	183	0	3
Oil-based	485	300	379	862	330	492

2.3. Demand

- On a monthly comparison, both peak and off-peak demand increased by 3.1 percent and 0.3 percent on average, respectively, due to higher demand requirement and observance of less holidays in February as compared to January
- It was a similar year-on-year trend where both peak and off-peak demand went up by 6.5 percent and 6.1 percent on average, respectively, as a result of higher economic activities from consumers
- Maximum system demand in February reached 11,895 MW for peak hours and 10,540 MW for off-peak hours
- Minimum system demand in February reached 9,154 MW for peak hours and 7,045 MW for off-peak hours
- A significant difference in average system demand between February and January was on the account of low demand during Christmas holiday

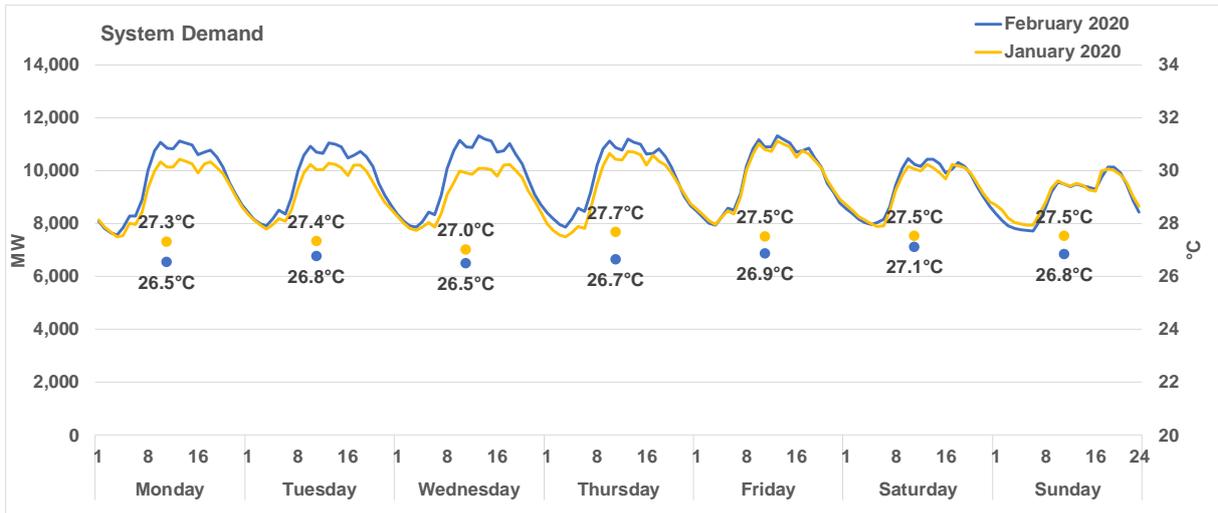


Figure 8. Average Hourly System Demand, Feb 2020 and Jan 2020

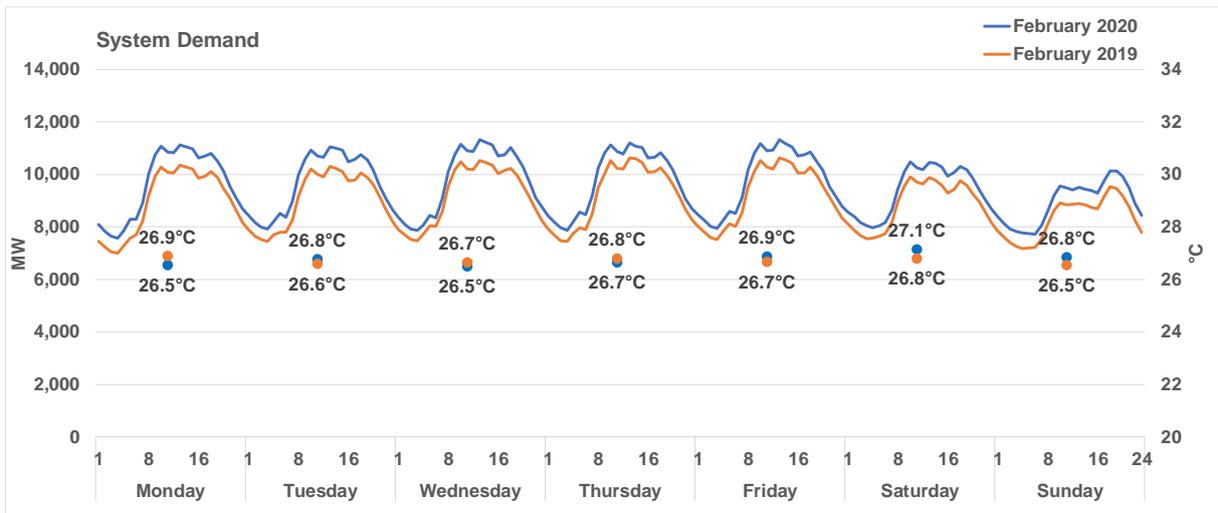


Figure 9. Average Hourly System Demand, Feb 2020 and Feb 2019

3. Spot Transactions

3.1. Spot Exposure

- Spot quantities in February stood at 14.3 percent of the total metered quantities, lower than last month's 18.1 percent spot exposure
- Spot exposure in off-peak hours averaged at 17 percent while 16 percent in peak hours
- Average spot exposure was almost consistent throughout the day as compared with January
- Based on the spot duration curve⁴, 90 percent of the time, spot quantities fell below 20 MWh

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

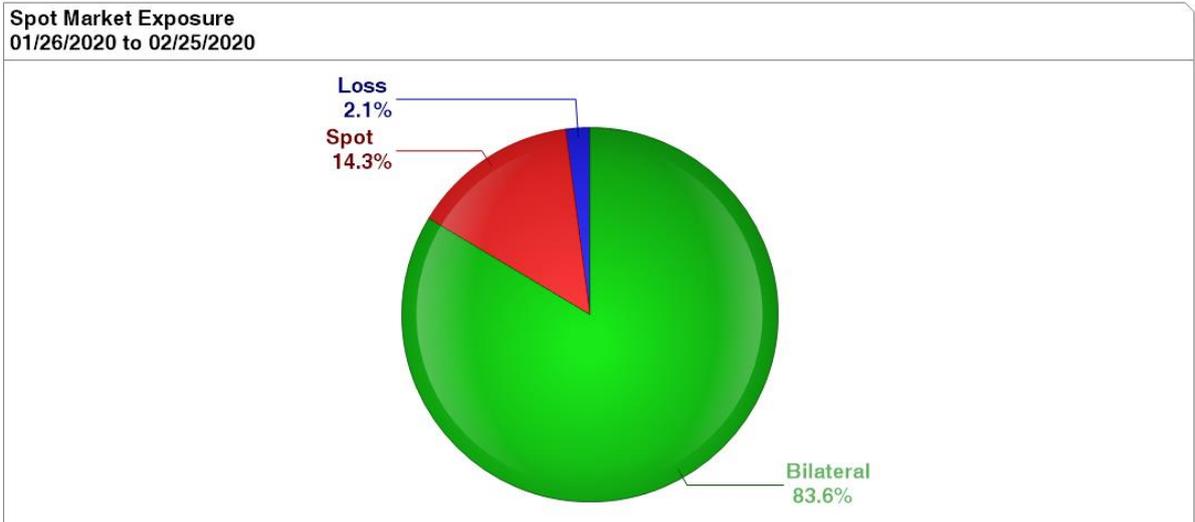


Figure 10. Spot Market Exposure

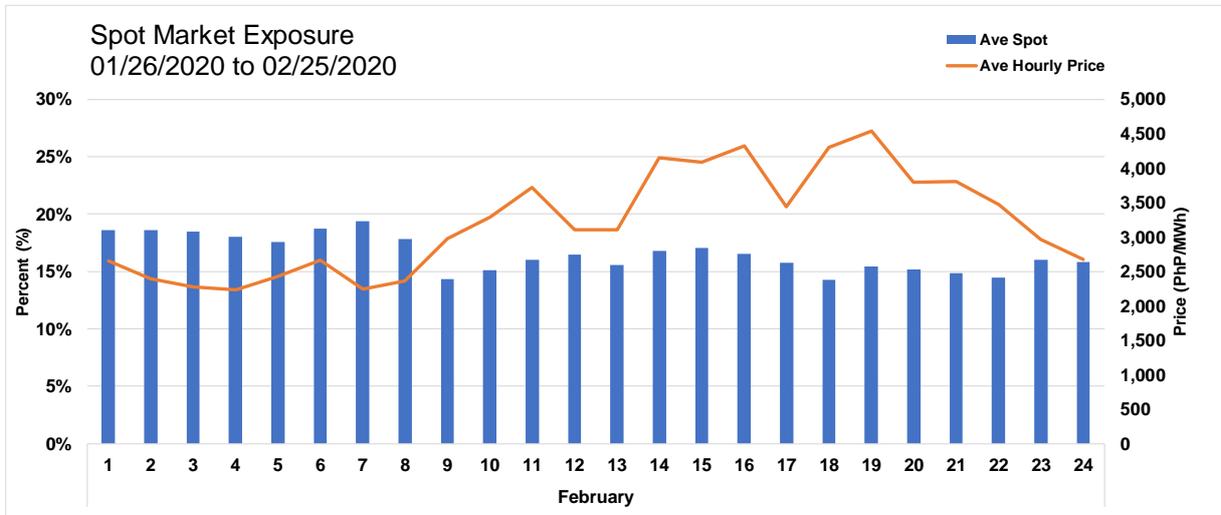


Figure 11. Hourly Spot Market Exposure

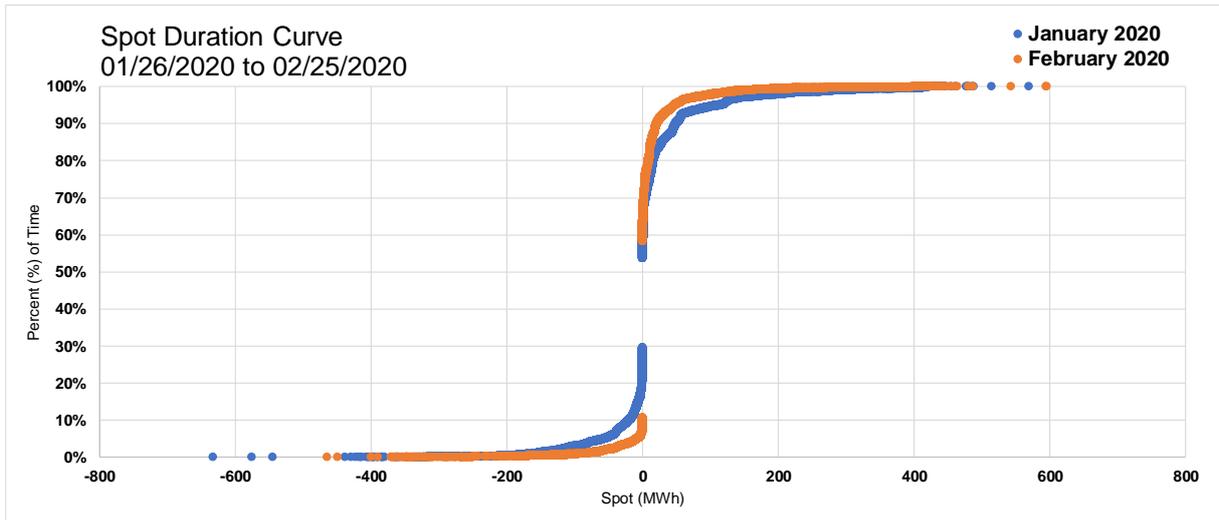


Figure 12. Spot Duration Curve

3.2. Pivotal⁵ Plants

- Only four (4) power plants were pivotal during February ensuring that enough supply was available to satisfy the demand requirement
- As compared to February, the January billing month has more pivotal plants despite wider supply margin mainly because the computation of Residual Supply Index⁶ (RSI) was only applied to Visayas instead of system-wide application during the intervals where Luzon experienced market intervention (i.e. Taal eruption).
- With the foregoing, Visayas region have experienced tighter supply-demand condition resulting to more frequent pivotal plants

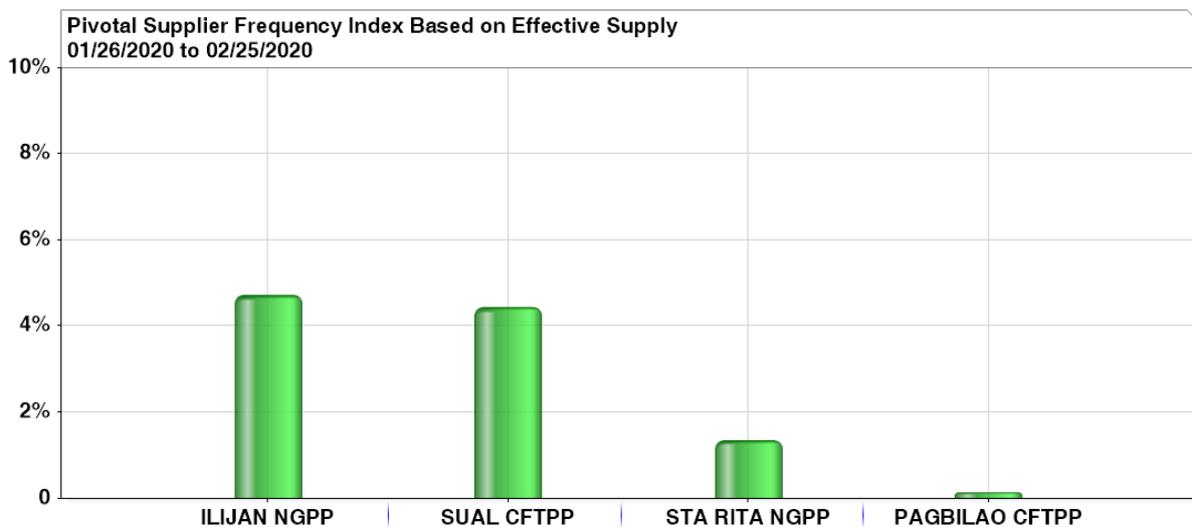


Figure 13. Top Pivotal Plants, February 2020

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

Table 6. Pivotal Supplier Frequency Index, February 2020

Top Pivotal Suppliers				
Rank	Plant	Major Participant Group	Frequency	% of Time
1	ILIJAN NGPP	SMC	35	4.7%
2	SUAL CFTPP	SMC	33	4.4%
3	STA RITA NGPP	FGC	10	1.3%
4	PAGBILAO CFTPP	AP	1	0.1%

3.3. Total Trading Amount⁷ (TTA) Share

- San Miguel Corporation (SMC), First Gen Corporation (FGC), and Power Sector Assets and Liabilities Management Corporation (PSALM) held the highest TTA share with approximately 20 percent, 19 percent, and 18 percent, respectively, or a cumulative 55 percent of the entire TTA during the billing month
- Likewise, they had the highest spot exposure share, with FGC having the highest at around 23 percent, followed by SMC at 20 percent and PSALM at 18 percent
- This month’s list was joined by SPC Power Corporation (SPC) and Gregorio Araneta, Inc. (GAI), bumping off Vivant Energy Corporation (VEC) and Aboitiz Power Corporation (AP) off the list from last month

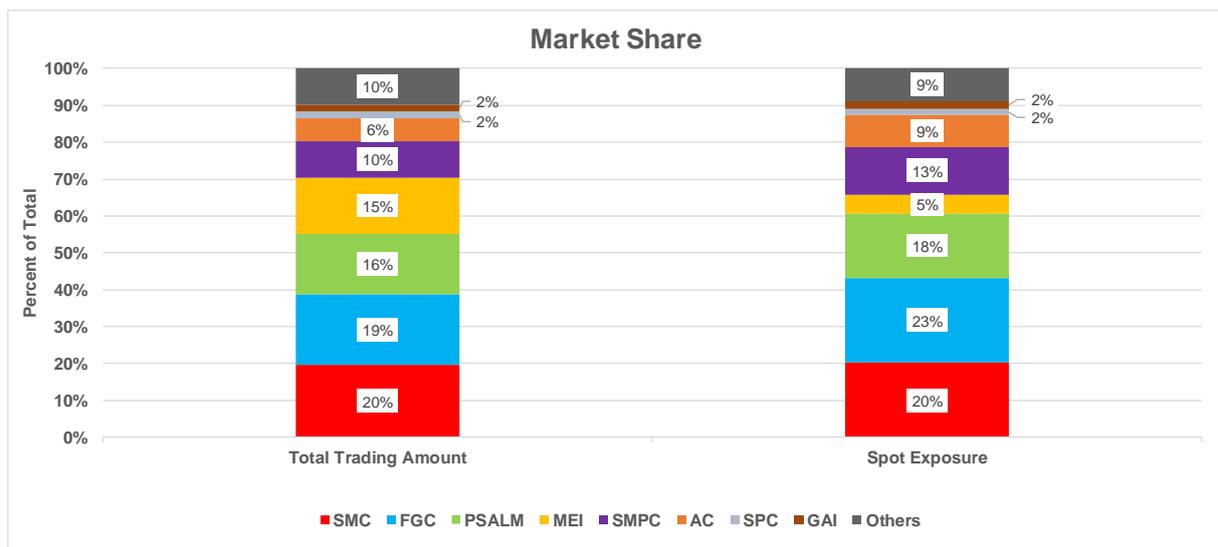


Figure 14. Total Trading Amount and Spot Exposure Share, February 2020

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

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			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			Forced Outage	Emergency shutdown requested by customer to facilitate rotor transfer to Unit 2	Jul 1997
LUZON	COAL	SLPGC 1	150	12/13/2019 0:04	02/12/2020 10:14	61.42	Planned Outage	Maintenance Outage	Jan 2015
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
VISAYAS	GEO	Mahanagdong A2	5	12/25/2019 10:31	02/04/2020 0:15	40.57	Forced Outage	Under assessment	Jul 1997
VISAYAS	COAL	PEDC 3	150	12/31/2019 19:35	01/29/2020 22:58	29.14	Forced Outage	Coal feeder A and B problem. Scheduled for APMS at 2001H	Aug 2016
LUZON	COAL	SMC 1	150	01/03/2020 4:27	02/06/2020 18:40	34.59	Maintenance Outage	Maintenance Outage until 22 January 2020.	Nov 2016
LUZON	OIL	Limay 1	60	01/06/2020 0:01	02/23/2020 9:32	48.40	Planned Outage	Maintenance Outage until 20 February 2020	May 1993
VISAYAS	GEO	Mahanagdong B1	5	01/06/2020 21:02	02/04/2020 0:21	28.14	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	01/17/2020 23:58	02/20/2020 10:55	33.46	Planned Outage	Planned outage as per GOP	May 2000
LUZON	GEO	Makban 1	63	01/18/2020 23:08	02/01/2020 14:42	13.65	Forced Outage	Low Steam Supply.	Apr 1979
VISAYAS	GEO	Upper Mahiao 1	32	01/24/2020 8:45	01/26/2020 9:32	2.03	Forced Outage	Emergency shutdown.	Jul 1997
LUZON	COAL	SLPGC 2	150	01/24/2020 15:29	01/28/2020 15:55	4.02	Forced Outage	Isolated due to tripping of Calaca-Sta Rita 230kV L1	Jan 2015
LUZON	COAL	SLTEC 1	121	01/24/2020 15:29	01/26/2020 1:59	1.44	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	01/26/2020 21:27	2.25	Forced Outage	Isolated due to tripping of Calaca-Sta Rita 230kV L1	Aug 2015
LUZON	NATG	Sta. Rita 1	257.3	01/25/2020 1:43	01/26/2020 8:25	1.28	Forced Outage	Initiated by First Gas in coordination with SO to maintain N-1 compliance for Batang	Jun 2000
LUZON	COAL	SBPL	455	01/25/2020 11:26	01/26/2020 21:42	1.43	Forced Outage	Air heater problem	Apr 2019
VISAYAS	GEO	Upper Mahiao 4	32	01/26/2020 8:55	01/26/2020 15:22	0.27	Forced Outage	Emergency shutdown	Jul 1997
VISAYAS	GEO	Upper Mahiao 1	32	01/26/2020 10:59	01/26/2020 18:35	0.32	Forced Outage	Indication- Lube oil low pressure.	Jul 1997
LUZON	COAL	SBPL	455	01/26/2020 23:30	01/27/2020 1:55	0.10	Forced Outage	Tripped with 80MW load.	Apr 2019
VISAYAS	OIL	CENPRI 2	4.2	01/27/2020 15:17	01/28/2020 17:07	1.08	Forced Outage	Emergency cut-out due to malfunctioned voltage regulator.	Mar 2016
LUZON	OIL	MGTPP	100	01/27/2020 15:42	01/27/2020 16:55	0.05	Forced Outage	Unit Transformer fault	Jan 1993
LUZON	COAL	SBPL	455	01/27/2020 20:48	02/16/2020 19:39	19.95	Forced Outage	Boiler de-slugging	Apr 2019
LUZON	OIL	Limay 5	60	01/27/2020 22:18	01/28/2020 17:45	0.81	Forced Outage	Main fuel oil pump trouble	Dec 1994
VISAYAS	COAL	CEDC 1	82	01/28/2020 6:38	01/29/2020 9:38	1.13	Forced Outage	DRUM LEVEL VERY HIGH	Apr 2010
VISAYAS	OIL	CENPRI 3	4.2	01/28/2020 13:01	02/19/2020 12:01	21.96	Forced Outage	Unable to cut-in due to PLC IO module problem	Mar 2016
VISAYAS	OIL	CENPRI 1	4.2	01/28/2020 16:31	01/28/2020 17:06	0.02	Forced Outage	Offline due to below Technical Pmin Market dispatch (1.0MW)	Mar 2016
VISAYAS	OIL	CENPRI 4	6.4	01/28/2020 16:35	01/28/2020 17:05	0.02	Forced Outage	Offline due to below Technical Pmin Market dispatch (1.5MW)	Mar 2016
VISAYAS	COAL	CEDC 3	82	01/30/2020 0:52	02/19/2020 22:37	20.91	Planned Outage	APMS	Jan 2011
LUZON	NATG	Sta. Rita 3	265.5	01/31/2020 11:35	01/31/2020 13:08	0.06	Forced Outage	Tripped at 265MW load	Oct 2001
VISAYAS	COAL	CEDC 1	82	02/01/2020 0:55	02/01/2020 10:16	0.39	Forced Outage	Correction of boiler feedpump motorized valve leak.	Apr 2010
LUZON	GEO	Makban 3	63	02/01/2020 13:39	02/01/2020 18:02	0.18	Forced Outage	Tripped from 40MW load due to loss of AC Voltage.	Apr 1979
LUZON	GEO	Makban 4	63	02/01/2020 13:39	02/01/2020 21:21	0.32	Forced Outage	Tripped from 43mw load due to reverse power.	Apr 1979
LUZON	COAL	SLTEC 2	122.9	02/01/2020 14:31	02/01/2020 18:39	0.17	Forced Outage	Due to tripping of Boiler Feed Pump. Lowest frequency is 59.568Hz.	Aug 2015
VISAYAS	GEO	Upper Mahiao 4	32	02/02/2020 14:27			Forced Outage	Emergency cut-out.	Jul 1997
VISAYAS	GEO	Upper Mahiao 2	32	02/02/2020 14:31	02/03/2020 6:43	0.68	Forced Outage	Emergency cut-out.	Jul 1997
VISAYAS	GEO	Upper Mahiao 1	32	02/02/2020 14:32	02/08/2020 13:23	5.95	Forced Outage	Emergency cut-out.	Jul 1997
LUZON	NATG	San Gabriel	420	02/02/2020 17:01	02/03/2020 1:01	0.33	Forced Outage	Boiler protection actuated	Mar 2016
LUZON	HYD	San Roque 3	145	02/03/2020 0:01	02/14/2020 0:01	11.00	Planned Outage	Maintenance Outage until 15 February 2020	May 2003
VISAYAS	COAL	PALM 1	135	02/03/2020 0:44	02/03/2020 7:39	0.29	Forced Outage	Affected by tripping of Negros-Panay submarine cable	Mar 2016
VISAYAS	GEO	PGPP2 Unit 3	20	02/03/2020 19:28	02/03/2020 22:40	0.13	Forced Outage	Ongoing investigation on cause of tripping	Aug 1983
VISAYAS	GEO	Mahanagdong A1	5	02/04/2020 0:11			Forced Outage	Annual PMS of 230kV bus bar.	Jul 1997
VISAYAS	GEO	Mahanagdong A2	5	02/04/2020 0:15	02/12/2020 3:37	8.14	Forced Outage	Annual PMS.	Jul 1997
VISAYAS	GEO	Mahanagdong B1	5	02/04/2020 0:21	02/06/2020 23:54	2.98	Forced Outage	Annual PMS of 230kV bus bar.	Jul 1997
LUZON	HYD	Pantabangan 2	60	02/07/2020 10:53	02/07/2020 12:29	0.07	Forced Outage	Tripped due to Main Inlet Valve Problem	Dec 2010
LUZON	COAL	SLTEC 2	122.9	02/07/2020 21:01	02/09/2020 6:07	1.38	Forced Outage	Boiler Tube Leak (Water Wall side) until 09 February 2020.	Aug 2015
LUZON	COAL	Masinloc 2	344	02/07/2020 23:46	02/11/2020 10:58	3.47	Forced Outage	Due to boiler tube leak.	Jun 1998
LUZON	COAL	SMC 2	150	02/07/2020 23:46	02/09/2020 14:06	1.60	Maintenance Outage	MO from 02.8-9 2020.	Mar 2017
LUZON	OIL	Limay 3	60	02/08/2020 4:33	02/08/2020 18:12	0.57	Forced Outage	Due to Turbine trouble.(RECLASSIFIED FROM FORCE. OMC OUTAGE)	May 1993
LUZON	OIL	Limay 7	60	02/08/2020 20:13	02/09/2020 11:48	0.65	Forced Outage	Unable to start due to excitation problem.	Dec 1994
LUZON	OIL	Limay 5	60	02/09/2020 0:11	02/09/2020 5:26	0.22	Forced Outage	Declared unavailable due to air intake coarse filters trouble.	Dec 1994
LUZON	OIL	Limay 3	60	02/09/2020 5:26	02/10/2020 16:27	1.46	Forced Outage	Tripped due to turbine trouble	May 1993
LUZON	COAL	GN Power 1	316	02/09/2020 7:35	02/13/2020 0:43	3.71	Forced Outage	Emergency shutdown due to turbine driven circulating valve repair.	May 2013
LUZON	OIL	Limay 5	60	02/09/2020 14:49	02/09/2020 15:47	0.04	Forced Outage	Failed start-up.	Dec 1994
LUZON	HYD	Caliraya 1	14	02/10/2020 0:01	02/15/2020 23:16	5.97	Maintenance Outage	Maintenance outage 15 February 2020	Oct 2002
LUZON	HYD	Caliraya 2	14	02/10/2020 0:01	02/15/2020 23:16	5.97	Maintenance Outage	Maintenance outage 15 February 2020	Oct 2002
LUZON	COAL	SMC 4	150	02/10/2020 23:25			Planned Outage	Maintenance outage until 02 March 2020	Sep 2018
LUZON	COAL	SLPGC 1	150	02/12/2020 14:14	02/12/2020 18:09	0.16	Forced Outage	From MO (over speed testing).	Jan 2015
VISAYAS	GEO	Upper Mahiao 2	32	02/13/2020 14:38	02/13/2020 20:29	0.24	Forced Outage	Due to thrust bearing high temperature.	Jul 1997
VISAYAS	COAL	CEDC 1	82	02/13/2020 15:03	02/15/2020 3:01	1.50	Forced Outage	SUSPECTED BOILER TUBE LEAK	Apr 2010
VISAYAS	GEO	Upper Mahiao 2	32	02/13/2020 20:29	02/14/2020 15:41	0.80	Forced Outage	Cut-in to the system.	Jul 1997
LUZON	HYD	Kalayaan 1	180	02/13/2020 23:01			Forced Outage	Declared unavailable due to heavy water leak at penstock	Aug 1982
LUZON	HYD	Kalayaan 2	180	02/13/2020 23:01			Forced Outage	Declared unavailable due to heavy water leak at penstock	Aug 1982
LUZON	HYD	Kalayaan 3	180	02/14/2020 3:17	02/14/2020 4:45	0.06	Forced Outage	Tripped as pump.	May 2004
VISAYAS	GEO	Upper Mahiao 2	32	02/14/2020 16:04			Forced Outage	cut-in to the system	Jul 1997
LUZON	HYD	Kalayaan 3	180	02/14/2020 18:50	02/14/2020 20:53	0.09	Forced Outage	Turbine guide bearing trouble	May 2004
LUZON	COAL	Masinloc 3	335	02/14/2020 23:36	02/24/2020 9:03	9.39	Planned Outage	Tripped while on house load operation started at 2334H.	Mar 2019
LUZON	COAL	Sual 1	647	02/14/2020 23:58	02/16/2020 14:20	1.60	Maintenance Outage	Maintenance Outage until 2-16-2020 at 2400H.(RECLASSIFIED FROM FORCE. OMC OUI	Oct 1999
LUZON	NATG	Sta. Rita 1	257.3	02/15/2020 0:53	02/23/2020 3:29	8.11	Maintenance Outage	On Maintenance Outage	Jun 2000
LUZON	HYD	Kalayaan 3	180	02/15/2020 1:22	02/21/2020 15:26	6.59	Forced Outage	On emergency shutdown due to Turbine bearing temp. high.	May 2004
LUZON	HYD	Kalayaan 4	180	02/15/2020 1:23	02/15/2020 8:50	0.31	Forced Outage	Affected by the tripping of San Juan - Lumban 230kV Lines 1 and 2 (isolated)	May 2004
LUZON	NATG	Avion 1	50.3	02/16/2020 7:01	02/16/2020 16:01	0.38	Maintenance Outage	Maintenance Outage	Aug 2015
LUZON	COAL	ANDA 1	72	02/16/2020 13:17	02/22/2020 2:48	5.56	Forced Outage	Emergency shutdown due to high furnace pressure	Apr 2015
LUZON	HYD	Binga 1	35	02/18/2020 8:01	02/21/2020 19:07	3.46	Planned Outage	Maintenance Outage until 22 February 2020	Jan 1960
LUZON	OIL	SLPGC 4	25	02/19/2020 7:01	02/25/2020 8:08	6.05	Forced Outage	Declared unavailable due to AVR diagnostic test	Mar 2017
LUZON	COAL	SLPGC 2	150	02/19/2020 23:57			Planned Outage	Maintenance outage.	Jan 2015
VISAYAS	OIL	TPC Carmen 2	10	02/20/2020 12:11	02/21/2020 9:09	0.87	Forced Outage	REPAIR OF TURBO CHARGER	Mar 1979
LUZON	COAL	Pagbilao 1	382	02/20/2020 19:31			Forced Outage	Tripped off due to Boiler tube leak.	Mar 1996
VISAYAS	COAL	TPC Sangi 2	85	02/20/2020 20:57	02/23/2020 23:50	3.12	Forced Outage	UNIT EMERGENCY CUT-OUT FROM THE SYSTEM DUE TO BOILER TUBE LEAK PROBLEM	Dec 2013
LUZON	COAL	Sual 2	647	02/21/2020 23:34	02/23/2020 11:19	1.49	Maintenance Outage	Maintenance Outage until 26 February 2020	Oct 1999
LUZON	COAL	SLTEC 1	121	02/21/2020 23:50			Planned Outage	Maintenance Outage until 07 March 2020	Sep 2014
LUZON	OIL	Limay 5	60	02/22/2020 0:10	02/22/2020 21:42	0.90	Forced Outage	Declared unavailable due to detached Air Intake Elbow Rubber Bellows.	Dec 1994
LUZON	GEO	Tiwi 5	57	02/22/2020 8:14	02/22/2020 14:10	0.25	Forced Outage	Emergency shutdown to facilitate repair of steam leak.	Jan 1979
LUZON	OIL	Limay 1	60	02/23/2020 10:47			Forced Outage	Combustion problem.	May 1993
LUZON	OIL	MGTPP	100	02/24/2020 9:09	02/24/2020 22:11	0.54	Forced Outage	Tripping of aux. transformer	Jan 1993
LUZON	COAL	Masinloc 3	335	02/24/2020 13:28	02/25/2020 21:43	1.34	Forced Outage	Tripped with 107MW load. On commissioning test	Mar 2019
LUZON	COAL	SMC 2	150	02/25/2020 12:41			Forced Outage	Emergency shutdown to rectify the observed hotspot on the connectors of SCPC Unit	Mar 2017