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Billed for Annual Power Shortages

10 Solutions to Protect Consumer from the Power Crisis

April 2022

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On the evening of 26 March 2022, six coal-fired power plant units and one hydropower plant underwent simultaneous forced outages, and three coal-fired power plant units and one gas-fired power plant derated their capacities. These incidents shaved off 2,834 MW from the Luzon Grid and forced the National Grid Corporation of the Philippines to declare a yellow alert.[1] A yellow alert is raised when power reserves are thin or lower than the ideal reserve requirement.

The recent yellow alert forebodes the annual power shortages that have been occurring during and in the months leading up to the summer, when electricity demand ordinarily increases. Ahead of the yellow alert status, Meralco was right on schedule as it also announced its first rate increase of the year[2]—an announcement that has often accompanied tight supply in the grid.

However, this thinning reserve sounds a more threatening alarm of a power crisis, considering the one year of consecutive Meralco rate increases and unresolved allegations of gaming, collusion, and abuse of dominance of certain power generators during last year's Luzon Grid red alert; along with the confluence of several other significant events—two years of the COVID pandemic, higher inflation rate, the recent Indonesia coal ban, oil and fossil gas price hikes following many countries' sanctions against Russia—a top oil and gas exporter, and, of course, the May elections.

"[I]n 2022, a household consuming 200 kWh per month is paying Php 180.98 to Php 265.43 more than they did the same month last year."

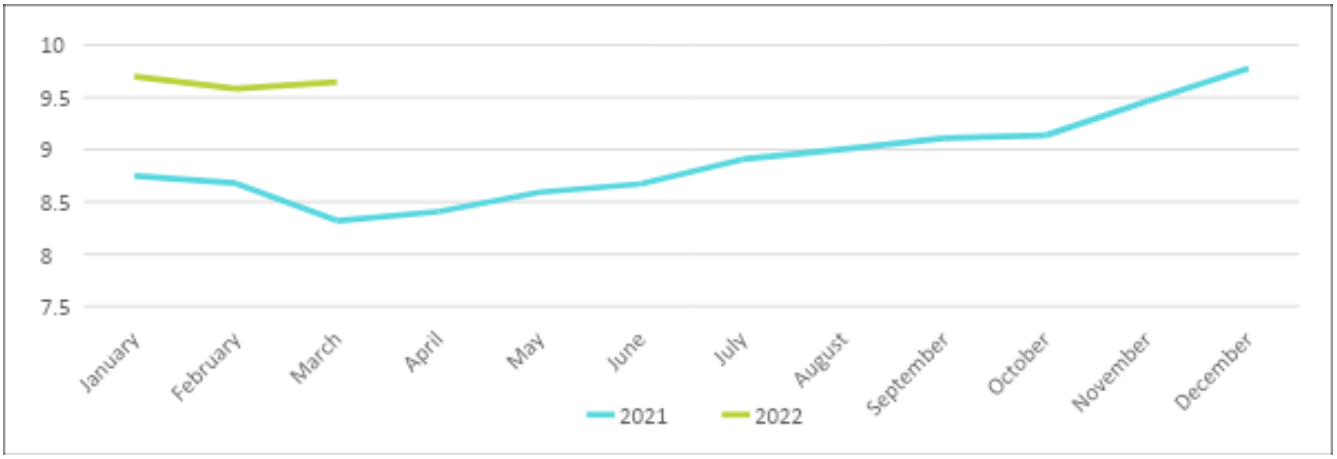
Nearly one year of Meralco rate increases

[1] *Luzon grid placed on yellow alert after seven plant outages,* Business World, March 2022. https://www.bworldonline.com/luzon-grid-placed-on-yellow-alert-after-seven-plant-outage/
[2] *March 2022 Rates Updates,* Meralco, 18 March 2022. https://company.meralco.com.ph/news-and-advisories/march-2022-rates-updates

Meralco billed electricity consumers with successively higher rates every month last year, starting April (Figure 1). While at the start of 2022, in January and February, Meralco announced a slight decrease in electricity rates, these rates are still significantly higher than the previous year—Php 0.9530/kWh and Php 0.9049/kWh more, respectively. Meralco rates started at an expensive cost of Php 9.7027/kWh in January and Php 9.5842/kWh in February.

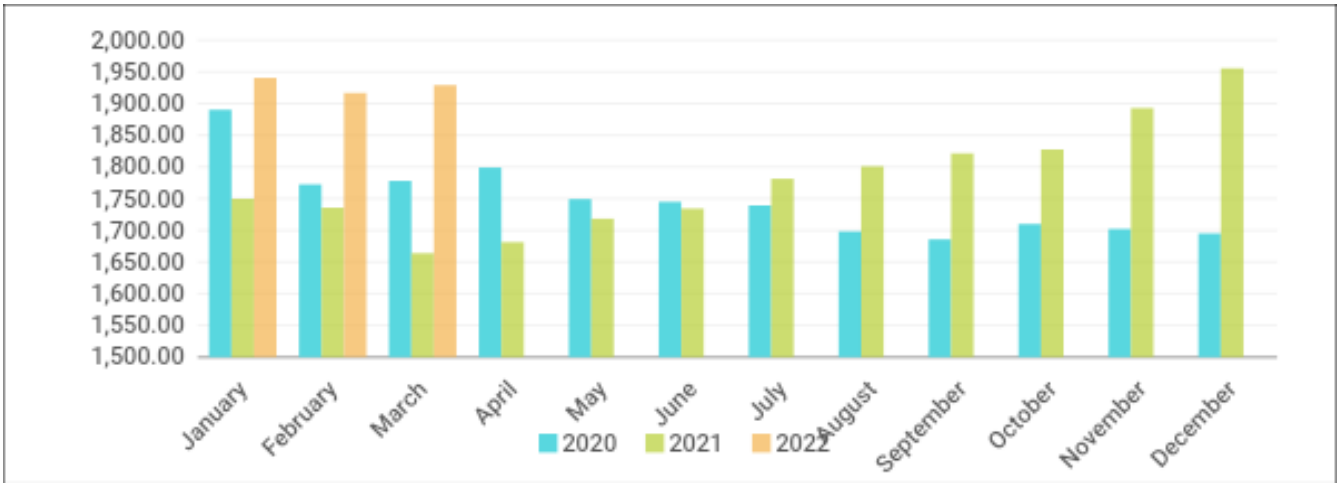
Last March 2021, a household with an electricity consumption of 200 kWh was charged with an electricity rate of Php 8.3195/kWh. Meralco's rate increased consecutively for the next eight months, jumping to Php 9.7773/kWh by year-end. Although Meralco reported slightly lower rates for January and February, March 2022 rate is Php 9.6467/kWh, still Php 1.3272/kWh higher than last year's.

Figure 1. Meralco electricity rate of a household consuming 200 kWh per Month (Php/kWh)



Starting July 2021, Meralco consumers have been paying for more expensive electric bills compared to the same period in the previous year (Figure 2). For example, in July 2021, a household consuming 200 kWh paid Php 1,781.42, Php 42.10 than its July 2020 bill of Php 1,739.32. This difference in the electric bills from the previous year widened as the year progressed. By December 2021, a 200 kWh-consuming household paid for Php 1,955.40, which is Php 260.35 higher than its December 2020 electric bill.

Figure 2. Comparing Meralco Bills of a Household Consuming 200 kWh per Month (Php)



**Meralco's infamous bill shock occurred from March to April 2020, and resulted to ERC fining Meralco with Php 19 million for violating rules from March to July 2020.*[3]

However, the first quarter of 2022 saw an even wider jump in electric bill compared to the previous year (Figure 3). Meralco consumers with a 200 kWh consumption are paying Php 180.98 to Php 265.43 higher bills than the same period last year.

In March 2022, the Meralco bill of a 200-kWh consuming household soared to Php 1,929.33 from Php 1,663.90 last March 2021. For March, net adjustment in Meralco bills for 200-500 kWh consumption have increased from Php 105.31 to Php 663.57 (Table 1). This means that in 2022, a household consuming 200 kWh per month is paying Php 180.98 to Php 265.43 more than they did the same month last year.

Figure 3. Meralco Bill of a Household Consuming 200 kWh per Month, Q1 2021 v. Q2 2022 (Php)

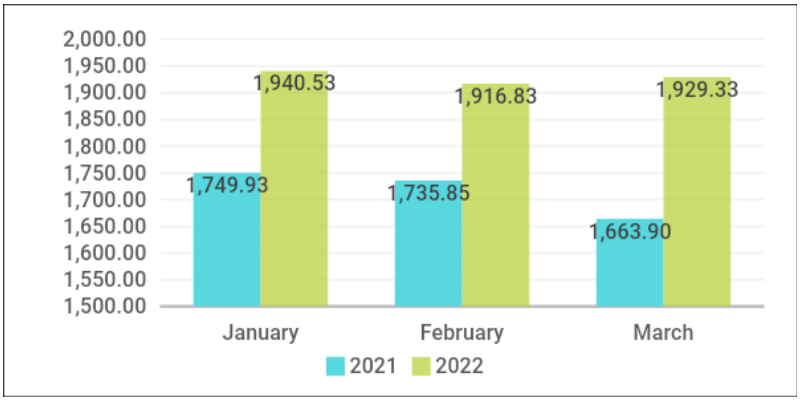


Table 1. Net adjustment in Households' Meralco Bills March 2021 v. March 2022

Household Consumption	Net Adjustment
100 kWh	Php 105.13 ↑
200 kWh	Php 265.43 ↑
300 kWh	Php 398.14 ↑
400 kWh	Php 530.86 ↑
500 kWh	Php 663.57 ↑

In the ten months that Meralco announced power rate hikes over the past year, Meralco attributed the increases to mainly three reasons: power outages and de-rated capacities due to Malampaya restrictions, Wholesale Electricity Spot Market (WESM) price spikes, and pass-through costs (See Appendix 1: Reasons for Meralco's consecutive rate increases starting April 2021).

[3] *Meralco fined P19 million over 'bill shock' amid lockdown,* CNN Philippines, 27 August 2020. https://www.cnnphilippines.com/news/2020/8/27/Meralco-fined--19-million-ERC.html

Annual power shortages

"In the ten months that Meralco announced power rate hikes over the past year, Meralco attributed the increases to mainly three reasons: power outages and de-rated capacities due to Malampaya restrictions, [WESM] price spikes, and pass-through costs."

The recent yellow alert announced on March 26 was triggered by unplanned outages, which resulted to an unavailable capacity of 2,011 MW, and the combined de-rated capacity of 823 MW. Similar to last year's Luzon Grid red alert, coal-fired power plants are largely to blame for the yellow alert. Out of the 11 power plant units that underwent outage or de-rating, nine are coal-fired, one is gas-fired, and another uses hydropower (Table 2).

Aboitiz Power Corporation (AboitizPower) & AC Energy, Inc. (ACEN) involvement in the recent yellow alert is most interesting. AboitizPower and ACEN entered into a private limited partnership for the operation of GNPower Dinginin Ltd. Co.'s Coal-fired Power Plant. The plant was cleared for commercial operations only three months ago[4], but already went on unplanned outage due to turbine balancing adjustment on March 26.

Just a few months ago, GNPower Dinginin was called the "saving grace" of the 2021 Luzon Grid red alert[5], when its sister company GNPower Mariveles Energy Center Ltd. Co.'s Coal-fired Power Plant shut down and tripped. GNPower Mariveles Unit 1 went on a prolonged unplanned outage from February 6 to July 27, 2021, due to a boiler tube leak, while its Unit 2 shut down due to the same reason from June 1 to 9, 2021, and tripped due to circulating water pump trouble from September 18 to 29, 2021 (See Appendix 2: Power Plants with Unavailable Capacity in 2021).

Another ACEN-owned power plant, South Luzon Thermal Energy Corporation's (SLTEC) Puting Bato Coal-fired Power Plant Unit 1 de-rated 30 MW, while its 123 MW Unit 2 went on outage due to high HP relative expansion.

Table 2. Power plants with Unavailable Capacity in 25-26 March 2022 Causing a Yellow Alert in the Luzon Grid

Parent Holding Company	Facility Name	Type	Unavailable Capacity (MW)	Date of Unavailability	Reason for Unavailability	Expected to Come Online
AboitizPower & ACEN	GNPower Dinginin U1	Coal	668	25 March 2022	Unplanned outage - Turbine balancing adjustment	27 March 2022
DMCI Holdings, Inc.	SEM-Calaca	Coal	300	26 March 2022	Unplanned outage - Generator stator ground fault	No information

[4] *ERC clears commercial run of GNPower Dinginin's first unit,* Business World, 28 December 2021. https://www.bworldonline.com/erc-clears-commercial-run-of-gnpower-dinginins-first-unit/
[5] *GNPower Dinginin Unit 1 full operation set for August,* Power Philippines, 14 June 2021. https://powerphilippines.com/gnpower-dinginin-unit-1-full-operation-set-for-august/

Semirara Mining and Power Corp.	SLPGC U2, U3, and U4	Coal	200	26 March 2022	Unplanned outage - Primary air fan A trouble and turbine lube oil sump metal chips	No information
ACEN	SLTEC Puting Bato U2	Coal	123	26 March 2022	Unplanned outage - High HP relative expansion	No information
J-Power & Sumitomo Corp.	CBK Power Kalayaan	Hydro	720	26 March 202	Unplanned outage - Low water elevation	No information
Tokyo Electric Power Company & Marubeni Corporation	TeaM Sual U1 and U2	Coal	410	26 March 2022	De-rating	No information
SMC Global Power Holdings Corp.	KEPCO Ilijan CCGT	Gas	383	26 March 2022	De-rating - Supply restrictions in the Malampaya gas field	No information
ACEN	SLTEC Puting Bato U1	Coal	30	26 March 2022	De-rating	No information

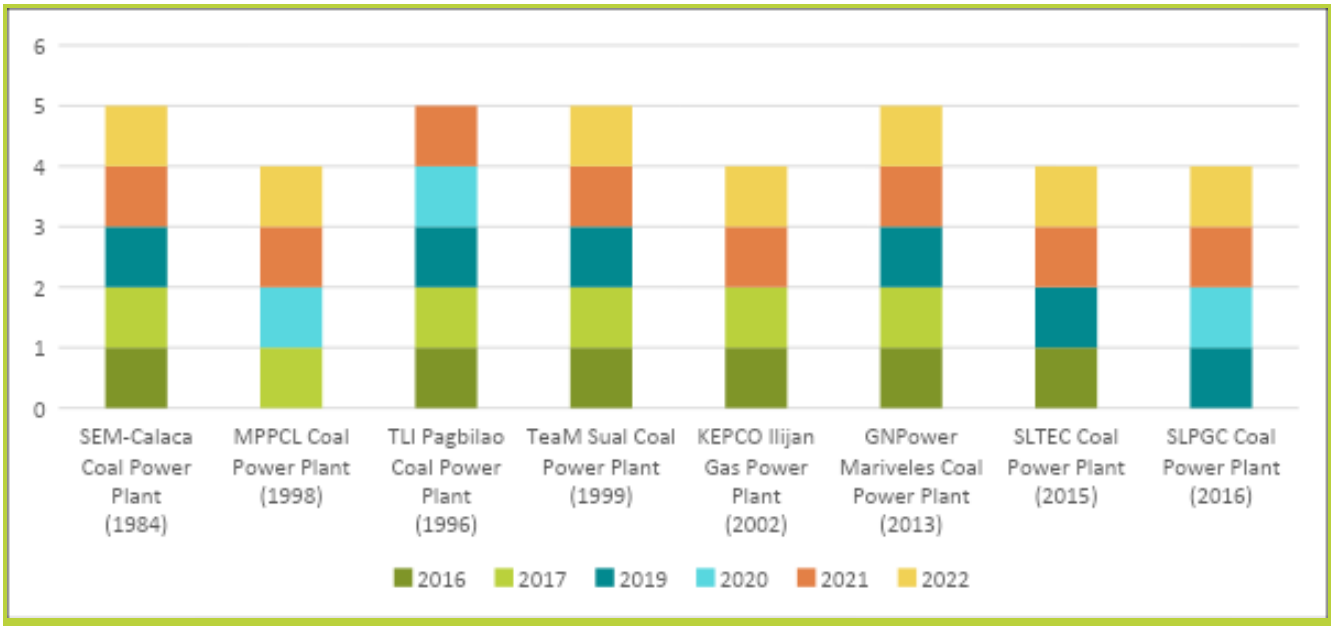
Meanwhile, DMCI Holdings' SEM-Calaca Coal-fired Power Plant Unit 2, which was on prolonged outage due to a generator earth fault last year, shut down again due to another generator stator ground fault. Following its nine-month unplanned outage which breached ERC rules on allowable maximum outages for coal-fired power plants, SEM-Calaca was fined Php 4.31 million by the ERC.[6] SEM-Calaca is the oldest coal plant in the country, operating since 1984, or nearly four decades.

The recent yellow alert shows that forced outages and de-ratings are incidents not isolated to old and near-end-of-life coal-fired power plants. In fact, there are several relatively new coal-fired power plants that have already experienced several forced outages in the past five years (Figure 5).

Figure 5 shows that many of the fossil fuel power plants that triggered the Yellow Alert Status on March 26 are the same power plants that have been burdening electricity consumers with regular outages and/or de-rating since 2016.

Figure 4. Power plants with Unavailable Capacity due to Forced Outage or De-rating in 2016-2022

[6] *ERC imposes P4.31-million fine on Batangas power plant,* Business World, 1 February 2022. https://www.bworldonline.com/erc-imposes-p4-31-million-fine-on-batangas-power-plant/



**Year commissioned is indicated in parenthesis.*

From 2016-2022, SEM-Calaca Coal Power Plant, TLI Pagbilao Coal Power Plant, TeaM Sual Coal Power Plant, and GNPower Mariveles Coal Power Plant have gone on forced outages and/or de-ratings for five years. Several of these outages occurred for extended periods of time, some for half a month and other extending to almost a year (See Appendix 3: Power Plants with Unavailable Capacity, 2016-2020).

A Luzon power outlook analysis by ICSC finds that thin reserves are expected before and after the elections period as operating margins have been falling below dispatchable reserve requirements. Thinning reserves, regular outages from coal plants, recent occurrence of shortage alerts, and dependence on another unit of unreliable coal power to come online signifies that a power shortage can occur. However, this year, the stakes for a repeat of summer power shortage is higher as this could put into question the integrity of automated elections, which largely depends on the secure supply of electricity.

"[M]any of the fossil fuel power plants that triggered the Yellow Alert Status on March 26 are the same power plants that have been burdening electricity consumers with regular outages and/or de-rating since 2016."

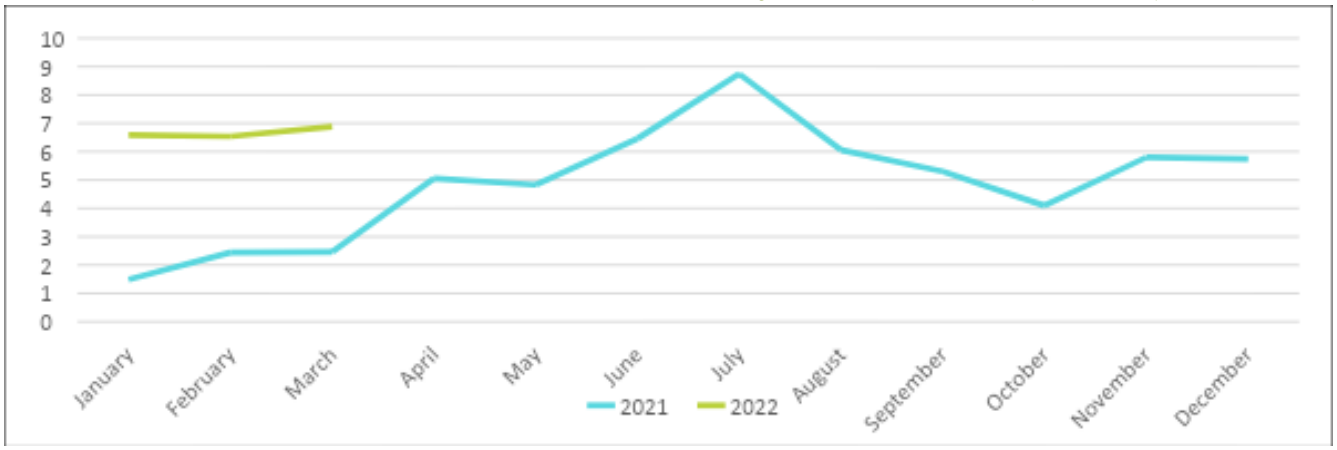
Unresolved complaints concerning pricing play between sister generation companies

When contracted supply is not delivered by power producers, distribution utilities would have to purchase more electricity from the WESM, which exposes consumers to higher and volatile WESM rates. During the Luzon Grid red alert last June 2021 that was triggered by mostly fossil fuel power plant outages and de-ratings, some of which lasted until September, Meralco's WESM rates spiked (Figure 6).

In the period leading up to the red alert, the secondary price cap (SPC) was imposed for several intervals leading up to last year's outages. As early as 28 May 2021 (1100H to 1300H and 1600H to 2000H) and 29 May 2021 (0100H to 0600H, 0800H to 1300H, 1700H to 2200H, and 2400H), a number of breaches have already been noted by Philippine Electricity Market Corporation (PEMC). The market

assessment report from PEMC revealed that on 31 May 2021, peak hour market price hit Php 32/kWh. Leading up to the outages, load weighted average price already skyrocketed to Php 35/kWh. Similar prices were observed across the days of outages.

Figure 5. Meralco's WESM Charges in January 2021-March 2022 (Php/kWh)



Even electricity purchased by Meralco through power supply agreements (PSAs) increased, for those PSAs that are considered financial contracts—PSAs that offer to supply and sell electricity from power plants and WESM. For example, ACEN executed a baseload PSA with Meralco, where it nominated SLTEC Puting Bato Coal Plant and WESM. When ACEN's SLTEC Puting Bato Coal Plant went on forced outage during the Luzon Grid's red alert last year, its PSA charges to Meralco also increased from Php 4.9873/kWh in April to Php 5.6735/kWh in May, Php 6.3396/kWh in June, and Php 6.4800/kWh in July.

Considering the high concentration of ownership and operation over installed capacities in the country, there were several power companies whose power plants underwent outages or de-ratings, while their sister companies supplied electricity in the WESM during the same period. It was no less than the ERC Chairperson Agnes Devanadera that alleged a "pricing play" among these companies, after the SPC was hit at least 418 times in a span of 6 months.[7]

Table 3 shows the parent holding companies and the power plant facilities of their subsidiaries that went on repeated outages and/or de-rating causing yellow and/or red alerts, and contributed to the effective supply of WESM during the same period of yellow and/or red alert.

Although PEMC reports do not include GNPower Dinginin as one of the pivotal plants providing effective supply to the WESM during last year's yellow and/or red alerts, AboitizPower reported that its net income increased last year due to the capacity addition of GNPower Dinginin and higher capacity injection into the Wholesale Electricity Spot Market (WESM).[8] According to PEMC's Monthly Market Assessment Report, GNPower Mariveles Unit 1 tallied a total of about 200 days on outage as of September 2021, clearly exceeding the 44.7 days of unavailability provided to pulverized coal power plants by ERC rules. Thus, despite GNPower Mariveles Coal Plant Unit 1 undergoing forced outage from

[7] Power Philippines, *ERC blames gencos' "pricing play" for Red Alert,* As of 7 June 2021. https://powerphilippines.com/erc-blames-gencos-pricing-play-for-red-alert/
[8] Manila Bulletin, *Aboitiz Power income soars 66% to P20.8 B in 2021,* As of 7 March 2022. https://mb.com.ph/2022/03/07/aboitiz-power-income-soars-66-to-p20-8-b-in-2021/

February 6 to July 27, and its Unit 2 shutting down from June 1 to 9 and again on September 18 to 20 in 2021, AboitizPower net income soared 66% compared to last year due to GNPower Dinginin.[9]

SLTEC's Unit 2 on the other hand tallied about 56 days on outage, also exceeding the 32.3 days of unavailability provided to circulating fluidized bed coal plants. ACEN reported a consolidated attributable net income of Php 5.25 billion in 2021, 22% higher than the previous year attributed to a larger power demand.[10]

Table 3. Parent Holding Companies behind the 2021 Yellow and Red Alerts and WESM Price Spikes

Parent Holding Company	Facility going on repeated outages and/or de-rating causing yellow and/or red alerts	Facilities contributing to the effective supply of WESM during yellow and/or red alerts	Yellow and/or Red Alert Period
First Gas Holding Corp.	• Sta. Rita Natural Gas Power Plant	• Sta. Rita Natural Gas Power Plant	May 3-9
Aboitiz Power	• TLI Pagbilao coal plant	• Pagbilao coal plant[11]	May 3-9
Tokyo Electric Power Company & Marubeni Corp.	• Sual Coal-fired Thermal Power Plant	• Sual Coal-fired Thermal Power Plant	May 31-Jun 6
Aboitiz Power & ACEN	• GNPower Mariveles coal plant		Oct 18-24
Aboitiz Power		• Pagbilao coal plant	
ACEN	• SLTEC Puting Bato coal plant		
SMC Global Power Holdings Corp.	• KEPCO Ilijan CCGT	• KEPCO Ilijan CCGT • SMC Limay Coal-Fired Thermal Power Plant • Masinloc Coal-fired Thermal Power Plant	May 31-Jun 6
	• KEPCO Ilijan CCGT	• KEPCO Ilijan CCGT • SMC Limay Coal-Fired Thermal Power Plant • Masinloc Coal-fired Thermal Power Plant	July 12-18
	• SMC Limay Coal-Fired Thermal Power Plant	• Masinloc Coal-fired Thermal Power Plant • SMC Limay Coal-Fired Thermal Power Plant	Oct 18-24

[9] Manila Bulletin, *Aboitiz Power income soars 66% to P20.8 B in 2021,* As of 7 March 2022. https://mb.com.ph/2022/03/07/aboitiz-power-income-soars-66-to-p20-8-b-in-2021/

[10] https://acen.com.ph

[11] The Weekly Market Watch report from the Philippine Electricity Market Corporation does not disclose which unit of the Pagbilao power plant was pivotal for the respective period.

"Despite GNPower Mariveles Coal Plant Unit 1 undergoing forced outage from February 6 to July 27, and Unit 2 shutting down from June 1 to 9 and again on September 18 to 20 in 2021, AboitizPower net income soared 66% compared to 2020 due to GNPower Dinginin."

At the height of the Congressional hearings on the red alert last year, Malacanang ordered the ERC, DOE, Department of Justice, and the Philippine Competition Commission (PCC) to investigate the 17 generation companies whose power plants went on prolonged unplanned outages.[12]

Meanwhile, the Power for People Coalition including several other Meralco electricity consumers filed a complaint against DOE Secretary Cusi for grave misconduct, gross neglect of duty, inefficiency, incompetence, and conduct prejudicial to the best interest of the service—for his failure to issue a single policy to curb the yearly unplanned outages that have caused yellow and red alerts since 2016.

Several months after the outages last Yellow and Red Alerts last 31 May to 1 June 2021, ERC started fined 10 power generation companies that breached allowable unplanned outage days in 2021. Combined penalties amount to Php 15.5 million only, a relatively measly price to pay for power players with billions worth of earnings.[13]

As for the investigation on "pricing play" and economic sabotage, there has been neither report or update on its status. In a direct inquiry to the relevant government agencies, they refused to share information on whether the investigation has been concluded. Meanwhile, the Ombudsman has not resolved the electricity consumers' administrative complaint against DOE Secretary Cusi.

After ERC tightens price cap regulations, PIPPA requests for suspension

During the 2021 Luzon Grid red alert, the ERC amended the rolling average period before the SPC could be triggered—shortening this from 120 hours to 72 hours.

The SPC is part of a price control mechanism to shield consumers from the sustained skyrocketing prices of electricity. This Pre-Emptive Mitigation Measure in the WESM was first implemented in 2014 as an interim response to consistently high prices from May to June of that year.[14] After extending the application through two consecutive resolutions[15], the ERC finally issued Resolution No. 20, Series of 2014 which made the measure permanent.[16]

The measure sets a threshold electricity price called the Cumulative Price Threshold (CPT), which, if breached over a sustained, predetermined period, triggers the SPC. As of ERC's Resolution No. 07, Series of 2021, the CPT currently stands at Php 9,000.00/MWh while the period has been reduced to 72 hours. The SPC is currently set at Php 6,245.00/MWh. The market clearing price for the immediate trading interval following the breach will be set at the price of the cap and stay there until the Generator

[12] *Power Philippines,* Palace orders ERC, DOJ, PCC to help DOE probe gencos, 4 June 2021. https://powerphilippines.com/palace-orders-erc-doj-pcc-to-help-doe-probe-gencos/
[13] *ERC fines 10 firms for having too many power outages in 2021,* Philstar, 7 February 2021. https://www.philstar.com/business/2022/02/07/2159173/erc-fines-10-firms-having-too-many-power-outages-2021
[14] ERC Resolution 8, Series of 2014
[15] ERC Resolution 13 and 14, Series of 2014
[16] ERC Resolution 20, Series of 2014

Weighted Average Price (GWAP) rolling average falls below the CPT. However, should there be intervals where the market clearing price is lower than the price cap while the cap is in effect, the lower market clearing price will be applied for settlement purposes.[17]

The price cap is set at a level which would allow a diesel plant, the riskiest among these investments, to recover marginal costs.[18] The rolling average threshold, on the other hand, is based on the historical market prices in the months of April to June from 2010 to 2014, in addition to allowing the market to clear at the level of Php 32,000.00 for 3 intervals in a day.[19]

Finally, the price cap shall be lifted when the rolling-average falls lower than the threshold. This measure is similar to those implemented in the National Electricity Market of Australia and the price cap practice in Texas at the time of its initial local implementation.

As of writing, the war between Russia and Ukraine continues to drive fuel and electricity prices up internationally, especially for the European Union (EU) which relies mainly on Russia for its gas supply. In response, EU members Spain and Portugal have proposed market reform measures such as price caps to ease the burden on its citizens.[20] In particular, Spain's local industries have been adversely affected, with some members of the supply chain being forced into a halt because the cost of electricity had begun eating into household savings.[21]

While other countries are proposing price control measures for the protection of consumers, the Philippine Independent Power Producers Association Inc. (PIPPA) had the audacity to ask the ERC to lift the SPC to prevent them from incurring losses due to soaring fuel prices in the world market.[22]

10 Solutions to the Power Crisis

Emergency solutions

1. **Impose more stringent price cap regulations to safeguard consumers from abusive and anti-competitive behaviors.** Lifting the SPC as requested by the PIPPA is out of touch with the reality of several ordinary Filipinos, whose electricity bills have been eating more into their budget and savings, and contrary to the very intent of the price cap. The SPC seeks to protect consumers exactly from these extreme and sustained increases of electricity prices in the WESM. Under these extraordinary circumstances, the ERC should instead consider shortening the rolling period even further from 72 hours to 24 hours, and examine the possibility of lowering the price cap further. The matter being imbued with public interest, the protection of consumers should be prioritized over business interests.

2. **Sanction generation companies that breached the maximum allowable outages with higher fines and penalties, and parent power holding companies and sister companies that have been**

[17] Resolution No. 07 Series of 2021
[18] ERC Resolution 20, Series of 2014
[19] Ibid.
[20] *Spain, Portugal Emerge as 'Energy Island' in Europe's Crisis,* USNews, 29 March 2022. https://www.usnews.com/news/business/articles/2022-03-29/spain-portugal-emerge-as-energy-island-in-europes-crisis
[21] European Council for an Energy Efficient Economy, *Energy prices push Spanish inflation to 37-year high*. https://www.eceee.org/all-news/news/news-2022/energy-prices-push-spanish-inflation-to-37-year-high/
[22] ERC reviews WESM secondary cap suspension, *Manila Bulletin,* 16 March 2022. ERC reviews WESM secondary cap suspension – Manila Bulletin (mb.com.ph)

proven to engage in economic sabotage or pricing play. The fines and penalties imposed by the ERC thus far cannot serve their intent to deter future protracted forced outages if these are dwarfed by the profit that the parent holding companies are earning from WESM transactions through their other subsidiary generation companies. Increasing sanctions will force erring companies to maintain their power plants in good conditions, train and hire local experts that can quickly respond to unplanned outages, and immediately have their plants up and running in just a matter of days. It is imperative to conclude the investigation on the alleged economic sabotage or pricing play from last year's red alert, and impose the appropriate sanctions to prevent a repeat this year.

3. **Mandate all distribution utilities to expedite processing of net-metering applications to reduce dependence on the grid and maximize supply from already installed solar PV rooftop systems that can meet peaking demand.** Solar PV is often dismissed as most appropriate for peaking demand considering the inflexible grid. But in the instances of red alerts and outages, peaking demand is in fact what needs to be met. Instead of expediting the commissioning of coal plants and other fossil fuel plants, expediting the processing of pending net-metering applications for already installed solar PV rooftop systems is an emergency solution that can immediately pick-up the slack from unreliable and obsolete coal plants. As of May 2021, the DOE reports a total of 4,118 qualified end-users registered under the Net-Metering Program with a total capacity of 33.21-megawatt peak (MWp).[23] There is no information regarding net-metering applications yet to be approved.

4. **Hasten implementation of energy efficiency and conservation programs and other demand-side management programs to reduce overall demand and shave off peaking demand.** Through massive and effective implementation of energy efficiency and conservation and demand-side management programs, we can immediately reduce overall demand while still performing the productive tasks. These programs can also help change electricity consumption behaviors and shave off peaking demand as needed.

Medium-term solutions

5. **Remove automatic pass-through provisions and other terms in Power Supply Agreements that provide undue preference to fossil fuel players.** Last year's electricity bill shock and red alert exposed how unfavorable provisions and terms implemented in coal PSAs do not prioritize consumer interest. Electricity consumers shoulder expensive and volatile costs from imported fuels, which are costs are expected to continue to rise with sanctions being imposed on Russia, a top oil and gas exporter.

6. **Publish all Performance Audits and the corresponding Final Recommendations, and sanction DOE and ERC for being remiss in curbing the annual power outages.** Pursuant to DOE DC 2017-12-0016, performance assessments and audits of all power generation, transmission, and distribution systems and facilities should be conducted annually. These assessments and audits as well as the corresponding final recommendations of the DOE should be published so that all Filipino consumers can be apprised of the findings of the real status of the power plants that have been undergoing repeated and protracted outages and de-rating. This should also inform consumers whether DOE and ERC are diligently performing their mandates to ensure the quality, reliability, security, and affordability of the supply of electricity.

[23] DOE, Philippine Energy Plan 2020-2040, p. 86.

7. **Incentivize the relevant government bodies to expedite the permitting process for renewable energy systems that can pick-up the slack from unreliable and obsolete coal plants, and incentivize financial institutions that extend financing to these renewable energy systems.** Considering the impact on power rates of requiring 100% firm ancillary service requirement from NGCP or resorting to baseload coal for peaking demand, the true saving grace in this time is renewable energy peaking plants such as solar PV, which is faster and easier to construct and utilize flexible, dispatchable, and renewable resource. In Vietnam's experience, as much as 9 GW of solar PV potential can be tapped through solar PV rooftop systems in a matter of a few months.

Long-term solutions

8. **Reduce dependence on imported fossil fuels and prevent fossil gas lock-in.** Reducing dependence on imported fossil fuels will not only help the country meet transition and climate goals, it will also protect consumers from expensive and volatile costs of Despite the country's brimming RE potential, DOE has declared another fossil fuel as the new preferred energy source—fossil gas. Without a clear fossil gas exit strategy, fossil gas may crowd-out renewables through diverted investments and result in a carbon lock-in or continued dependence on imported fossil fuels that delays transition further.

9. **Allow the government to engage in the generation of power in order to provide additional capacity in times of shortages and construct renewable energy plants needed to meet transition targets.** By allowing government to engage in power generation again, it can prioritize the construction of renewable energy plants that can provide needed demand in times of shortage, and can expedite the country's energy transition.

10. **Impose more stringent limits on concentration of ownership, operation, or control of installed generating capacity among private companies to deoligarchize and democratize the generation sector, and prohibit cross-ownership between companies involved in the generation and supply, transmission, and distribution sectors.** Considering the allegations of pricing play and economic sabotage, the limits to the concentration of ownership and cross-ownership should be made more stringent. The power industry should not be controlled by only a handful of corporations, whose income have significantly soared in the past year while consumers are burdened power shortages and expensive electricity bills.

Appendix 1: Reasons for Meralco's consecutive rate increases starting April 2021

Month	Meralco rate (Php/kWh)	Reasons for the rate increase
Apr-21	4.5370	• WESM prices were higher by Php 2.5991/kWh due to tighter supply in the Luzon grid—there was increase in demand as well as unplanned plant outages[24]
May-21	4.5474	• Charges from Power Supply Agreements (PSA) were up by Php 0.2541/kWh due to the low dispatch of San Gabriel caused by Malampaya natural gas supply restriction[25] • WESM remained high as capacity on outage stayed above 3,300 MW and Luzon peak demand in April still exceeded 10,400 MW[26]
Jun-21	4.6171	• WESM prices increased by Php 1.6322/kWh due to the thin supply in the Luzon grid brought by plant outages • Secondary price cap was triggered from May 4 to 7 and then from May 20 to 22[27]
Jul-21	4.8707	• Tight supply conditions in the Luzon grid brought generation charges up by Php 0.2536 to Php 4.8707/kWh. • WESM prices remained high at P8.7424, aggravated by the supply restriction of Malampaya gas and forced outages • Charges from Independent Power Producers (IPPs) increased by P0.1929/kWh, due to peso depreciation and Malampaya gas restriction, as gas-fired power plants have to use the more expensive liquid fuel[28]
Aug-21	4.9322	• Transmission charge was up by Php 0.1331/kWh due to higher ancillary service charges • Generation charge also inched up by Php 0.0615/kWh to Php 4.9322/kWh in August • IPP charges increased again by Php 0.7389/kWh, due to the same reasons—peso depreciation and Malampaya gas restriction, causing gas-fired power plants to use the more expensive liquid fuel[29]
Sep-21	5.0439	• Higher generation charges from PSAs due to lower demand, leading to excess energy deliveries • Lower average plant dispatch led to higher IPP charges[30]

[24] *Meralco rates slightly increase in April 2021,* Rappler, 8 April 2021. https://www.rappler.com/business/meralco-electricity-rates-april-2021/
[25] *Meralco rates increase in May 2021,* Rappler, 7 May 2021. https://www.rappler.com/business/meralco-electricity-rates-may-2021/
[26] *Meralco rates slightly up in May,* GMA News, 7 May 2021. https://www.gmanetwork.com/news/money/companies/786600/meralco-rates-slightly-up-in-may/story/
[27] *Thin power supply pushes Meralco rates up in June 2021,* Rappler, 11 June 2021. https://www.rappler.com/business/meralco-electricity-rates-june-2021/
[28] *Power spot market prices push Meralco rates up in July 2021,* Rappler, 11 July 2021. https://www.rappler.com/business/meralco-electricity-rates-july-2021/
[29] *Meralco rates going up for 5th straight month in August 2021,* Rappler, 9 August 2021. https://www.rappler.com/business/meralco-electricity-rates-august-2021/
[30] *For 6th straight month, Meralco rates up in September 2021,* Rappler, 10 September 2021. https://www.rappler.com/business/meralco-electricity-rates-september-2021/

Oct-21	5.0435	● Higher transmission charge due to higher ancillary service charges, accounting for about 33% of the National Grid Corporation of the Philippines' total transmission cost ● Charges from PSAs due to higher fuel prices and the depreciation of the peso[31]
Nov-21	5.3346	● The maintenance shutdown of the Malampaya natural gas facility from October 2 to 25 resulted in higher costs of power from the WESM and IPPs ● Tight supply in the Luzon Grid kept WESM prices high and triggered the secondary price cap on Sept. 30, Oct. 1, Oct. 21 and 22, which made up 8.39% of the October supply month ● The Luzon grid was also put on Yellow Alert on Oct. 20 due to forced outages of several power plants. As a result, WESM charges went up by Php 1.7073/kWh. Charges from IPPs also increased by Php 0.8186/kWh[32]
Dec-21	5.5343	● Charges from PSAs went up by Php 0.2142/kWh due to the rise in international coal prices and lower dispatch of some PSAs. ● Transmission charges jumped due to higher Ancillary service charge. ● Generation charge, includes first of the four monthly installments covering the deferred costs from the November bill. The Energy Regulatory Commission (ERC) ordered Meralco to defer the collection of part of the suppliers' generation costs.[33]
Mar-22	5.4737	● Mainly due to higher charges from the WESM ● Charges from IPPs also increased by Php 0.1625/kWh mainly due to the lower dispatch of Quezon Power and First Gas-San Lorenzo ● Charges from PSAS were higher by Php 0.1510/ kWh, as the dispatch of First NatGas-San Gabriel plant continued to be affected by Malampaya facility's inability to supply sufficient natural gas ● Lower excess energy deliveries, which are priced at a discount, also contributed to the increase in PSA costs[34]

[31] *Meralco rates inch up in October 2021*, Rappler, 8 October 2021. https://www.rappler.com/business/meralco-electricity-rates-october-2021/
[32] *Meralco rates to increase in November,* Business World, 12 November 2021. https://www.bworldonline.com/meralco-rates-to-increase-in-november/
[33] *Meralco rates go up in December,* Business World, 10 December 2021. https://www.bworldonline.com/meralco-rates-go-up-in-december/
[34] *Following two consecutive months of reductions,*
power rates slightly inch up in March, Meralco, 18 March 2022. https://company.meralco.com.ph/news-and-advisories/march-2022-rates-updates

Appendix 2: Power Plants with Unavailable Capacity in 2021

Parent Holding Company	Facility Name	Type of Outage	Type	Year Commissioned	Reason	Date Out	Date Online
DMCI Holdings, Inc.	SEM-Calaca Unit 2	Unplanned	Coal	1984	Generator Earth fault	3 Dec 2020	19 Sept 2021
Semirara Mining and Power Corp.	SLPGC U2, 3, and 4	Unplanned	Coal	2016	Declared unavailable due to phase time overcurrent protection tripped	14 Sept 2021	15 Sept 2021
Tokyo Electric Power Company & Marubeni Corporation	TeaM Sual U2	Unplanned	Coal	1999	Boiler tube leak	16 May 2021	2 Jun 2021
Tokyo Electric Power Company & Marubeni Corporation	TeaM Sual	Unplanned	Coal	1999	Tripped from 178MW during load stabilization	3 Sept 2021	3 Sept 2021
AboitizPower	TLI Pagbilao U2	Unplanned	Coal	1996	Boiler tube leak	2 Jun 2021	5 Jun 2021
AboitizPower	TLI Pagbilao U2	Unplanned	Coal	1996	Preventive Maintenance Outage until 19 September 2021	21 Aug 2021	19 Sept 2021
KEPCO Philippines & SPC Power Corporation	KSPC Coal U1	NA	Coal	2010	Preventive Maintenance	8 May 2021	3 Jun 2021
KEPCO Philippines & SPC Power Corporation	KSPC Coal U1	Unplanned	Coal	2010	Boiler tube leak	21 Sept 2021	24 Sept 2021

ACEN	SLTEC Puting Bato U2	NA	Coal	2015	Extended Outage	10 May 2021	31 May 2021
ACEN	SLTEC Puting Bato U1	Planned	Coal	2015	Preventive Maintenance	16 Aug 2021	15 Oct 2021
SMC Global Power Holdings SMC Global Power Holdings Corp.	KEPCO Ilijan CCGT	NA	Fossil gas	2002	De-rating	31 May 2021	NA
SMC Global Power Holdings	KEPCO Ilijan CCGT	Unplanned	Gas Fossil gas	2002	Gas Restriction, Generator bearing lube oil line leak	12 Sept 2021	17 Sept 2021
AboitizPower & ACEN	GNPower Mariveles U1	Unplanned	Coal	2013	Boiler tube leak	6 Feb 2021	27 Jul 2021
AboitizPower & ACEN	GNPower Mariveles U2	Unplanned	Coal	2013	Boiler tube leak	1 Jun 2021	9 Jun 2021
AboitizPower & ACEN	GNPower Mariveles U2	Unplanned	Coal	2013	Tripped due to circulating water pump trouble	18 September 2021	20 September 2021

Appendix 3: Power Plants with Unavailable Capacity, 2016-2020

Power Plant	Fuel	Installed Capacity	Dependable Capacity	Unavailability Cause	Date Out
SMC Masinloc Coal-fired Power Plant Unit 2	Coal	344	344	Unplanned - Ongoing Assessment	4-Jun-20
TLI Pagbilao Coal-fired Power Plant Unit 2	Coal	382	382	Unplanned - Boiler tube leak	4-Jun-20
TLI Pagbilao Coal-fired Power Plant Unit 1	Coal	382	382	Unplanned - Excitation Fault Alarm	3-Jun-20
SMC Consolidated Power Corporation (SMCCPC) Limay Unit 1	Coal	150	135	Unplanned - Emergency shutdown to rectify hotspot at Lamao substation & repair of coal feeders	25-May-20
San Buenaventura Power	Coal	500	455	Unplanned - Maintenance Outage to perform boiler cleaning/ de-slagging	23-May-20
Southwest Luzon Power Generation Corporation (SLPGC) Unit 2	Coal	150	140	Unplanned - Extended planned Outage	6-Apr-20
SMC Masinloc Coal-fired Power Plant Unit 3	coal	335	335	Unplanned - Repair of the HP heater and included draft fan; on commissioning test	24-Mar-20
Tiwi Unit 1 and Makban Unit 5	Geo	115		Outside Management Control Outage - Steam Supply Issue	
GNPower Mariveles Power Ltd. Unit 2	Coal	345	316	Unplanned - Isolated due tripping of Transmission line caused by 6.1 magnitude earthquake; ongoing troubleshooting after failed synchronization on 2 May 2019 evening	22-Apr-19
SCPC Calaca Unit 2	Coal	300	200	Unplanned - Boiler Tube Leak	28-Apr-19

TLI Pagbilao Unit 1	Coal	382	382	Unplanned - Tripped due to excessive water leak at feed water flow sensing line	2-May-19
GNPower Mariveles Power Ltd. Unit 2	Coal	345	316	Unplanned - Isolated due tripping of Transmission line caused by 6.1 magnitude earthquake; ongoing troubleshooting after failed synchronization on 2 May 2019 evening	22-Apr-19
SCPC Calaca Unit 2	Coal	300	200	Unplanned - Boiler Tube Leak	28-Apr-19
Angat Main Unit 3	Hydro	50	50	Unplanned - Tripped due to High Bearing Temperature	29-Apr-19
GNPower Mariveles Power Ltd. Unit 2	Coal	345	316	Unplanned - Isolated due tripping of Transmission line caused by 6.1 magnitude earthquake	22-Apr-19
SMCCPC Limay Unit 1	Coal	150	135	Unplanned- Isolated due tripping of Transmission line caused by 6.1 magnitude earthquake	22-Apr-19
SMCCPC Limay Unit 2	Coal	150	135	Unplanned - Isolated due tripping of Transmission line caused by 6.1 magnitude earthquake	22-Apr-19
SCPC Calaca Unit 2	Coal	300	200	Unplanned - Boiler Tube Leak	28-Apr-19
GNPower Mariveles Power Ltd. Unit 1	Coal	345	316	Unplanned - Isolated due to the M6.1 earthquake incident.	22-Apr-19
GNPower Mariveles Power Ltd. Unit 2	Coal	345	316	Unplanned - Isolated due to the M6.1 earthquake incident. Ongoing Restoration	22-Apr-19
SMCCPC Limay Unit 1	Coal	150	150	Unplanned - Isolated due to the M6.1 earthquake incident. Ongoing Restoration	22-Apr-19
SMCCPC Limay Unit 2	Coal	150	150	Unplanned - Isolated due to the M6.1 earthquake incident. Ongoing Restoration	22-Apr-19
SMCCPC Limay Unit 2	Coal	150	150	Unplanned - Boiler tube leak	11-Apr-19

Southwest Luzon Power Generation Corporation (SLPGC) Unit 2	Coal	150	150	Unplanned - Vibration in Primary Air Fan	7-Apr-19
SMCCPC Limay Unit 2	Coal	150	150	Unplanned - Boiler tube leak	11-Apr-19
SLPGC Unit 2	Coal	150	150	Unplanned - Vibration in Primary Air Fan	7-Apr-19
Pagbilao Energy Corporation (PEC) Pagbilao U3	Coal	420		Unplanned - Boiler Sagging	2-Apr-19
SMCCPC Limay Unit 2	Coal	150	150	Unplanned - Boiler tube leak	11-Apr-19
TeaM Energy Corporation Sual Unit 1	Coal	647		Unplanned - Boiler Circulating Pump piping leak	9-Apr-19
SLPGC Unit 2	Coal	150	150	Unplanned - Vibration in Primary Air Fan	7-Apr-19
PEC Pagbilao Unit 3	Coal	420		Unplanned - Boiler Sagging	2-Apr-19
SSMCCPC Limay Unit 2	Coal	150	150	Unplanned - Boiler tube leak	11-Apr-19
TeaM Energy Corporation Sual Unit 1	Coal	647		Unplanned - Boiler Circulating Pump piping leak	9-Apr-19
SLPGC Unit 2	Coal	150	150	Unplanned - Vibration in Primary Air Fan	7-Apr-19
PEC Pagbilao Unit 3	Coal	420		Unplanned - Boiler Sagging	2-Apr-19
Malaya Unit 2	Oil	350		Unplanned - Undisclosed	4-Apr-19
PEC Pagbilao U3	Coal	420		Unplanned - Undisclosed	4-Apr-19
SLTEC	Coal	135		Unplanned - Undisclosed	4-Apr-19
Makban Unit 7	Geo	20		Unplanned - Undisclosed	4-Apr-19
Tiwi Unit 6	Geo	57		Unplanned - Undisclosed	4-Apr-19

Tiwi Unit 1	Geo	60		Unplanned - Undisclosed	4-Apr-19
TLI Pagbilao Unit 1	Coal	382		Unplanned - Tripping of 230 kilovolt Pagbilao-Tayabas Transmission Line 1	20-Oct-17
TLI Pagbilao Unit 2	Coal	382		Unplanned - Tripping of 230 kilovolt Pagbilao-Tayabas Transmission Line 1	20-Oct-17
SCPC Calaca Unit 2	Coal	300		Unplanned - Undisclosed	20-Oct-17
GNPower Mariveles Power Ltd. Unit 2	Coal	345		Unplanned - Undisclosed	20-Oct-17
Masinloc Coal-fired Power Plant Unit 1	Coal	330		Unplanned - Undisclosed	20-Oct-17
TeaM Energy Corporation Sual Unit 2	Coal	647		Unplanned - Undisclosed	20-Oct-17
QPPL Co. Coal -fired Power Plant	Coal	456		Unplanned - Vibration of the boiler booster pump	20-Oct-17
Pagbilao Energy Corporation (PEC) Pagbilao Unit 2	Coal	382		Unplanned - Undisclosed	22-Sep-17
San Lorenzo Unit 1	Fossil gas	250		Unplanned - Undisclosed	22-Sep-17
Limay Block 6		70		Unplanned - Undisclosed	22-Sep-17
GNPower Mariveles Power Ltd. Unit 2	Coal	302		Unplanned - Undisclosed	22-Sep-17
Kalayaan Unit 3	Hydro	180		Unplanned - Undisclosed	22-Sep-17
Kalayaan Unit 4	Hydro	180		Unplanned - Undisclosed	22-Sep-17
Avion Unit 2	Fossil gas	50		Unplanned - Lost power capacities due to the earthquakes	11-Apr-17
San Lorenzo Unit 1	Fossil gas	250		Unplanned - Lost power capacities due to the earthquakes	11-Apr-17
San Lorenzo Unit 2	Fossil gas	250		Unplanned - Lost power capacities due to the earthquakes	11-Apr-17

Ilijan Unit 2	Fossil gas	600		Unplanned - Lost power capacities due to the earthquakes	11-Apr-17
San Gabriel	Fossil gas	420		Unplanned - Lost power capacities due to the earthquakes	11-Apr-17
Avion Unit 2	Fossil gas	50		Unplanned - Lost power capacities due to the earthquakes	10-Apr-17
San Lorenzo Unit 1	Fossil gas	250		Unplanned - Lost power capacities due to the earthquakes	10-Apr-17
San Lorenzo Unit 2	Fossil gas	250		Unplanned - Lost power capacities due to the earthquakes	10-Apr-17
Ilijan Unit 2	Fossil gas	600		Unplanned - Lost power capacities due to the earthquakes	10-Apr-17
San Gabriel	Fossil gas	420		Unplanned - Lost power capacities due to the earthquakes	10-Apr-17
Makban Unit 5	Geo	55		Unplanned - High turbine vibration	10-Apr-17
TLI Pagbilao Unit 2	Coal	328		Unplanned - Boiler tube leak	10-Apr-17
Angat Main Hydropower Plant Unit 4	Hydro	50		Unplanned - Undisclosed	4-Aug-16
Kalayaan Hydroelectric Power Plant Unit 1	Hydro	180		Unplanned - Undisclosed	4-Aug-16
Makban Geothermal Power Plant Unit 1	Geo	40		Unplanned - Undisclosed	4-Aug-16
Makban Geothermal Power Plant Unit 10	Geo	40		Unplanned - Undisclosed	4-Aug-16
Limay Cogeneration Plant Block 6		60		Unplanned - Undisclosed	4-Aug-16
TLI Pagbilao Unit 2	Coal	382		Unplanned - Undisclosed	4-Aug-16
SLTEC Unit 1	Coal	122		Unplanned - Undisclosed	4-Aug-16

SLTEC Unit 2	Coal	140		Unplanned - Undisclosed	4-Aug-16
Malaya Thermal Power Plant Unit 1	Oil	280		Unplanned - Undisclosed	4-Aug-16
TeaM Energy Corporation Sual Unit 2	Coal	647		Unplanned - Undisclosed	30-Jul-16
SCPC Calaca Unit 2	Coal	300		Unplanned - Undisclosed	30-Jul-16
Malaya Thermal Power Plant Unit 2	Oil	280		Unplanned - Undisclosed	30-Jul-16
GNPower Mariveles Power Ltd. Unit 1	Coal	302		Unplanned - Undisclosed	30-Jul-16
TLI Pagbilao Unit 2	Coal	382		Unplanned - Undisclosed	30-Jul-16
Kalayaan Hydroelectric Power Plant Unit 3	Hydro	180		Unplanned - Low water elevation	30-Jul-16
Kalayaan Hydroelectric Power Plant Unit 4	Hydro	180		Unplanned - Low water elevation	30-Jul-16
SLTEC Unit 1	Coal	122		Unplanned - Undisclosed	30-Jul-16
SLTEC Unit 2	Coal	140		Unplanned - Undisclosed	30-Jul-16