



Powering Up The New Normal

Why Energy Efficiency
Matters in this time of
COVID-19

Government imposed ECQ in Metro Manila and other areas in PH

Manila Lockdown March 15 until April 14, 2020

Thorn Tree forum / Country forums / South-East Asia Islands & Peninsula / Philippines

INSIDE DEVELOPMENT | COVID-19

**To contain the spread of coronavirus,
Manila grapples with lockdown**

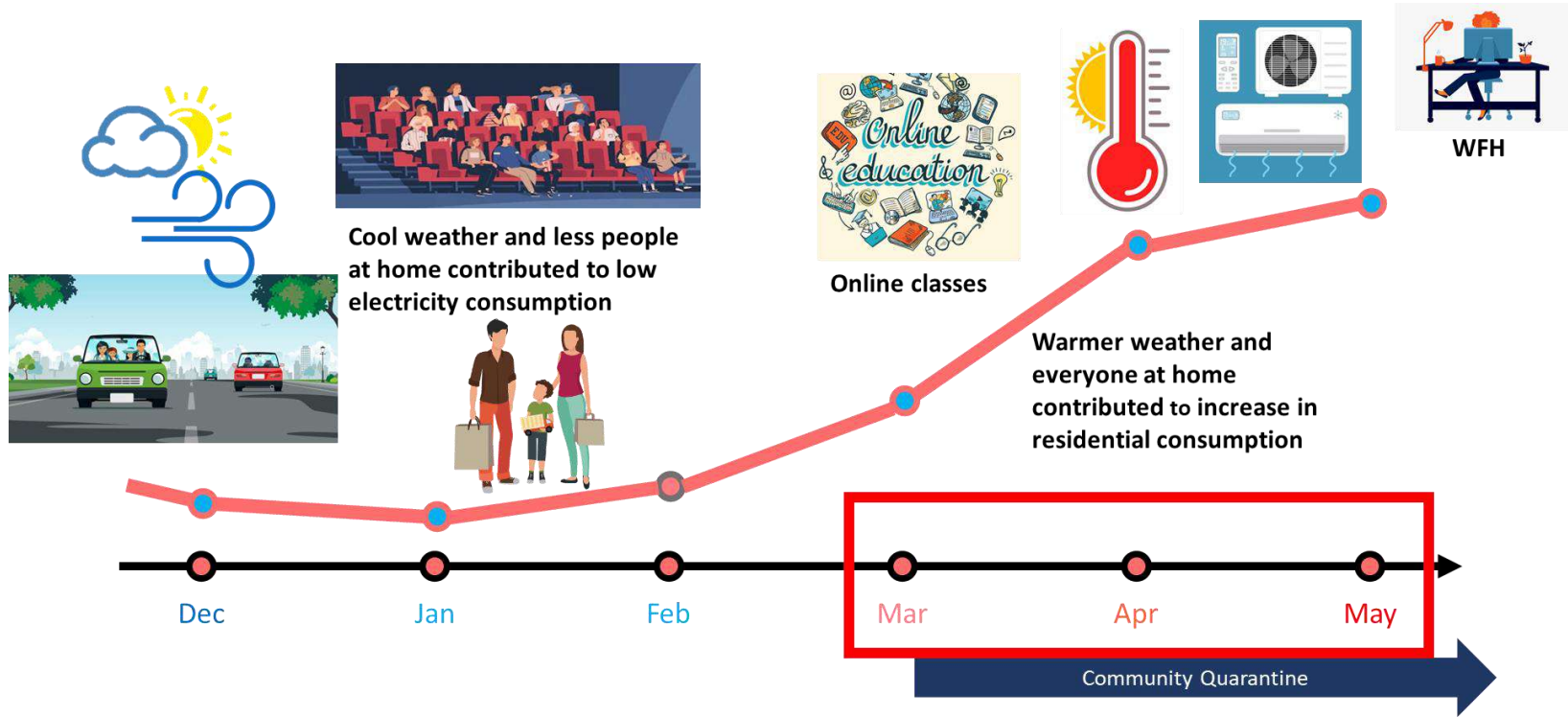
**Duterte extends Luzon
lockdown until April 30**

**Philippines: ECQ over Metro Manila Extended Until May 15; Other
COVID-19 Issuances**



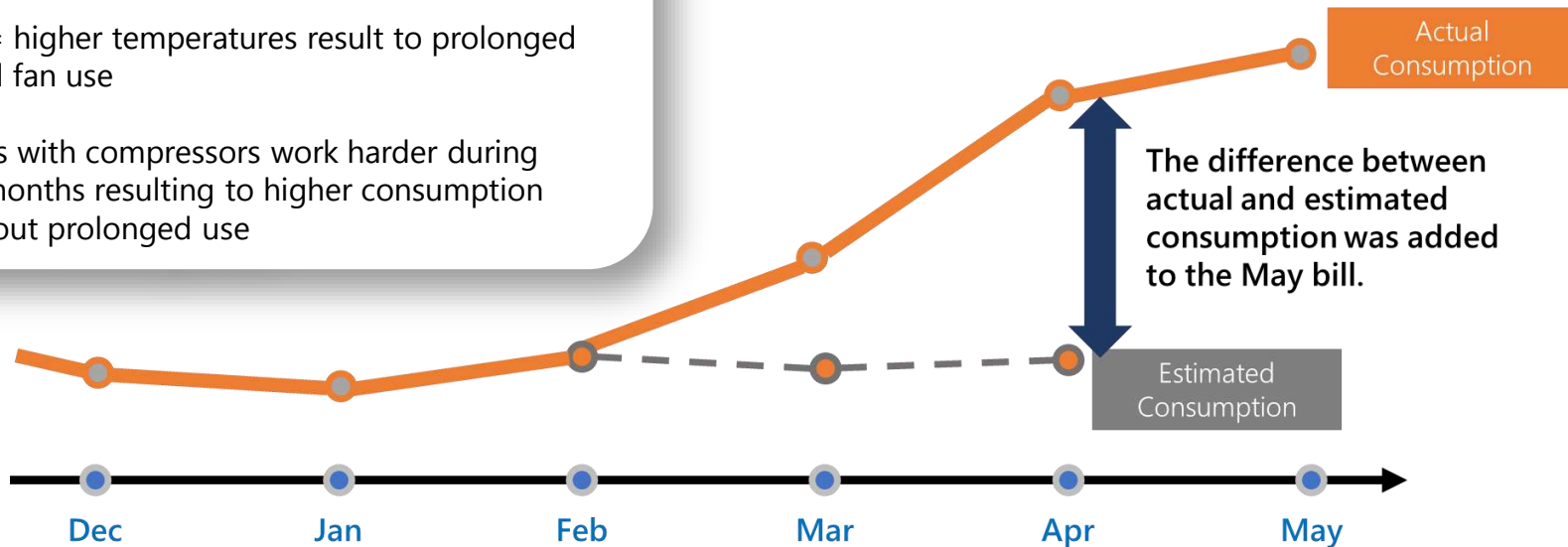
**STAY
HOME
SAVE
LIVES**

ECQ forced a drastic lifestyle change



For essential businesses with continuous operations during ECQ, the same factors contributed to higher energy consumption.

- ⚡ Appliances/equipment critical for operations are used longer
- ⚡ Summer = higher temperatures result to prolonged aircon and fan use
- ⚡ Appliances with compressors work harder during summer months resulting to higher consumption even without prolonged use



Meralco's Energy Efficiency Programs



How to make your homes / businesses energy efficient?

Use energy efficient appliances/equipment

- ⚡ Choose appliances or equipment with lower wattage rating but with the same or better performance



Reduce the duration of appliance/equipment use

- ⚡ Use appliances/equipment in the shortest possible time



But it is important to also know that being energy efficient means:

- ⚡ You don't sacrifice comfort, convenience and productivity
- ⚡ You achieve this by deploying efficient technologies and employing best practices

How to measure energy efficiency:

- 1 Delivers more product/services for the same energy input
- 2 Same product/services for less energy input
- 3 More product/services for less energy input

The Energy Efficiency and Conservation Act was signed to have an energy efficiency framework in place.

Designated Establishments must take action on the following key requirements:

1

Register their business with the required information with the DOE.

2

Have a certified energy manager or conservation officer to fulfill the requirements of the law.

3

Accomplish the required energy reports by the DOE, to be submitted every 15th of April of each year, starting 2021.

An aerial night photograph of a city skyline, featuring numerous illuminated skyscrapers and buildings. A large white diagonal shape overlays the left and top portions of the image, serving as a background for the title text.

Load Profile Study

Space cooling appliances contribute to ~70% of total consumption.

⚡ Top contributors to a residential customer's electricity consumption are space cooling appliances and refrigeration accounting to ~70% of the total consumption.

⚡ Other appliances : 30%

**Electrical Appliances and Usage Study, GFK Philippines, Jan 2016; Panel Research, Synergy Business Consulting, 2012*

Appliances Owned	Low (0 – 100 kWh)	Mid (101 – 350 kWh)	High (351 kWh and up)
Air Conditioner	-	22.0%	57.0%
Electric Fan	53.0%	28.0%	6.0%
Refrigerator	-	18.0%	6.0%
Television	29.0%	13.0%	6.0%
Flat Iron	-	4.0%	5.0%
Lights	9.0%	1.0%	3.0%
Rice Cooker	-	1.0%	1.0%
Radio	4.0%	1.0%	0.4%
Computer	-	2.0%	6.0%
Wifi Router	-	2.0%	0.5%
Others	5.0%	8.0%	9.1%
TOTAL	100.0%	100.0%	100.0%

Here's proof: Meralco conducted a 1-month load monitoring of an actual residential customer:

- ⚡ Family of 5 (husband and wife, 1 baby and 2 helpers)
- ⚡ With daytime consumption (wife, baby and 2 house helpers)
- ⚡ Appliances owned:
 - 1-1.0hp window-type ACU*
 - 1-0.6hp window-type ACU*
 - 1-9.6 cu ft. two-door refrigerator*
 - 1-7.0kg top load washing machine*
 - lights, TV, vacuum cleaner, microwave oven, laptop, flat iron*



Here's proof: Meralco conducted a 1-month load monitoring of an actual residential customer:

- ⚡ Power Data Loggers were installed at customer premises (main and branch circuit breakers)



Customer's average consumption of 609 kWh falls under the **HIGH** consumption bracket*

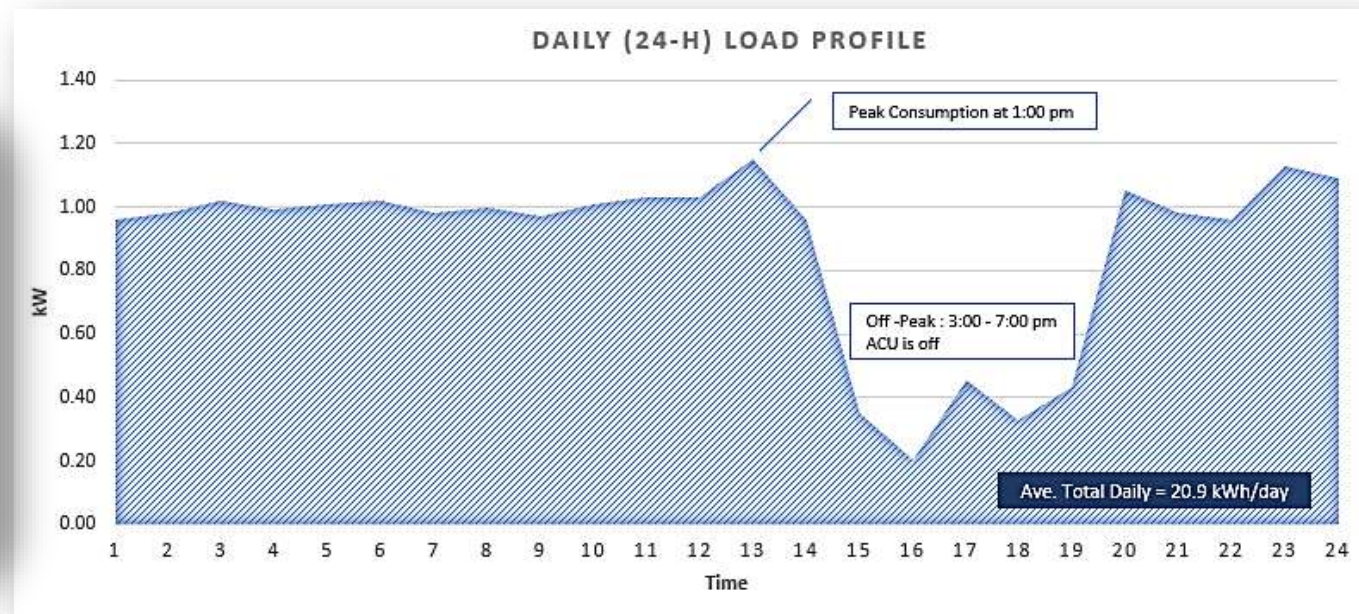
⚡ Based on Meralco account records:

Consumption Bracket: HIGH	Monthly (2019 – 2020 YTD)
Ave. Consumption (kWh)	609 kWh
Ave. Consumption (Pesos)	P6,397.1



Results show that customer has significant daytime consumption

- ⚡ Housewife, baby, 2 house helpers stay in the house the whole day.
- ⚡ With peak consumption in the afternoon at around 1:00pm, 8:00pm and 11:00pm
- ⚡ Off-peak consumption between 3:00pm – 7:00pm



Average aircon use is at 18hrs / day (night time + daytime)

Appliances	Ave. kWh	% Contribution
Aircon	11.7	56%
Refrigerator	2.3	11%
Washing Machine	0.5	2%
Others	6.4	31%
TOTAL	20.9	100%

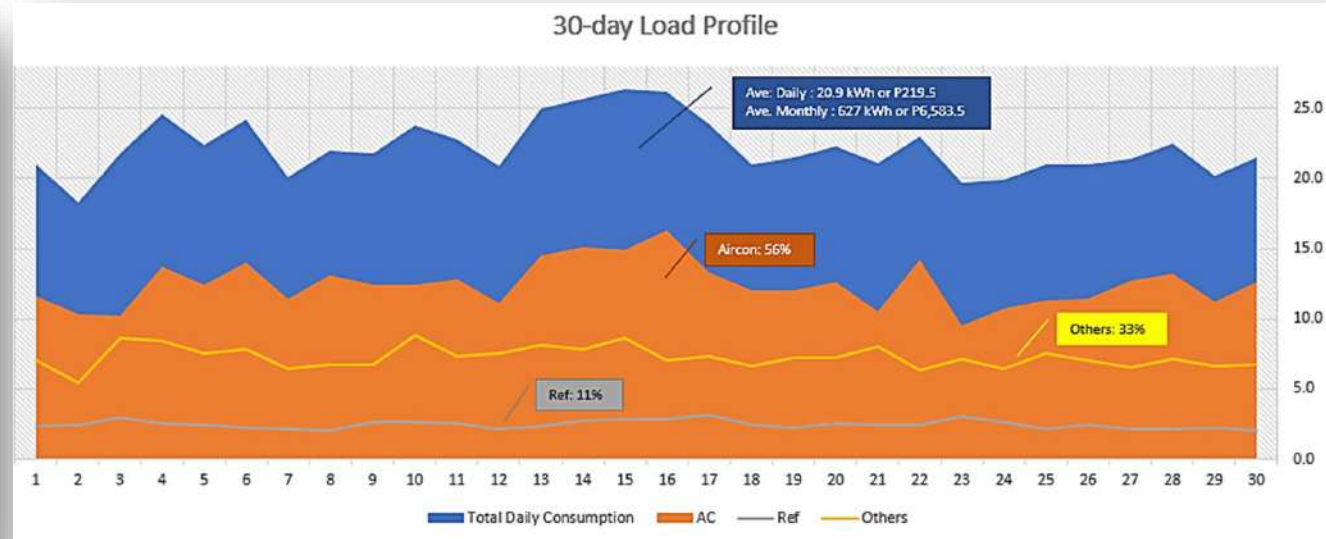


Appliances Owned	High (351 kwh and up)
Air Conditioner	57.0%

⚡ This further verifies that customer falls under the **HIGH** consumption bracket.

Aircon usage contributes to 56% of customer's total 30-day consumption.

- ⚡ Aircon has significant contribution in the total daily and monthly consumption, which is similar to the overall consumption pattern
- ⚡ Peak consumption - in the middle of the month (13th – 16th day)
- ⚡ Sample customer validates the research findings of the Appliance Ownership and Usage study



2020 vs. 2019 consumption increased only by 8% or 1.1x

⚡ Customer's usage behavior is somewhat consistent (has significant daytime consumption)

⚡ Based on Meralco Power Lab tests, **per one degree increase in outside temperature affects the consumption of aircons by 11% - 23%.**

⚡ So in the case of sample customer, even at the same usage of aircon, there is still an expected increase. Ave. Temp difference (Summer 2019 vs 2020) = 3°C

Consumption bracket: HIGH	Monthly (2019 – 2020 YTD)	Monthly (Mar-May 2019)	Monthly (Mar-May 2020)
Ave. Consumption (kWh)	609 kWh	618 kWh	669 kWh ↑
Ave. Consumption (peso)	P 6,397.10	P 6,485.50	P 7,026.90 ↑

Studies show that **summer + ECQ lifestyle** drive increase in the electric bill

		Average kWh/mo.	Aircon Consumption (57%)	New Aircon Consumption	% Increase in Aircon Consumption	% Increase in Total Bill	Projected Bill	Increase in Total Bill
Scenario 1	No increase in aircon usage (same no. of hours)	565	322	428	33%	19%	7,404.90	1.2 x
Scenario 2	Due to hot temperature (summer), aircon usage increased by 100% (from 6 hours to 12 hours per day)	565	322	857	166%	95%	12,129.80	2 x
Scenario 3	Due to hot temperature (summer), aircon usage increased by 100% (from 6 hours to 12 hours per day) + thermostat setting lowered by 3°C	565	322	2026	529%	302%	25,024.90	4 x



Case Study on a Business Customer



A Meralco-client mall implemented cost-effective energy efficiency measures.

ENERGY EFFICIENCY MEASURES

EFFICIENT OPERATING PROCEDURE	SOLUTION	DESCRIPTION	INVESTMENT
	LIGHTING	<ul style="list-style-type: none">• CONSTRUCTION OF ELECTRIC ENABLING CHANGE OF REQUIRED LIGHTING CONFIGURATION BASED SPECIFIC SCENARIOS• PROPER SCHEDULING OF LIGHTING	—
	ESCALATOR	<ul style="list-style-type: none">• ACTIVATION OF ESCALATORS 30 MINUTES AFTER OPENING HOURS	—
EFFICIENT TECHNOLOGIES	CHILLERS SENSORS	<ul style="list-style-type: none">• UPGRADE OF EXISTING SENSORS (I.E. DIFFERENTIAL PRESSURE SENSORS OF CHILLERS)	P50,000 ++
	PUMP	<ul style="list-style-type: none">• REHABILITATION OF PUMPS AND MOTORS	P200,000 ++
IMPROVED BLDG. DESIGN AND ENVELOP	THERMAL INSULATION	<ul style="list-style-type: none">• IMPROVEMENT OF THERMAL INSULATION	P800,000 ++

TOTAL P1.05M ++

The customer was able to save as much as P9.6M every year.

AFTER ENERGY EFFICIENCY MEASURES



⚡ With these measures, the mall has remained profitable and competitive, while continuously offering customers a convenient shopping experience.

San Beda Alabang partners with Meralco to improve utilization of electricity

- ⚡ Through preventive maintenance and energy solutions, such as Light Retrofitting and Heating, Ventilating, and Air Conditioning (HVAC).
- ⚡ San Beda College Alabang was able to use their savings in upgrading their school facilities.





Managing Energy Efficiently



Use of appliances / equipment have different contributions to monthly consumption

1

Cooling appliances such as aircon, fan and refrigerators contribute significantly to the monthly consumption of residential customers (57% - 72%)

2

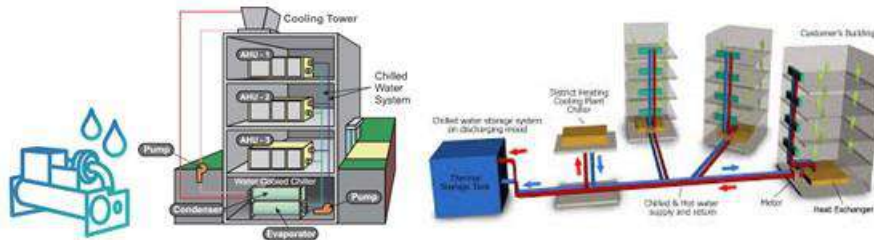
For business customers, depending on industry/nature of business, these are the top contributors:

- **Cooling appliances:** 40% - 70%
- **Refs/Freezers/Chillers:** 10% - 20%
- **Computers and printers:** 10% - 47%
- **Lighting:** 4% - 30%

There are 2 types of HVAC systems commonly used:

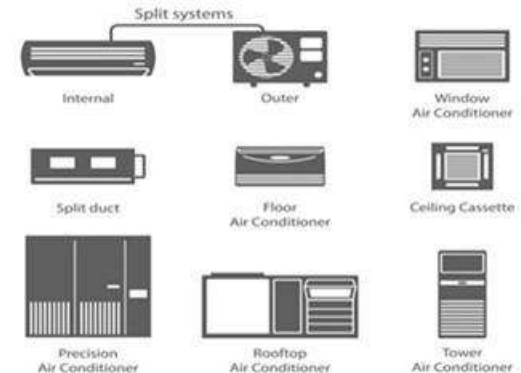
1

Centralized (Chiller Systems, District Cooling)



2

RACs (Window, Split/Multi-Split, Ceiling, Cassette, Floor-Standing)



Factors Affecting Cooling Energy Consumption

1

Room/building area

- ⚡ Capacity-area mismatch: 35% - 110% change in energy consumption for oversize/undersize scenarios*

2

Thermostat setting

- ⚡ Chillers: 1.4% savings per one (1) degree setback**
- ⚡ RACs: 5% - 7% savings per one (1) degree setback*

3

Ambient temperature

- ⚡ 11% - 23% per one (1) degree increase in ambient temperature*

Factors Affecting Cooling Energy Consumption

4

Room/building insulation

⚡ Less insulation, more heat/solar irradiation penetrating, more effort for AC unit to cool the room/area

5

No. of people/occupants, heat loads

⚡ More people, more heat load, more effort for AC unit to cool the room/area

6

Maintenance condition

⚡ 30% - 40% increase in energy consumption for poorly maintained units/system*

Tips for Space Cooling / Air conditioning units

1

Thermostat Setting

- ⚡ Set at highest most comfortable temperature level (e.g. Mid/25C)
- ⚡ Adjust as necessary so comfort levels are not compromised

Save up to P990 per month!

at 8-hours per day, night time use, 1.0hp window-type unit



Tips for Space Cooling / Air conditioning units

2

Follow prescribed maintenance schedule for your AC units/system:

- ⚡ Avoid 30-40% potential increase in energy consumption for poorly maintained units/system
- ⚡ Clogged air filters also causes airflow issues, the harder the air handler has to work to push air thru it – hence more energy is consumed

- ✓ Regularly clean your air filter
- ✓ Save up to **P341 per month!**

1.0 hp window-type unit (clean and unclean filter scenarios)



Three-Step Expert HVAC Maintenance Service



1 SCOPING, PLANNING, AND SCHEDULING

Determine the scope of work, essential machine parts, and shutdown and service dates



2 MAINTENANCE WORK

Cleaning or repair work



3 FINAL CHECK

Follow a checklist that covers three key areas: machines, safety, and housekeeping before restarting

Tips for Space Cooling / Air conditioning units

3 Consider INVERTER Technology



Save P504 per month!

at 8-hours per day, night time use, 1.0hp window-type inverter vs. conventional
P4.90/hr vs P2.89/hr, 41% savings

- 1 Savings and Efficiency** - savings of **20% - 64% less** in electricity consumption versus conventional units.
- 2 Constant Temperature** - It **keeps the room temperature constant**, making it more comfortable.
- 3 Quicker Result** - Inverter units **reach the set room temperature quicker** compared to conventional units.
- 4 Longer Lifespan** - The on and off cycle of a conventional unit shortens its lifespan due to **wear and tear of the compressor**.
- 5 Low Maintenance** - Conventional compressors **start and stop** repeatedly putting too much strain on the unit, often causing breakdowns.

Tips for Space Cooling / Air conditioning units

4

Observe proper aircon-sizing

IT DEPENDS ON
YOUR ROOM'S SIZE.

Room Size	Aircon Horsepower (HP)
12 sqm.	0.75 hp
18 sqm.	1.0 hp
24 sqm.	1.5 hp



Refrigerator Tips

1 Ensure doors are properly closed

- ⚡ Check door seals for any leaks
- ⚡ Inspect for any cracking or lack of flexibility



2 Do not overload your refrigerator

- ⚡ Optimal loading = 2/3 full (70%)
- ⚡ Ensure at least a quarter-inch gap for air to circulate



Refrigerator Tips

3

Consider INVERTER technology

Save **P278 per month***

*7.0 cu ft two door ref (inverter vs conventional)

P8.04/day vs P17.30/day



Inverter Technology – Commercial Freezers



14 cu ft. commercial chest freezer

Inverter

- ▶ 0.6761 kWh/day
- ▶ P6.59/day
- ▶ P197.7/month

Non-inverter

- ▶ 3.1899 kWh/day
- ▶ P31.08/day
- ▶ P932.4/month

Monthly Savings = P734.7



79% Savings

Lighting Tips

1

Consider using LED lights

Save up to **P156 per month per bulb!**

9-watts LED vs. 60 watts incandescent bulb, 10-hours daily use, 85% savings !

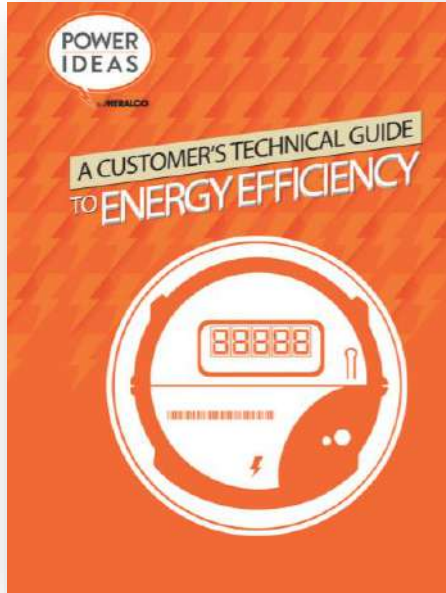


How Meralco can help your organization

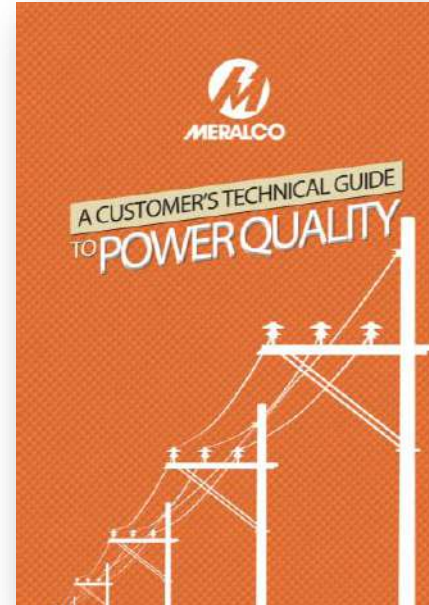


You can download manuals from our website

Energy Efficiency Manual



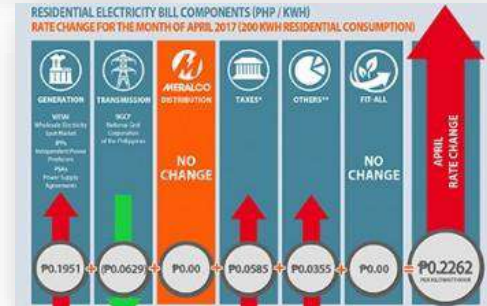
Power Quality Manual



You can also check the website for our article releases, operational updates, rate schedule, and more!



POWERCLUB





As we all rise to the challenge of COVID-19,
Meralco is here to help
POWER UP THE NEW NORMAL.



<https://corporatepartners.meralco.com.ph>



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Business hotline 16210