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How the Philippines' rooftop solar surge can flip the energy emergency script

Rooftop solar is large and growing, and could deliver another "Meralco Terra Solar" project in just 24 months.

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About

This short report analyses the Philippines' rooftop solar economics in light of recent electricity price rises and how the government can embrace this inevitable surge in rooftop solar, against the backdrop of the energy emergency.

Summary

Rooftop solar in the Philippines is taking off.

This report's key findings are:

- **Rooftop solar has likely almost doubled in the last 12 months.** The Institute for Climate and Sustainable Cities (ICSC) measured rooftop solar in the Philippines at 712 megawatts (MW), using satellite images up to January 2025. Generation data profiles suggest a further 600 MW came online in the last 12 months to April 2026. In 2025, the Philippines' net imports of solar panel capacity (5,068 MW) were more than five times the grid-connected utility-scale solar installed (800 MW), also suggesting a strong pick-up in rooftop solar.

- **The Philippines is China's second-largest solar panel export market in 2026, suggesting significant rooftop pick-up.** China exported more solar panels to the Philippines than to Pakistan. China exported over 3,000 MW of solar panels to the Philippines in March and April alone. There is also some evidence that domestic solar manufacturing is beginning to scale.

- **Rooftop solar's payback time has crashed, as electricity prices surge.** Retail prices in May 2026 were 17% higher for retail customers, 18% higher for commercial customers and 14% higher for industrial customers, compared to May 2025. The Philippines now has the costliest residential electricity price in Southeast Asia, the second-highest commercial price and the third-highest industrial price. As a result, from May 2025 to May 2026, the payback time for residential rooftop solar has fallen from 4.0 years to just

3.1 years, for commercial rooftop from 3.0 years to just 2.3 years, and for industrial rooftop from 3.9 years to 3.1 years.

The payback times for rooftop solar have hit levels that should encourage mass uptake. Concerns about future electricity price rises make it more likely, while recent policy changes make mass adoption easier.

This paper provides a vision for rooftop solar in just 24 months to scale to another "Meralco Terra Solar" project, of 3,500 MW with battery. Three policy changes help make this happen: loan schemes to cover upfront costs for customers, enabling smaller plug-and-play solar and a government project to build more batteries.

The policy changes would save consumers money, strengthen the grid and quickly reduce fossil fuel imports.

The government's plans to speed up renewables auctions will help avoid a future energy emergency. Rooftop solar can help to do that even faster.

> "The economics of rooftop solar are more attractive than ever, and its rapid rise is inevitable. The government has an opportunity to carve its own path on rooftop solar, to pull the Philippines out of fossil dependency, and onto a path of cheap, abundant electricity."
>
> **Dave Jones**
> Chief Analyst, Ember

Rooftop solar is sizable and growing

Despite a lack of comprehensive official tracking, independent analysis indicates that rooftop solar capacity in the Philippines has nearly doubled 721 MW in early 2025. While this currently represents just 1% of the country's theoretical rooftop potential, a massive and unprecedented surge in solar panel imports from China in the first few months of 2026, suggests a major acceleration in upcoming installations.

Rooftop solar was 721 MW in early 2025

The Institute for Climate and Sustainable Cities has begun tracking rooftop solar via satellites. Their April 2026 update shows a rooftop solar capacity of 721 MW (371 MW in residential, 214 MW in C&I and 136 MW in rooftops over 1 MW). This is based on satellite images up to January 2025, which means it gives few clues about growth in the last 12 months.

The Philippines has no comprehensive official tracking of rooftop solar data. The Department of Energy (DOE) only tracks grid-connected solar. The latest data as of March 2026 showed 3,765 MW, of which 99% is ground-mounted, and only 1% (52 MW) is "behind the meter".

The Net Metering scheme, administered by the Energy Regulatory Commission (ERC), does not make data publicly available. The last update appears to be from May 2025 with a paltry 157 MW of cumulative net metering capacity. It is hard to know how much residential solar is unregistered. In Pakistan, 85% of rooftop solar is unregistered, as consumers prefer the simplicity of

self-consumption to avoid the costs of net metering schemes. In the Philippines, however, unregistered rooftop solar might be much less because stricter system operator enforcement prevents solar panels that export electricity (effectively spinning the meter backwards, meaning residential customers get exports paid at the retail rate).

The ERC does not publish uptake data for the Distributed Energy Resources programme, the net metering-equivalent scheme for industrial and commercial customers.

The International Energy Agency (IEA) provides an estimate of 200 MW at the end of 2025, which ICSC shows is an understatement.

Rooftop solar has perhaps doubled in 12 months to 2026

Preliminary analysis by Ember suggests rooftop solar may have almost doubled since early 2025.

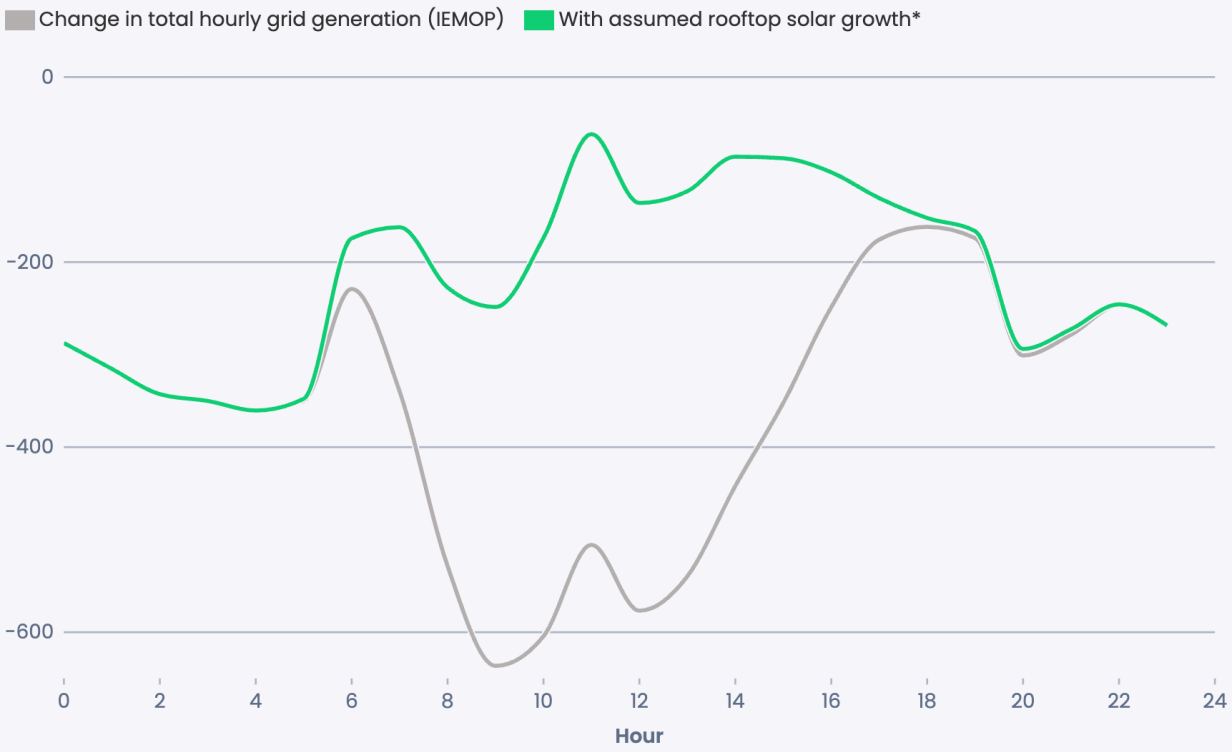
Ember's analysis of the Philippines generation data from IEMOP, the electricity market operator, suggests that the country added around 600 MW of rooftop solar from April 2025 to April 2026. Grid generation was much lower year-on-year at midday, when solar generation is at its peak, strongly suggesting growth in rooftop solar.

Therefore, if there were 721 MW at the start of 2025, and 600 MW added since, the Philippines already has around 1,300 MW of rooftop solar installed.

Yet, this is only 1% of the total potential. The ICSC estimates that the total building rooftop area in the Philippines could theoretically support 106,000 MW of solar panels.

Analysis suggests around 600 MW of rooftop solar was added in the 12 months to April 2026

April 2026 compared to April 2025 (average MW)



Source: Ember analysis of generation data from the Independent Electricity Market Operator of the Philippines (IEMOP)
*Proportion of April reported utility solar generation added, equal to 600 MW of capacity.

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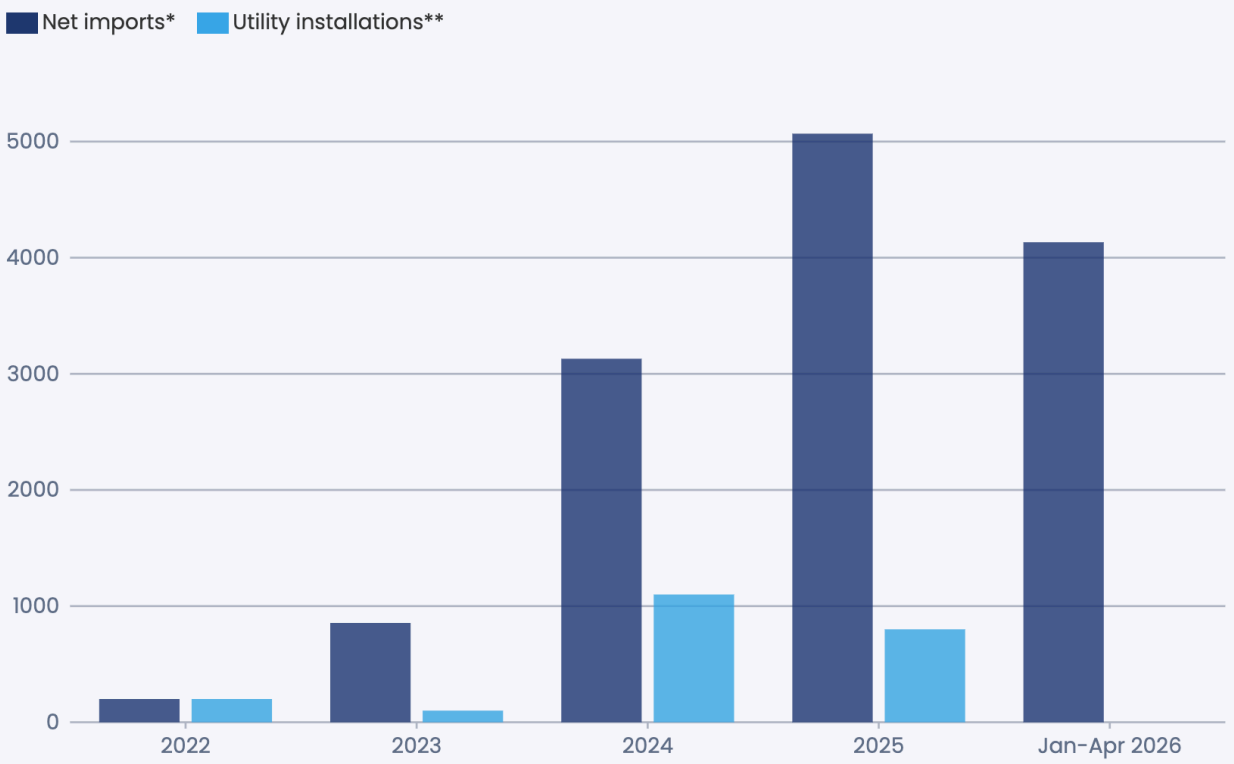
Surge in solar panel imports suggests rooftop solar will accelerate

In 2025, the Philippines imported more than five times as much solar panel capacity (5,068 MW) as the grid-connected utility-scale solar it had installed (800 MW). This implies a large inventory buildup that will translate into future installations. The large step-up in Chinese solar panel exports in Q1-2026 to 3,200 MW, buoyed by the March spike, shows that an even bigger gap is emerging.

The surge in solar imports dwarfs utility solar installations, suggesting rooftop solar is growing strongly

Solar panel capacity (MW)



Source: Ember's analysis of the Philippines customs data (2026)
*Net imports calculated by Ember from the Philippines customs data submitted to COMTRADE; Jan-Apr 2026 is the pure Chinese exports.
**As reported by DOE.

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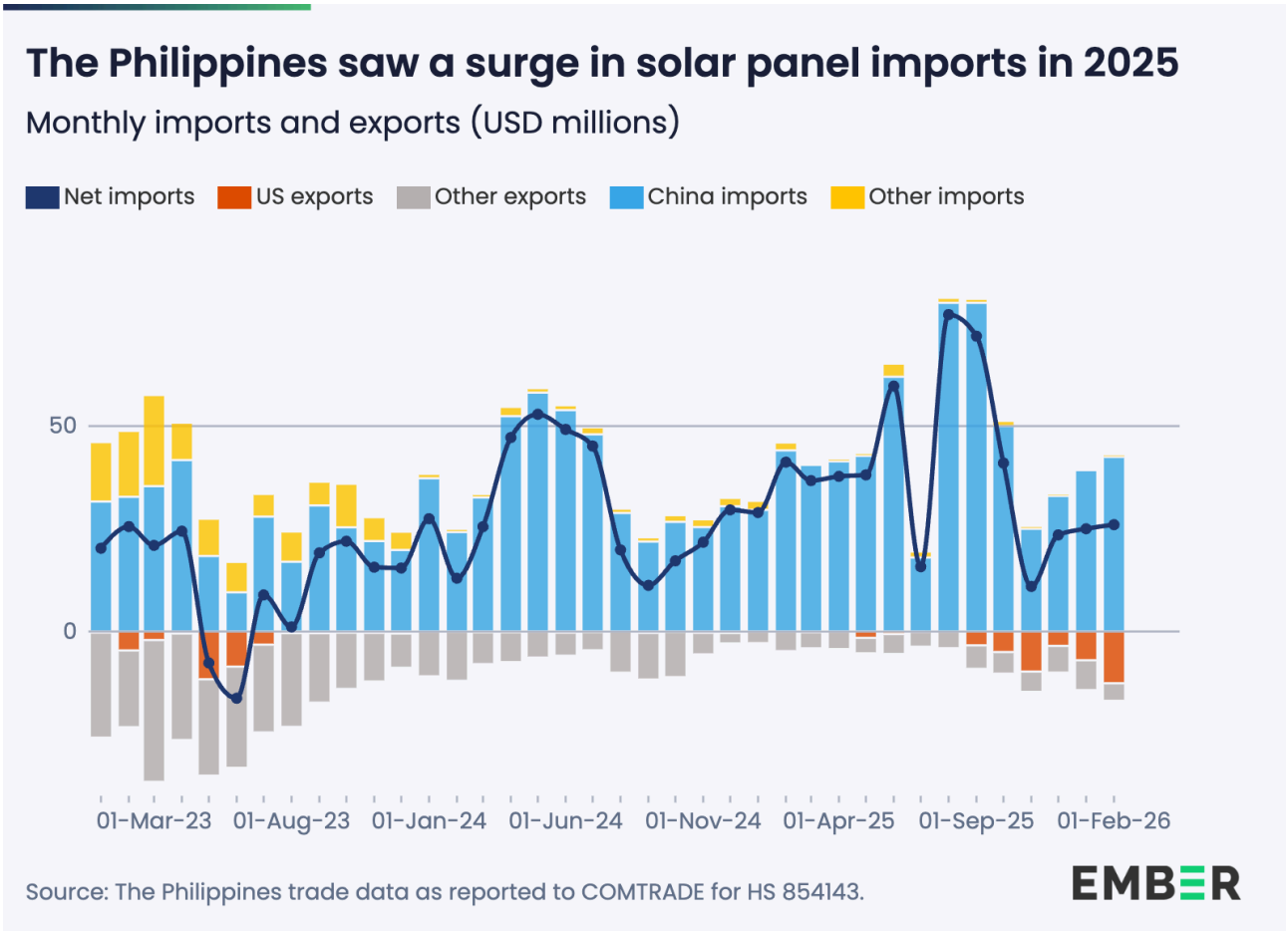
More solar panels imported in 2025

Ember's analysis of the United Nations' COMTRADE import and export data for the Philippines shows net solar panel imports into the country rose from $365 million in 2024 to $483 million in 2025. The increase led to a 62% rise in solar capacity, taking into account the fall in wholesale solar price, with solar imports rising from 3,130 MW to 5,068 MW.

The solar panels mostly came from China: of the 2025 imports, 98% were from China. Around 14% (in value terms) was re-exported; from September 2025, much of this, for the first time, was to the US.

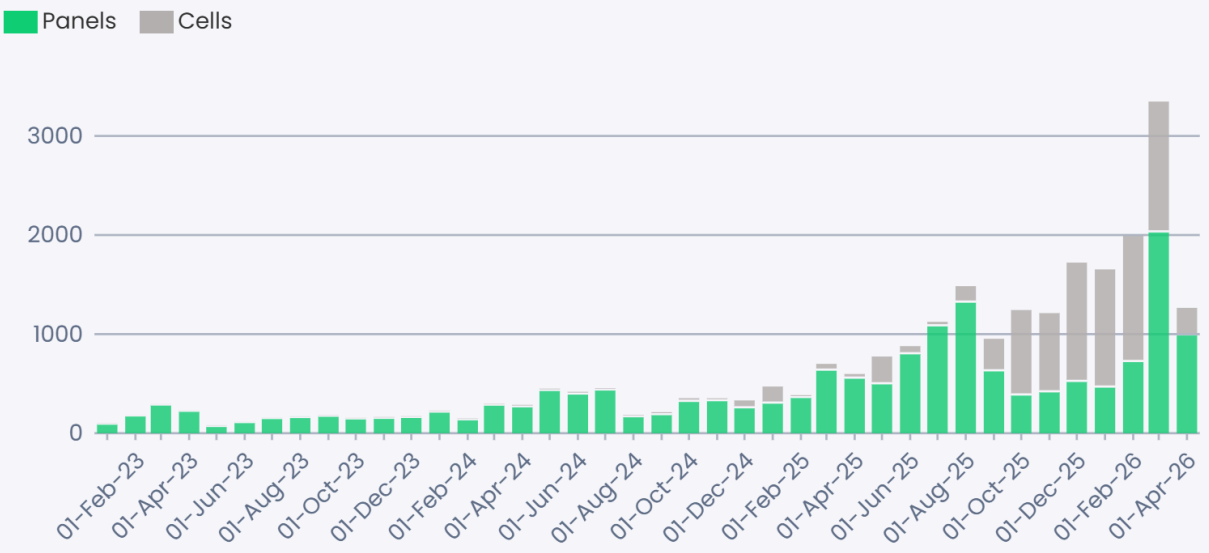


Even more solar panels imported in 2026

A surge in Chinese solar panel exports in March and April 2026 hit record levels, suggesting over 3,000 MW of panels are seemingly heading for the Philippines. April saw a spike in Chinese exports in March, ahead of a change in tax rate on 1 April. However, April exports continued at record levels.

China's exports of both panels and cells to the Philippines hit new records in 2026

Monthly exports (MW)*



Source: Ember's China's Solar PV Export Explorer
*Megawatts is calculated from dividing the USD value of the China customs data by the international wholesale price of solar panels.

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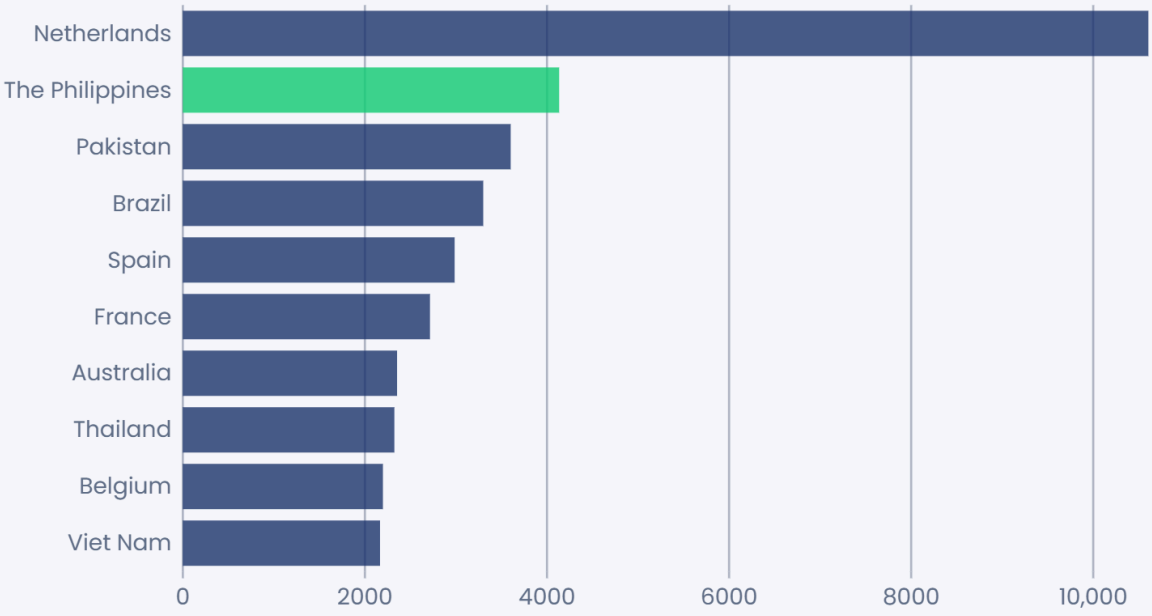
In 2026 so far, China has exported more solar panels to the Philippines than any other country except the Netherlands (which acts as an import hub for much of Northwest Europe). The Philippines has, in fact, even overtaken Pakistan as a destination for Chinese exports.

China has exported more solar panels to the Philippines than any other country except for the Netherlands so far in 2026

Chinese solar panel exports in Jan-Apr 2026 (MW)



Source: Ember's China's Solar PV Export Explorer • Note, the Netherlands acts as a re-export hub for much of north-west Europe.

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The start of domestic manufacturing

In addition to solar panels, China has also started exporting solar cells to the Philippines. China's trade data above also show that $292 million worth of solar cells were exported to the Philippines in just six months, from October 2025 to March 2026 (up from almost nothing before), which converts to a huge 6,628 MW.

Manufacturing facilities are beginning to appear in the Philippines Economic Zone Authority (PEZA) areas. Key investments include Gstar's 1 GW manufacturing plant opened in May 2025 at Subic Bay, a further Gstar 1 GW manufacturing plant

opened in April 2026 at the First Philippines Industrial Park, and an investment of 0.37 GW by Batangas signed in April 2026.

The surge in Chinese solar cell exports since October 2025 does not appear as imports in the Philippines data, suggesting that the majority of the solar cells are re-exported. However, some are undoubtedly used in domestic panel manufacturing.

The inevitability of rooftop solar

The payback times for rooftop solar have hit levels that should encourage mass uptake. This is made more likely by concerns about future electricity price rises, and made easier by recent policy changes. Cheaper solar will help households and businesses save money and be less frugal in their electricity use. It will also benefit the government in its efforts to reduce imports and avoid the need to build new coal power plants.

Payback time for rooftop solar has collapsed as electricity prices have risen

Meralco's retail electricity prices have risen substantially in the last 12 months. Prices in May 2026 were 17% higher for retail customers, 18% higher for commercial customers and 14% higher for industrial customers, compared to May 2025.

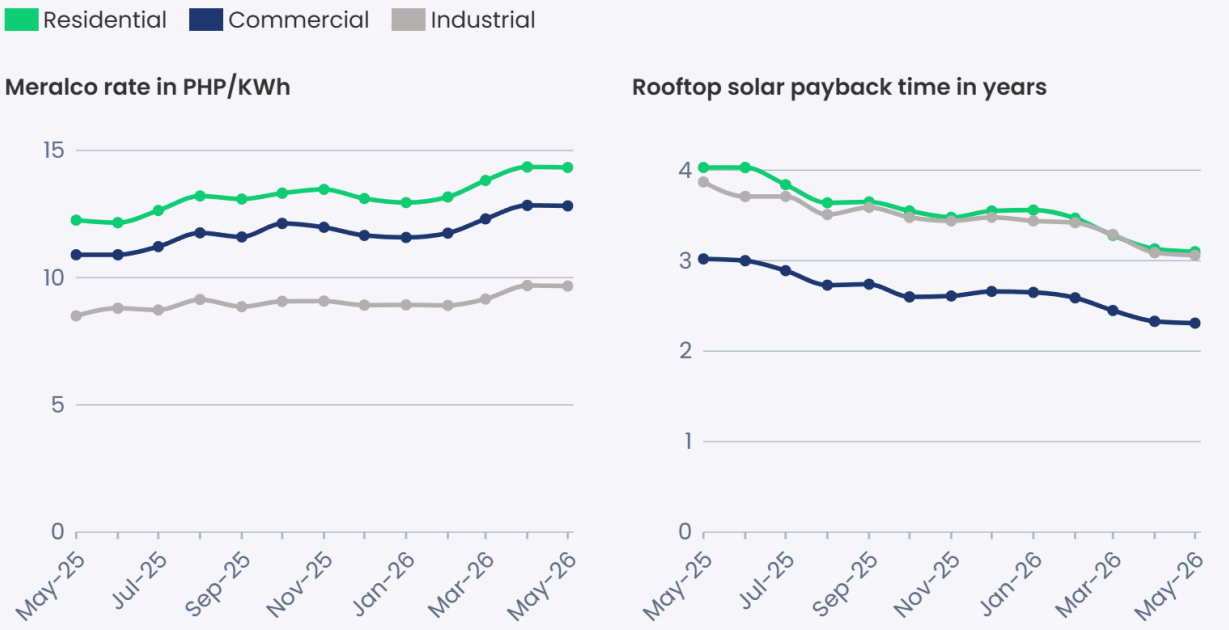
This means the payback time for rooftop solar has reduced substantially. It is especially true when considering a 10% fall in solar costs in the last 12 months, which is the magnitude quoted by a few sources. The fall in costs is because of the huge supply influx highlighted above, and more competition and installation experience.

Residential solar payback period has fallen from 4.0 years to just 3.1 years. The payback period is based on a price of Philippine Peso (PHP)60,000/watt ($0.97/watt) for a rooftop installation. Further, some island electricity rates are much higher, driven by higher diesel prices, meaning even lower payback times.

Commercial rooftop payback times are even shorter than residential. They fell from 3.0 years in May 2025 to just 2.3 years in May 2026, as rooftop installations are cheaper than residential, and yet retail electricity prices are not much different.

Industrial rooftop payback times are similar to residential. They fell from 3.9 years in May 2025 to 3.1 years in May 2026. The rooftop installations are cheaper than residential. However, industrial electricity prices are substantially lower.

As retail electricity prices rise and solar costs fall, rooftop solar's payback time has fallen fast in the Philippines



Source: Meralco rates from Department of Energy
Simple payback calculated based on May-2026 system price of PHP 60/watt ($0.98/W) for Residential and PHP 40/watt ($0.66/W) for C&I in Apr-2026; without battery. Assumes 10% system price fall from May-25 to May-26. Assumes 15.4% load factor (i.e. 1350KWh annually from 1KWdc).

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More electricity price rises to come

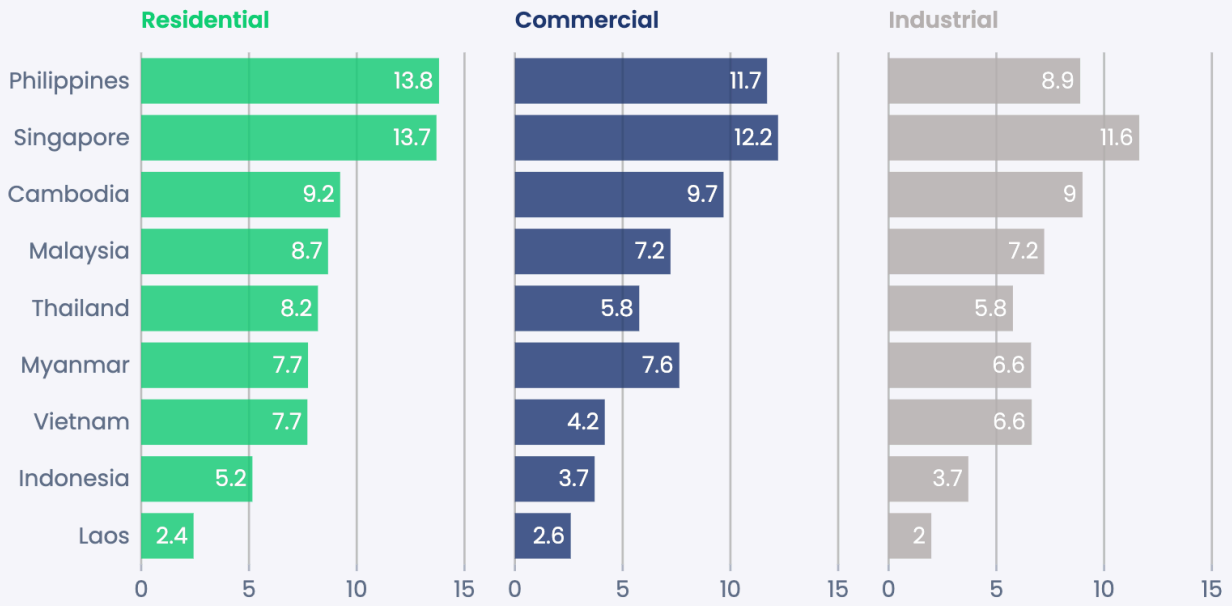
The government intervened to prevent electricity prices from rising amid the energy crisis. Meralco avoided a price hike in May as the ERC took extreme actions to prevent prices from rising further, even though the feed-through component for generation costs would have driven prices up 4%. Meralco covers over half (55%) of the Philippines electricity generation and billing, including all of Manila.

The weakening peso and higher fuel import costs are adding pressure to prices. Further expensive interventions will be needed to avoid more electricity price rises. Unless these are forthcoming, electricity prices will rise.

This is despite the Philippines already having such expensive electricity. The DOE, in March, compared the Philippines electricity prices to international peers. The Philippines already had the most expensive residential price in Southeast Asia, the second most expensive commercial price and the third most expensive industrial price.

The Philippines has the most expensive electricity in Southeast Asia

Power cost per kilowatt-hours as of March 2026 (PHP/kWh)



Source: International Electricity Rates from PH Department of Energy
Note: Before the Philippines' price rise in April, and are the nationwide average price not the Meralco price.

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How rooftop solar helps in the energy crisis

Rooftop solar, with a payback of as little as 2-3 years, will help consumers and businesses directly cut their electricity bills.

It can also help the country cut its imported gas requirements. Meralco's supply is approximately 60% natural gas, almost all USD-denominated LNG. Although most solar panels are imported, their import cost is less than the import cost of gas needed to generate a year's worth of electricity (based on current prices of $0.15/Watt solar and $17/metric million British thermal units (MMBtu) gas). So if

the solar panel lasts 20 years, it will need 20 times fewer imports than a gas power plant to produce the same amount of electricity.

Another benefit of rooftop solar is that with batteries, it is a far cheaper and quicker alternative to building new coal plants. The International Renewables Agency (IRENA) recently published a report on how solar and batteries in sunny countries can provide electricity for 95% of the year at just $55-$80/megawatt-hour (MWh). This is substantially cheaper than the cost of new coal power plants, estimated by BNEF at $87-$117/MWh. This is especially true after adding the grid savings of rooftop compared to centralised power plants.

Finally, the Philippines needs more electricity. Incredibly, its electricity use per capita is half that of the ASEAN region, because high electricity prices have plagued it for so long. Cheaper rooftop solar can unlock electricity demand. It can also reduce reliance on fossil fuels outside of the power sector. Electric car sales in the Philippines are growing fast, but severely lag the rest of ASEAN. This is critical, since oil imports for road transport eclipse gas imports for power generation. Although electricity prices have gone up, petrol prices have risen far more.

New rooftop solar policies will help

Many recent policy adjustments have also helped to make rooftop solar cheaper and more attractive.

Faster net metering

From early 2026, it should now take only 10 days to get net metering approval from the distribution utility and only 3 working days to issue an electrical permit. The government has reinforced these changes alongside the energy emergency, where, hopefully, they are already making a difference by reducing the time to build rooftop solar.

More attractive industrial and commercial rooftop

From February 2026, it is now possible for multi-site and aggregate net metering. This means one shop could install more rooftop solar than its electricity demand, and this would offset against another shop that did not.

Power purchase agreements (PPAs) will be more attractive from June 2026. The ERC has updated the Retail Competition and Open Access regulations to allow customers with over 100 kilowatt (kW) demand to choose their own supplier, enabling a solar developer to build rooftop solar and sell the electricity back to the roof owner under a PPA, thereby unbundling electricity supply and demand.

In addition, the November 2024 CREATE MORE Act has changed the business tax rules on expense deduction to make rooftop solar more attractive.

3. The solution to the energy emergency

The Philippines' government has declared an energy emergency. This will likely speed up the permitting and planning of the large renewables projects in the renewables auctions. Rooftop solar policy is the missing piece that can help pull the Philippines out of the energy emergency even faster and better.

Rooftop solar has two key advantages over wind and utility solar: it is built in days, not years, and with batteries, it reinforces the grid rather than stretching it.

It is reasonable to expect the solar rooftop to match the Meralco Terra Solar in size: 3,500 MW of rooftop solar in 24 months is more than possible, with 4,500

MWh of battery. The supply of panels is already on the ground. This is a little over a tenth of the estimated 32 gigawatt (GW) of rooftop solar installed in Pakistan. The economics are already there. Consumers are keen: even back in 2024, 82% of surveyed households expressed some interest in adopting solar panels. The two enabling features are solving the cashflow problem and building batteries now.

Perhaps a "rooftop Meralco Terra" might happen anyway, as the solar rooftop momentum grows. Three policy areas may help supercharge the rooftop boom, delivering at scale and beneficially impacting residents, businesses and the grid.

Solving the cashflow problem

The opportunity is real, but the upfront cost is often too high for a household or business, no matter how quick the payback time is.

The Government Service Insurance System's (GSIS) Ginhawa Solar Energy Loan (GSEL) programme is a game-changer. A 5% loan payable over 5 years is a no-brainer when the economic payback of the solar electricity is less than 3 years. The scheme has been popular, 46% of the PHP12.5 billion pot was drawn in just 27 days. As a result, the GSIS has already received applications for around 95 MW of solar (PHP5.7 billion of loans at PHP60/Wp).

However, it's only available to the ~2 million government employees. The remaining ~40 million private sector workers have no equivalent.

Plug-and-play solar

Many less affluent households would substantially benefit from just 1-2 solar panels. A typical large rooftop solar system is not only unaffordable for many, but also disproportionately large relative to the electricity many households use.

In many countries in the world, legislation now allows connecting up to 2 solar panels, up to 800 watts in total, directly without any electrical certificate. In other words, it is a level considered safe and plugs directly into the mains plug with no additional wiring. In Germany, this is called balcony solar, and one million systems are now connected, totalling 1,000 MW of capacity (this is in addition to over 4 million homes with standard rooftop solar). Supermarkets sell such kits for around €200. Subsidised vouchers could even help to shield the poorest households from high electricity prices.

This means plug-and-play solar kits can cost almost half as much per watt as typical solar systems. This would bring the payback time to well under 2 years.

There is currently no legal framework for plug-in solar in the Philippines. Connecting a microinverter to a wall socket without net metering registration is currently classified as an illegal "flying connection" under ERC rules. The DOE should create a micro-generation exemption below 800 watts.

Batteries now

The key to unlocking solar growth, both utility-scale and rooftop, is ensuring solar is dispatchable when customers want it. Fortunately, grid batteries can now turn daytime solar into anytime solar.

To match 3,500 MW of rooftop solar, 4,500 MWh of battery should also be built, matching the battery capacity of the Meralco Terra Solar project. This means a total project expenditure of $560 million, at the latest installed price of $125/kilowatt-hour (kWh), including commissioning, the power conversion system, inverter and grid connection.

Arguably, the cheapest and easiest way to do this is to build it embedded across the country, perhaps 100 MWh across 45 sites, which requires a small land footprint of less than twenty 20-foot containers.

The Philippines has an opportunity to carve its own solar rooftop path. Pakistan's solar rooftop rise has been fast and chaotic. Vietnam's boom was unprepared for and, therefore, cut short. Indonesia's 100 GW solar plan is exciting, but it is predominantly village-scale, which means it may be much slower than rooftop solar would be.

The Philippines' path would focus on a controlled burst of solar and battery to save consumers money, strengthen the grid and quickly reduce fossil fuel imports.