THE INCREASE IN ELECTRICITY TARIFFS HAS RAISED CONCERNS ABOUT ITS AFFORDABILITY, CAN SOLAR ENERGY BE A RELIABLE ALTERNATIVE, AND WHAT ARE THE MEASURES HOMEOWNERS CAN TAKE TO REDUCE POWER CONSUMPTION?

solar power is being considered as a potential alternative source of energy. Although the cost of generating solar power is eight to 12 times more than that perchant by non-renewable energy - largely coal and gas in

by non-rememble energy — largely coal and gas in Malaysia — solar energy options are largely becoming and rigidly becoming cheeper. Tools power generates about 5% of the world's energy, and the government is surgining 2.5% in Malaysia by 2007, way Ahmed Shadid Ahdul Wahab, providence of the Malaysian to Photocovillate Indexity Amountain (DEA). "The ener of generating one Efforward (AH) of which providence of the Malaysian with MOLOGO, Ob. And Wahab, providence (DEA)." The ener of generating one Efforward (AH) of what energy is the 1986 with MOLOGO, Ob. Among Among American (DEA). "The tens of generating contracting and water hearing systems with the three sense in the providence of the most part furnished to outdoor Egisting and water hearing systems. While they aren't hypically and water hearing systems. While they aren't hypically and water hearing systems. While they aren't hypically candidate are commentioned electrical appliance ancreamy product maximum of the providence of the prov

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4,000%, the personal precious is store to know year.

"Heating is actually continer than cooling, it's just that we don't do it as frequently." Ean scene. "The higher the temperature differential, the more it's going to cost you."

NET METERING

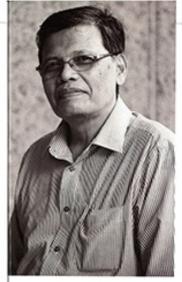
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cannot talk about solar power without talking about energy efficiency. You may use solar power, but why are you still using an incandescent light bulb? It makes more sense to use LED, for example, so these measures go hand in hand."

Examples of such measures include investing in energy-efficient appliances even though they may cost more. "Many people buy cheap air-conditioners, but those have fewer cooling fins, so you would spend twice the amount of money to cool the room compared with an efficient model," says Tan. "And although lighting doesn't make up the biggest portion of an electricity bill, switching to energy-efficient bulbs is a surefire way to save money. Those who are still using incandescent bulbs (60W) should change immediately to compact fluorescent lamps (13W). If you are still using halogen lights, throw them away. They are very hot and increase room temperatures."

Materials used in the construction of a house also play a big part in cooling its interiors, which makes up the bulk of a household's energy consumption. According to Tan, the roof is the biggest issue to address, as 60% to 70% of the heat inside a house comes through the roof.

"The first thing I would do is insulate the roof with rockwool and air — mass with air inside is the greatest insulation," he says. "It costs RM2,000 to RM2,500 to insulate the entire roof of a terrace house. It's the easiest measure with the fastest cost return, but the law doesn't [make insulating the roof mandatory], so most developers don't do it. However, it's hard to insulate the roof once a house is completed."

If homeowners choose to have glass panels instead of walls to take advantage of natural light during the day, double glazing or low-emissivity (low-E) glass helps to reduce heat from going through.

"Double or triple glazing and low-E glass let daylight in without the heat," explains Tan. "Single-pane glass is the worst, because the heat goes straight through."

While low-E glass once cost 40% more than single-pane glass, a higher demand for it today has reduced prices to only 10% or 15% more. If homeowners are unable to change the glass panes of their homes, it helps to add window awnings or use solar-reflective paint for the walls.

"Landscaping also helps a lot; Malaysians love to concrete their porch to park their cars and reduce garden maintenance, but this increases the temperature around the house by three to five degrees Celsius when the sun heats up the concrete," says Tan.

"So, what you need to do is plant trees around your house. You might have a problem with water consumption if you water the plants every day, so you need to plant native trees that can survive in our climate even if you don't water them. Greenery around the house really helps."

GREEN BUILDING INDEX

The Green Building Index (GBI) was developed by the Malaysian Institute of Architects (PAM) and the Association of Consulting Engineers Malaysia (ACEM). Launched in 2009, the index is an environmental rating system for buildings based on six criteria: energy efficiency, indoor environment quality; sustainable site planning and management; materials and resources; water efficiency, and innovation.

The GBI is fundamentally derived from existing rating tools, including the Singapore Green Mark and the Australian Green Star system, but extensively modified for relevance to Malaysia's tropical climate, environmental context and cultural and social needs. Homebuilders and property developers have to apply for a GBI rating.

Architect Dr Tan Loke Mun's house was designed to meet the criteria set out in the index. The temperature in his home is 25 to 26 degrees Celsius without the use of air-conditioners.

"I built a very large, flat insulated roof, and the windows face north and south, while the east and west walls are blank walls to reduce the sun's heat from coming in," says Tan.
"I've also got wind turbines on the roof, with glass tubes that extend from the roof into the house. When the temperature inside the house is three degrees Celsius higher than outside, the turbines turn and suck out the hot air inside, creating a breeze."

