

20 JUN, 2025

Transforming Malaysia's energy landscape

New Straits Times, Malaysia



ENERGY SECTOR REVOLUTION

# Transforming Malaysia's energy landscape

Smart grids, digitalisation and clean energy integration will support a sustainable, low-carbon future

ZAF SERAJ  
KUALA LUMPUR

IMAGINE being able to track your electricity usage and bill right at your fingertips — no more waiting for the physical bill every month.

Like checking your daily steps on a fitness app, you will be able to see how much you've used, how much it's costing you, and even how your choices impact the environment.

This is the future Tenaga Nasional Bhd (TNB) is building today through its nationwide grid modernisation.

At the heart of this transformation is the smart meter — a small device making a big difference.

These smart meters record your energy use every 30 minutes and send the data to TNB daily.

That means no more waiting for estimated bills or worrying about sudden spikes in cost.

With a few taps on the myTNB app, you can now track your energy use, set budgets, and even see how your habits are helping (or hurting) the planet.

TNB plans to install a minimum of 10.3 million smart meters throughout Peninsular Malaysia by 2030 to empower every household to make smarter, greener choices and take control of their bills.

SMART ELECTRICITY GRIDS

While households are seeing the benefits of smart meters, TNB is also upgrading what happens behind the scenes — through the implementation of the Distribution Automation (DA) Project.

This initiative brings numerous benefits to both customers and field operations.

On the customer side, one of the most important benefits is uninterrupted electricity supply, as users now enjoy a more stable power experience with minimal major disruptions. This significantly improves the overall customer experience, as the system helps improve power quality, optimise asset utilisation, and reduce outage durations.

All of this is made possible as the system allows for rapid fault detection and faster decision-making, which significantly reduces restoration times during outages.

At the operational level, TNB's control centres now use smart grid technology that enable real-time monitoring and control of network assets.

By using sensors and Intelligent Electronic Devices (IEDs), control centres receive automatic alarms and event notifications, allowing for more efficient responses.

TNB operators can now remotely



TNB aims to install at least 10.3 million smart meters across Peninsular Malaysia by 2030.

control critical components such as switches, circuit breakers, and reclosers — bringing benefits such as eliminating the need for manual intervention on-site and enhancing safety for on-ground personnel.

This smarter grid doesn't just improve reliability; it also helps TNB prepare for a future powered by clean energy.

TNB is also leveraging advanced analytics to predict equipment failures, analyse weather impact, and optimise overall grid performance.

Thanks to this DA Project, nearly 33,000 substations have already been upgraded, benefiting millions of customers with more efficient power delivery.

By 2030, 84 per cent of substations across Peninsular Malaysia will be part of this smart grid revolution.

The project involves installing various equipment such as Remote Terminal Units (RTU), Field Terminal Units (FTU), Motorised Switchgear and other equipment at all types of substations (PMU – Main Intake Substation, PPU – Primary Distribution Substation, SSU – Switching Station and PE – Substation) at various voltage levels (132kV, 33kV and 11kV).

As of now, the project has successfully installed and commissioned 4,565 substations, covering 3.6 million customers, bringing the total DA installation since 2014 to 32,905 distribution substations across Peninsular Malaysia.

SUSTAINABLE ENERGY PRODUCTION

TNB is also stepping up efforts to reduce Malaysia's carbon footprint.

It is accelerating the integration of

renewable energy (RE) into the grid, reducing reliance on fossil fuels and strengthening Malaysia's clean energy agenda.

It's integrating more renewable energy, like solar and hydro, into the grid and preparing for a future where homes can generate, store, and even sell back electricity.

One example is the Elmina Itham Residence in Shah Alam. As Malaysia's first interconnected smart green community neighbourhood, 513 homes have been fitted with rooftop solar panels.

Under TNB's Smart Community Infrastructure Programme, the homes have been equipped with 2.25kW solar panels through the Net Energy Metering (NEM) scheme, while the city will be under a rooftop leasing model using Community Renewable Energy Aggregation Mechanism (CREAM) — generating and offtaking green electricity within the community.

Residents there can share clean energy within their own community, reducing both costs and emissions.

To support this growing solar adoption, TNB is upgrading its systems to allow two-way energy flow, meaning energy can go from the grid to the consumer and vice versa. This shift is crucial in creating a cleaner, more flexible power system that supports TNB's Energy Transition Plan to achieve carbon neutrality by 2050, in line with the National Energy Transition Roadmap (NETR).

Another key initiative supporting this national goal is the push for low-carbon mobility — and TNB plays a central role in driving this transformation. As the

country's leading electricity provider, TNB is actively building a comprehensive EV charging ecosystem. Through its dedicated brand, TNB Electron, the company is deploying fast and accessible EV chargers across highways and urban areas, enabling both long-distance travel and daily convenience. In addition to installing its own chargers, TNB supports Charge Point Operators (CPOs) to expand the national network accelerating the adoption of cleaner transport options in line with Malaysia's Net Zero 2050 vision.

POWERING ASEAN TOGETHER

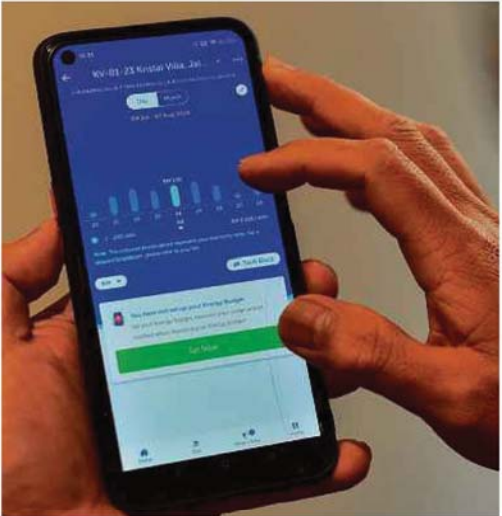
TNB's efforts tie directly into the ASEAN Power Grid — a bold regional initiative connecting power networks across Southeast Asia.

Countries can share excess energy, balance their grids, and tap into each other's renewable sources.

With its advanced smart grid and growing renewable capacity, Malaysia is well-positioned to be a key player in this cross-border energy exchange.

Already, power-sharing agreements are in the works, turning Malaysia into a regional hub for clean and reliable electricity.

These initiatives reflect TNB's commitment to modernising the energy landscape through innovation, sustainability, and community-led solutions, paving the way for a cleaner, more resilient future for all Malaysians.



The myTNB app allows consumers to track their energy use and set budgets.