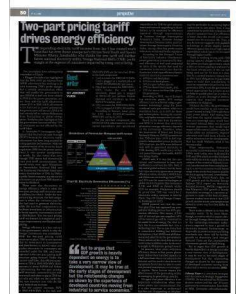


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# Two-part pricing tariff drives energy efficiency

**T**HE impending electricity tariff increase from Jan 1 has created much buzz that has even drawn unexpected criticism from Youth and Sports Minister Khairy Jamaluddin who thinks the new tariff will further fatten national electricity utility, Tenaga Nasional Bhd's (TNB), profit margin at the expense of consumers impacted by rising cost of living.

Two journalists have subsequently responded to Khairy:

i. Blogger Rockybru has highlighted that the RM0.0499 per kilowatt hour (kWh) adjustment has nothing to do with fattening TNB's profit margin, but a subsidy rationalisation effort that will enable the government to save RM4 bil in fuel cost from subsidy to TNB for the power generation sector. Even with the tariff adjustment, where 82% or RM0.0409 adjustment is for fuel cost in power generation, the government still incurs a RM14 bil fuel subsidy bill to cushion Malaysians from fluctuations in global energy prices. Rockybru also highlighted that the government has ensured that 70% of consumers are not affected by the tariff hikes.

ii. Journalist P Gunasagaran highlighted that the fuel cost pass-through (FCPT) formula for electricity tariffs adjustment has been long awaited by rating agencies and investors. With the implementation of the incentive-based regulation (IBR) for the power sector, there is now greater transparency in tariffs. He also noted that even though TNB shares had dramatically risen post-tariff announcement, the beneficiaries were again Malaysians as Permodalan Nasional Bhd and the Employees Provident Fund were major shareholders of TNB. As TNB is a public-listed company, any electricity consumers can purchase TNB shares to enjoy its dividend.

There were also discussions on energy efficiency which is what the two-part pricing tariff structure aims to address (see chart). Under the two-part pricing structure, the fuel component is where the consumer pays for the fuel used to generate electricity, while the non-fuel components is to facilitate investment in infrastructure to boost capacity, transmission as well as distribution. This two-part pricing tariff mechanism is transparent and a major improvement over blanket tariff pricing.

Energy efficiency is a key concern of the government, which is why the Energy Commission was established. With the two-part pricing tariff structure in place, TNB is now assured that its investment in transmission and distribution to deliver value and quality electricity to consumers are rewarded under the IBR, and hence captured in the two-part pricing tariff structure going forward. Under the current tariff hike, this efficiency payment to TNB is RM0.009/kWh which amounts to about RM900 mil. Before implementing the two-part pricing tariff structure, consumers know only how much and when to pay to TNB but not why and what are the tariffs for. This new structure now tells the full story behind any increase.

For the current increase, 82% or RM0.0409/kWh is for fuel and

**Guest writer**

**BY JOHNNY YUEN**

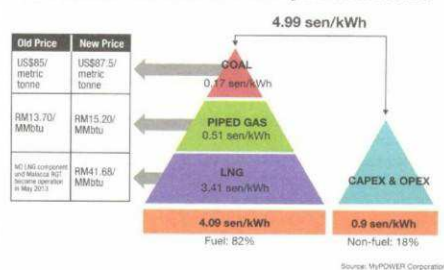
RM0.009/kWh are for non-fuel. Within the fuel component:

- Coal accounts for RM0.0017/kWh. Coal is pegged at a market price of US\$87.50 (RM282.63) per tonne;
- Piped gas accounts for RM0.0051/kWh. Under the new tariff structure, piped gas is pegged at RM15.20 per million British thermal unit (mmbtu), up from RM13.70 mmbtu; and,
- LNG accounts for RM0.0341/kWh. LNG is pegged at RM41.68 mmbtu.

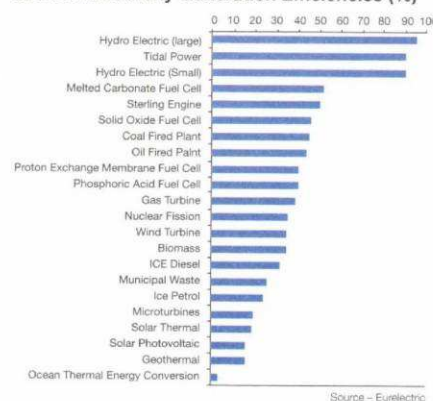
According to Reuters, Asian price for LNG was US\$18.60/mmbtu (RM59.89) on Dec 6, 2013.

For the non-fuel component, the RM0.009/kWh adjustment is to offset capital expenditure and operational

**Breakdown of Peninsular Malaysia tariff review**



**Chart B: Electricity Generation Efficiencies (%)**



**“But to argue that GDP growth is heavily dependent on energy is to take a very narrow view of development. It may be true at the early stages of development but the relationship changes as shown by the experience of developed countries moving from industrial to service economies.”**

expenditure by TNB for grid enhancement and network upgrading in distribution, to be measured by efficiency captured through improvements in Systems Average Interruption Frequency Index, Systems Average Interruption Duration Index, and Customer Average Interruption Duration Index, among other key performance indicators monitored by the regulator.

According to the Europe's Union of Electricity Industry (Eurelectric), power generation is measured by thermal efficiency of fuel used measured as units of the specific fuel used for conversion to electricity (see chart B). Eurelectric's fuel-type efficiency benchmark for electricity conversion are:

- 45% for coal-fired plant;
- 43% for oil-fired plants;
- 36% for gas-turbine plants;
- 27% for diesel-fired plants, and,
- 15% for micro-turbines like portable generators.

According to RWE, one of Europe's top electricity giants, 85% energy efficiency can be achieved using co-generation technology using the latest combined cycle gas turbine, while on a standalone basis, up to 60% for latest gas-turbine plants. Among the renewables, only hydro is impressive (see table).

Based on the data from Eurelectric and RWE, it is shown that electricity generation energy efficiency depends on the technology. Therefore, when the Association of Water and Energy Research Malaysia (AWER) pointed out that TNB now pays 100% in fuel supplied to independent power producers (IPPs) and yet, the IPPs were delivered only 40% in generated electricity to TNB, leaving 60% inefficiency in fuel cost passed through the tariffs, AWER was being cheeky.

AWER asks if it was fair for consumers and businesses to bear such inefficiency cost from the IPPs. Well, if the entire global industry has the same fuel-type electricity generation energy efficiency ratios, shouldn't AWER then ask if this was a technology issue? TNB and IPPs use the same technologies as global electricity giants like Germany's E.ON and RWE or French utility EDF, for example. Malaysians should be proud that TNB was voted No 1 electricity utility company in Asia by Platts' Top 250 Global Energy Company Rankings for 2013.

AWER pointed out that the new Prai plant that was approved via competitive bidding process has 60% generation efficiency. This means, if 100 unit of natural gas was supplied, 60% of the natural gas will be converted to be useful form of energy. Yes, that is a fact. But it is a worldwide fact. It is a technology fact. The success story here is competitive bidding has delivered transparency that AWER and all Malaysians had asked from the government. This is reform of the electricity sector at work today to deliver value in electricity supply to Malaysians going forward.

In practice, what plant utilisation efficiency shows is that power plants rarely deliver their installed capacity on a full-time basis due to variations in the demand and the need to shut down the equipment from time to time to carry out planned maintenance or emergency repairs. These factors impact the effectiveness of the generating utility in managing its generating capacity.

We agree that plant efficiency is an important consideration when new power plants are commissioned. But it is also important to understand that the cost of upgrading an old plant

may be preferable to incurring higher capital cost in new plant. Thus, it may sometimes be preferable to keep an old plant in operation even if its efficiency is lower since the overall cost is minimised over its economic life. Thus, it may be better to upgrade with available technology to attain slightly better efficiency gains than incur high capital expenditure which is to be recouped through higher tariffs.

There is nothing wrong with TNB paying capacity charges to IPPs under the power purchase agreements, which is like car owners paying instalment to the bank irrespective of the car not being used say for 30 days in a year. This is a normal business transaction as IPPs have obligations to pay loans taken to build their installations. It must be remembered that for the first generation IPPs, it was the government which approached the private sector for help to quickly plant-up in order to address an acute shortage in reserve capacity that impacted investors' confidence in Malaysia.

Without the IPPs, the government would have needed to use more taxpayers' money to help TNB build those same power plants. And raising that fund from the capital markets then, even as a sovereign issue, would have increased national debts and incurred interest payments that would have impacted the nation's ability to pay for social safety net initiatives, improve education and build more schools, as well as infrastructure for development, that has made Malaysia what it has become today.

More importantly, Malaysia's successful industrialisation from the 1990s until today, was facilitated by TNB and IPPs which provided Malaysia with stable electricity supply that is the catalyst of the economy. Malaysia's current transformation from manufacturing to a service economy would lessen usage of electricity but requires quality electricity going forward, nevertheless.

Citing the World Bank's data on GDP growth and the National Energy Balance 2011 report on electricity demand increase, AWER's suggestion that Malaysia's GDP growth is heavily dependent on energy is a spurious argument to make at the best of times. Various studies have shown that GDP growth and electricity consumption are related in some way but they differ by countries.

There is also a debate as to how the causality works. To be more blunt, though, a country which is export-driven through foreign direct investment in the technology-intensive industries is expected to have a growth in electricity demand. Furthermore, as disposable incomes increase and living standards rise, there will be further growth in electricity (and energy) demand. These are the consequences of economic growth and well-being.

But to argue that GDP growth is heavily dependent on energy is to take a very narrow view of development. It may be true at the early stages of development but the relationship changes as shown by the experience of developed countries moving from industrial to service economies. **Economist**

**Johnny Yuen** is a consultant strategist with the Centre of Strategic Engagement (CENSE). He has advised key Malaysian decision makers and has over 30 years experience in communications. Yuen holds an MBA. Comments: editor@hckmedia.my