Chapter 1

ACCCIM SERC Trust (AST)'s Memorandum to Suruhanjaya Tenaga on the New Electricity Tariff

1.0 Background

Following TNB's assertion that it would incur an added expenditure of RM1.5 billion to accommodate the increase in the price of PETRONAS natural gas from RM10.70/mmBTU to RM13.70/mmBTU effective 1 June 2011, the government allowed TNB to increase its electricity tariff by an average of 7.12%. Of this increase, 5.12% was to compensate for the 28% increase in natural gas price, and 2% was for the base tariff adjustment.

As indicated by TNB, the increase in electricity tariff for different categories of users was as follows:

- Industrial and commercial consumers would experience an average increase of 8.3%, ranging from 6.2% to above 10%;
- Special Industrial Tariff (SIT) consumers would experience an increase of 10%.

This was unlike the situation in July 2008 when electricity tariff was increased by 28% and natural gas price climbed 111% to 135%, depending on the category of user.

A new development in this instance was that the government would allow PETRONAS to increase the price of natural gas for power and industrial users by RM3/mmBTU every six months from June 2011 to 2015. Power and industrial users would pay market price for natural gas beginning 2016.

In line with the Renewable Energy (RE) Act which was passed in April 2011, the government would impose 1% as the Fit-in-Tariff (FiT) for RE Fund from 1 September 2011. The fund would be utilized to promote and develop RE projects managed by the Sustainable Energy Development Authority (SEDA) under the Ministry of Energy, Green Technology and Water.

The government would also introduce a Fuel Cost Pass Through (FCPT) mechanism for the power sector. Under this mechanism, end users would see their electricity tariff increase or decrease due to adjustment in cost of fuel such as natural gas, coal, oil and distillate after a review every six months. The next review after the June 2011 upward revision of electricity tariff would be in December 2011.

2.0 Implications

The increase in electricity tariff and the two new measures, FiT and FCPT, have cost implications to end users except households that utilize less than 300 kWh of electricity per month.

Surveys carried out by Maybank, CIMB and SERC showed that electricity as a proportion of total cost of production or operation of selected groups of end-users could be as low as 1% in the media sector to as high as 50% in the shopping complex/ hypermarket sector (Table 1). The increase in the electricity tariff would be negligible for those end-users whose expenditure on electricity is a small proportion of their overall cost of production or operation. However, a 7% increase in electricity tariff in the Shopping Complex or hypermarket sector would see their cost of operations increase by 3.5% (7% of 50%). While the goods and service sectors would absorb the increase in the cost of production initially, they would eventually pass the increased cost to consumers.

The above does not take into consideration the 1% FiT Fund that end users have to pay from 1 September 2011.

Table 1: Proportion of Electricity Cost in the Cost of Production (COP) of Selected End-Users

No.	Category	Percentage of COP
1	Steel	8 – 10
2	Cement	20
3	Gloves (incl. natural gas)	7 – 12
4	Media	1 – 2
5	Semiconductor	7
6	Chemical	12
7	Shopping Complex/ Hypermarket	25 – 50
8	Hotel	18

Source: Maybank, CIMB and SERC, 2011

The ripple effects of the increase in electricity tariff will be felt in all sectors of the economy, resulting not only in the increase in the cost of goods but also the cost of living.

The knock-on-effect of the increase in the cost of steel and cement production will result in higher

building construction cost and thus higher prices for factories, commercial and residential property. This increase will also be seen in the construction of infrastructural projects such as bridges and ports. While it can be argued that electricity is only a small part of Consumer Price Index (CPI), the inflationary cost of an instant increase in electricity tariff will be felt throughout the national economy.

This pain will be re-inflicted every six months under the current system of review. The next pain will be felt in December 2011.

3.0 Comparison with Regional Countries

Chart 1 and Chart 2 show, respectively, the domestic and commercial tariff comparison of Malaysia with regional countries, namely Indonesia, Thailand, Singapore and Philippines.

As domestic consumers make up only about 20% of the end-users of TNB and 80% come from the industrial and commercial sector, the focus of the analysis below is on the latter. The industrial and commercial sector is directly impacted, and is further affected indirectly through the knock-on-effect by the increase in electricity tariff.

The table below shows the industrial price of natural gas in Malaysia compared to Thailand, Indonesia, Singapore and Vietnam as stated by Tan Sri Nor Mohamed Yaacop to Bernama on 30 May 2011.

Table 2: Industrial Price of Natural Gas in Malaysia and Regional Countries

Country	RM/mmBTU
Malaysia	16.07
Indonesia	21.04
Thailand	18.23
Vietnam	18.70
Singapore	43.32

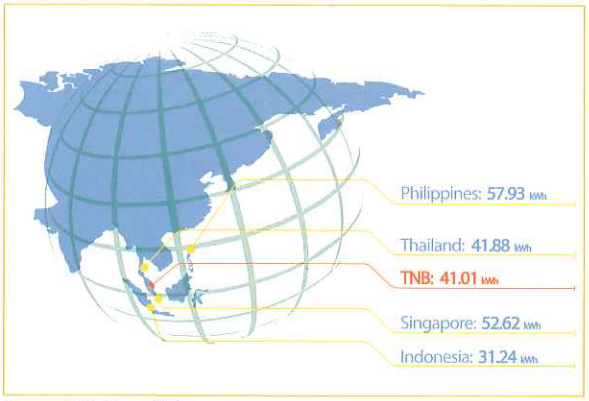
Source: Bernama, 30 May 2011

Chart 1: Domestic Tariff Comparison with Regional Countries in sen/kWh, 2011

Source: TNB, May, 2011

Taking the case of Thailand which pays market price for natural gas, it can be seen that Thailand's industrial natural gas price is 13.4% higher than in Malaysia. Despite the higher natural gas price in Thailand, its commercial tariff is only 2.1% above that of Malaysia.

Chart 2: Commercial Tariff Comparison with Regional Countries in kWh



Source: TNB, May, 2011

The chart above shows that Thailand's commercial electricity tariff is only marginally higher than in Malaysia despite the power plants having to pay a higher price for its natural gas. This reflects Thailand's efficiency in delivering electricity to industrial consumers as compared to Malaysia.

4.0 Benchmarking TNB's Operation

The comparisons between the situation in Malaysia and its neighbours show that industrial consumers are paying for the inefficiency of TNB. The government through MyPower needs to review the operations of TNB and see where the leakages are coming from before allowing it to increase the electricity tariff. An audit of TNB's operation should be called to benchmark its performance against that of Thailand or any power producing plants outside Malaysia. Remedial measures will have to be taken if TNB's operation is found to be below the benchmark base level.

The disparity between Malaysian and Thailand's commercial tariffs has been pointed out by the Petaling Jaya MP, Mr. Tony Pua. He stated that "despite having to contend with natural gas prices that were more than double that of Malaysia's, commercial electricity tariffs in Thailand were only 0.4 per cent higher than Malaysia's RM37.85 kWh rate."

He added that "the latest tariff hike meant that commercial power rates here would be 'significantly higher' than Malaysia's northern neighbour when they should be 16.9 per cent cheaper, based on existing subsidy rates."

5.0 TNB Upward Electricity Tariff Revision Should Only be Based on its Core Business

It is only fair that Suruhanjaya Tenaga should consider any upward revision of electricity tariff by TNB on the basis of the increase in TNB's operating cost of its core business. TNB states in its webpage that its core business is generating, transmitting and distributing electricity. *(http://www.tnb.com.my/about-tnb/our-business/core-business.html)*

The reasons quoted by TNB in its upward revision of electricity tariff on 1 June 2011 were:

- Consumer Price Index (CPI) increase of 14% from the period 2006 to 2011;
- Increase in capital expenditure;
- Increase in maintenance cost of about 19% in the same period;
- Increase in cost of raw materials for electrical supply equipment.

None of the reasons quoted above by TNB can be directly attributed to TNB's core business in generating, transmitting and distributing electricity. All the core and non-core businesses of TNB have been lumped together.

TNB's non-core businesses, as listed on its website, are 21 subsidiaries, and under these subsidiaries are 31 associated subsidiaries. These subsidiaries and associated subsidiaries are involved in diverse activities, including education and training such as Universiti Tenaga National (UNITEN), and TNB Integrated Learning Solution Sdn Bhd, ILSAS, property development such as TNB Properties Sdn Bhd and venture capitals such as TNB Capital (L) Ltd and TNB Ventures Sdn Bhd. Its non-core businesses also include overseas operations such as Power and Energy International (Mauritius) Ltd.

This may explain the increase in TNB's staff cost which has jumped by 70%, from RM1.7 billion in 2004 to RM2.9 billion in 2010 (Finance Twitter, an online publication, 2 June 2011).

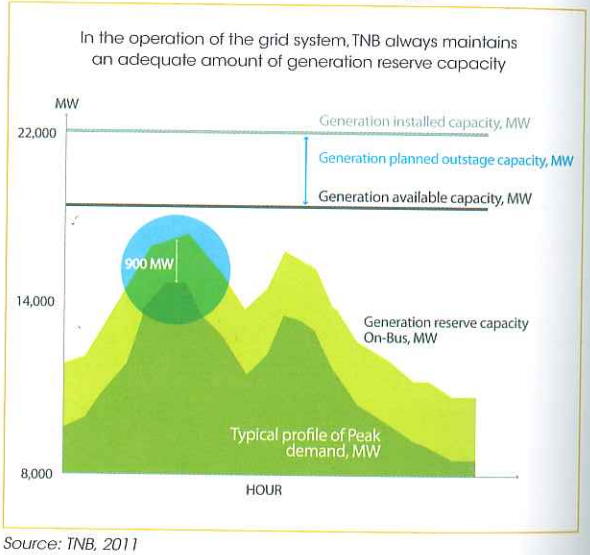
As such, Suruhanjaya Tenaga should require TNB to provide two separate sets of accounts, one of which will specifically concern TNB's core business of generating, transmitting and distributing of electricity. Any revision in the electricity tariff by TNB should be justified by this set of accounts.

6.0 Inefficiency of TNB – Independent Power Producers (IPPs) and Electricity Reserve Margins

Mr. Tony Pua alleged that the key reason for the disparity between Malaysia and Thailand "is the unfair PPAs (Power Purchasing Agreements) which resulted in ridiculously high levels of electricity reserve margins. Malaysia's 52.6 per cent reserve margin in 2010 was double that of Thailand (25.4 per cent) and Java, Indonesia (26 per cent). The net effect is that TNB is forced to purchase electricity which it does not need from the IPPs, resulting in inflated costs for TNB and correspondingly inflated profits for the IPPs."

The TNB's reserve margins can be seen in Chart 3.

Chart 3: TNB Reserve Margin



Source: TNB, 2011

According to *Finance Twitter*, an online publication published in 2 June 2011, purchasing of electricity from IPPs constituted 40.5% of TNB's operating cost in 2005. For FY 2010, TNB's energy cost grew by 2.4% to RM17.4 billion from RM17.0 billion, mainly due to higher payment to IPPs totaling RM12.5 billion in 2010, compared to RM11.8 billion in 2009.

7.0 Negotiations with IPPs Should be Competitive and Transparent

The government, through the private special-purpose unit, MyPower Corp, is presently reviewing all PPAs between TNB and IPPs, particularly the PPAs of the five initial IPPs (YTL Power, Genting Power, Powertek, Port Dickson Power and Segari Energy) which will end between 2015 and 2017.

According to an analyst in *Starbiz* on 16 July 2011, "the main thing is ensuring that future PPAs should be done on a competitive basis and ensuring renewals of PPAs is also done on a competitive basis." The Ministry of Energy, Green Technology and Water's Deputy Director General, in the same *Starbiz* article, said that part of the tasks of MyPower "is to review and discuss the contents of PPAs and come up with suggestions for both TNB and IPPs" for submission to the Ministry of Energy, Green Technology and Water, Prime Minister's Office and Ministry of Finance, after which MyPower will discuss the review with Suruhanjaya Tenaga.

SERC believes each IPP's costs for fuel, non-fuel and utilities sold to TNB should be made available and be transparent to the public. "Blind folding" generation cost and passing it off as tariff is not fair; there should be a mechanism to prevent any type of concession agreements with PPAs to be one sided. Further, since TNB, SESB and SEB are vertically integrated electricity supply monopolies, there is no decoupling of the major service functions such as generation, transmission, distribution and customer service.

The government needs to ensure that future PPAs be secured on a competitive basis. IPPs, merchant plants and/or net energy producers should tender for power-related projects via a competitive and transparent bidding process. Competition can boost efficiency if there is in place a policy of "multiple sellers and multiple buyers" instead of the current monopolistic situation of "multiple sellers and single buyer". The bidding process should incorporate the following conditions:

- Cap the profit that can be made by the companies – it is unfair to pass a higher generation cost as tariff just because a particular company seeks higher profit.
- Equilibrium between Return of Investment (ROI) and impact to tariff within the operating licensed period – The government must ensure a proper audit to ensure a fair rate between ROI and impact to tariff can be achieved. Any extension of the licensing period would only require Opex and minimal refurbishment cost to be factored into the tariff setting.
- Give priority to generation efficiency – use the most efficient technology in electricity generation.

8.0 No Automatic Increase in Natural Gas Price

The increase in tariff that has been agreed to is not a one-off affair. As mandated by the government, the price of natural gas will increase by RM3/mmBTU every six months until the end of 2015.

The automatic increase in natural gas price every six months until December 2015 is not justified. The upward revision should stop once it has reached world market price, even if that occurs before the end of 2015. Thereafter, the market price for natural gas should prevail.

The market price of natural gas is estimated to be RM46.52 in May 2011 given that the government has stated in Bernama that at RM10.70/mmBTU, the subsidy was 77 per cent. This will be higher than prices of natural gas to be paid by TNB, industrial and commercial users as indicated in Table 3 at the end of 2015.

Table 3 shows that at the end of 2015, TNB would have to pay PETRONAS a price of RM40.70/mmBTU for natural gas supply, an increase of 197% over a period of four and a half years. Similarly, a big industrial user would have to pay RM45.35/mmBTU, an increase of 147% and Gas Malaysia's customers will see an increase of 168% in natural gas price during the same period.

The increase in natural gas price and the percentage increase every six months from the base period of June 2011 can be seen in Table 4.

Table 3: TNB and Industrial Prices for Natural Gas under the Adjustment Mechanism, 2011 to 2015

RM/mmBTU	2011		2012		2013		2014		2015	
	June	Dec	June	Dec	June	Dec	June	Dec	June	Dec
TNB	13.70	16.70	19.70	22.70	25.70	28.70	31.70	34.70	37.70	40.70
Industry (>2 mmscfd)	18.35	21.35	24.35	27.35	30.35	33.35	36.35	39.35	42.35	45.35
Gas Malaysia (<2 mmscfd)	16.07	19.07	22.07	25.07	28.07	31.07	34.07	37.07	40.07	43.07

Source: SERC Computation

Table 4: Price and Percentage Increase from Base Period of June 2011

	2011	2012		2013		2014		2015	
	Dec	June	Dec	June	Dec	June	Dec	June	Dec
Price Increase from base, June 2011 in RM/mmBTU	3	6	9	12	15	18	21	24	27
TNB in %	21.9	43.8	65.7	87.6	109.4	131.4	153.3	175.2	197.1
Industry using >2 mmscfd in %	16.3	32.7	49.0	65.4	81.7	98.1	114.4	130.8	147.1
Gas Malaysia customers using <2 mmscfd in %	18.7	37.3	56.0	74.7	93.3	112.0	130.7	149.3	168.0

Source: SERC Computation

9.0 A Further Round of Electricity Tariff Increase will Render Malaysia's Exports Uncompetitive

Taking into consideration that the price of natural gas per mmBTU for the power sector will increase from RM13.70 in June 2011 to RM40.70 in December 2015, representing an increase of close to 200% or 3-fold increase (Table 4), there will be a corresponding increase in the tariff rate. Based on the simple calculation that a RM3/mmBTU would increase electricity tariff by 2.23 sen/kWh, the 10 adjustments will see a tariff of 51.61 sen/kWh (2.23 x 10 = 22.30sen/kWh) from the base of 31.31 sen/kWh prior to current increase (based on the government figure on 30 May 2011). This would mean that by 2015, Malaysian end-users would be paying the same rate as what Singaporean end-users are paying today.

Looking at this another way, Malaysia will price itself out of the market on its own volition.

Malaysia will become so uncompetitive, due to energy costs alone, that it will jeopardize the competitive advantage that it enjoys today. This will drive away foreign direct investment and encourage industries to move offshore to cheaper countries such as Thailand and Indonesia where no such periodic adjustment is taking place.

10.0 The Benchmark Price for Natural Gas should not be Medium Fuel Oil (MFO)

There is no reason why natural gas price in Malaysia should be based on MFO price. MFO is a bunker fuel used by ships. As Malaysia is a major exporter of natural gas particularly from Bintulu, the price of natural gas should be the f.o.b price from Bintulu.

According to PETRONAS, the market price used in the calculation of revised upward revision of tariff on 1 June was RM46.52/mmBTU. This is way above the natural gas price announced by NYMEX (New York Mercantile Exchange).

The natural gas futures price on 8 August 2011 was USD3.935/mmBTU or RM11.80/mmBTU at RM3 per USD.

Even at the highest price level of USD5/mmBTU since August 2010, the indicative market price of natural gas was only RM15/mmBTU.

11.0 Extending Off-peak Electricity Tariffs

Against a backdrop of rising electricity tariff and increasingly stiff competition in the industrial product market, it is imperative that both the government and manufacturers promote energy efficiency and conservation by holistically and extensively implementing the Time-of-Use Rate (TOU) Non-Rebate Programme under the Demand Side Management (DSM) approach.

TNB provides two discount riders during off-peak demand period:

- Off-peak electricity tariffs are now offered for industrial use from 10 p.m. to 8 a.m. every day. A 20% discount is given to industrial end-users who enrol under the Off Peak Tariff Rider (OPTR) scheme;
- The Sunday Tariff Rider (STR) scheme is offered to all medium or high voltage industrial customers on Sunday. Customers enrolled in the STR scheme will still pay the same rates on electricity usage as their current tariff. However, Maximum Demand charges are not applicable to any electricity usage on Sunday.

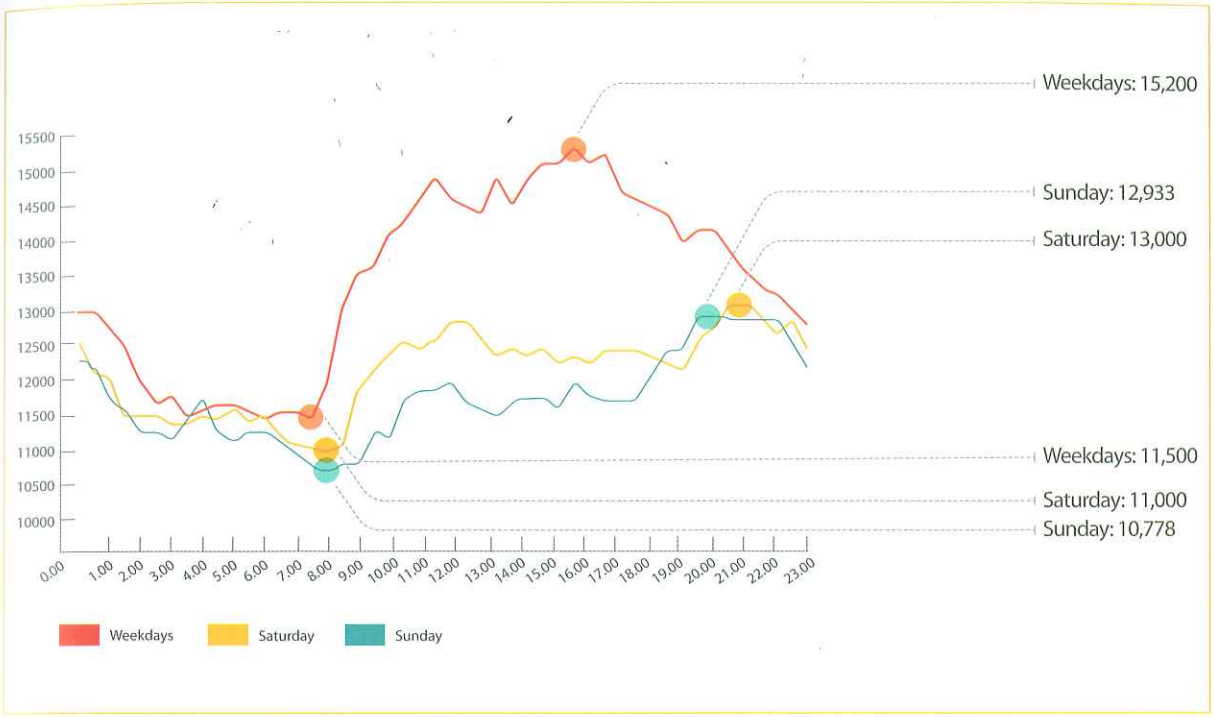
In many developed countries, and in Thailand, off-peak electricity tariffs are extended all day to Saturdays, Sundays and public holidays.

In Thailand, the off-peak periods are:

- 10 p.m. to 9 a.m. Monday to Friday
- All day on Saturdays, Sundays and public holidays.

Chart 4 shows the typical demand for electricity on Monday to Friday (weekdays), Saturday and Sunday in Malaysia. The timing of the off-peak

Chart 4: Typical Demand of Electricity on Weekdays, Saturdays and Sundays



Source: FMM, 2011

period demand for electricity on weekdays, Saturdays and Sundays is quite similar. However, there is a distinct lower demand for electricity on Saturdays and Sundays as compared to weekdays. In addition, the peak demand for electricity on weekdays begins from 10 a.m. to 8 p.m. It could be deduced that usage pattern on public holidays would be the same as on Sundays.

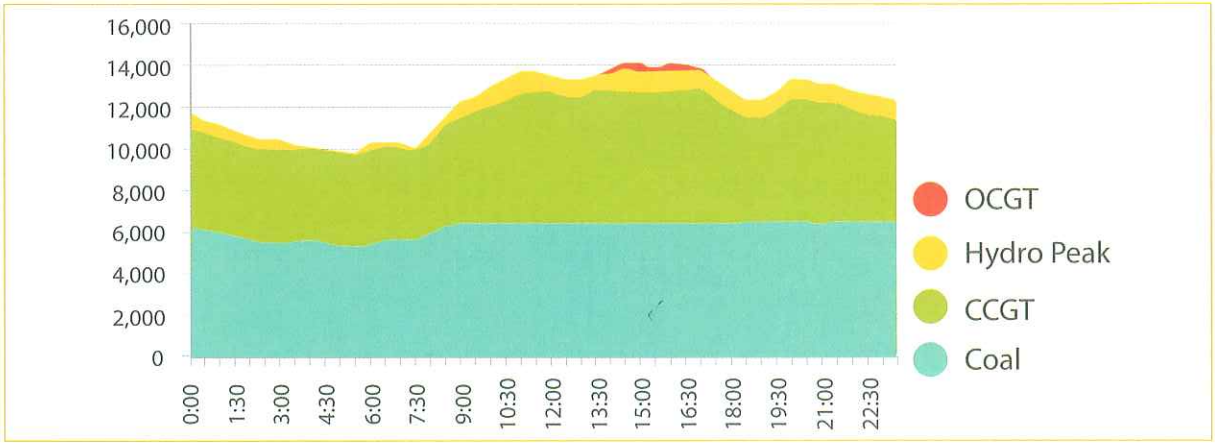
In view of the above arguments, Suruhanjaya Tenaga should consider directing TNB to expand the off peak phase electricity tariff as follows:

- 9 p.m. to 9 a.m. on week days
- All day Saturdays, Sundays and gazetted public holidays.

It is also proposed that electricity generation from coal be used as the basis to calculate load peak and off peak phases, instead of using natural gas for this purpose (see Chart 5). This will provide the minimum load power stations need to operate as coal power plants cannot be shut down once they are running. This could form the basis to ask TNB to extend by 2 hours the off peak period, i.e. from 9 p.m. to 9 a.m. for commercial and industry consumers.

Extending the off peak phase on weekdays and all day on Saturdays, Sundays and public holidays as in the case of Thailand would encourage manufacturers to shift their load of high demand to a much longer off peak period during week days, Saturdays, Sundays and public holidays, thereby reducing critical peak demand on week days.

Chart 5: Typical Daily Generation Load Profile of the Different Types of Generation in Kilowatt/hour the Grid System (except thermal) with Coal as Base



Source: Reconstituted from TNB data

This would also reduce the need to build new power plants, as well as lower the emission of greenhouse gases. TNB can save on capital expenditure and this would moderate future hikes in electricity tariffs.

TNB is not expected to incur losses if these changes were made. A substantial rise in the consumption of electricity during the off-peak period on weekdays, weekends and public holidays is expected to compensate for the discount in electricity tariff. In fact, TNB may gain from a smaller capacity expenditure (CAPEX) requirement over the medium term.

12.0 Alternative Fund to Support Renewable Energy (RE) and Energy Efficient (EE) as Feed-in-Tariff (FiT) will not Benefit Consumers

Arising from the Renewable Energy Act which was passed in April 2011, the Government uses Germany's Feed-in-Tariff (FiT) as its model to impose a 1% charge on the electricity bills of consumers for the FiT Fund, effective from 1 September 2011. The FiT Fund will provide financial incentives to encourage the private sector to go into green power generation or other RE initiatives which will be managed by Sustainable Energy Development Authority (SEDA) under the Ministry of Energy, Green Technology and Water. Domestic consumers with 300kWh per month consumption and below are exempted from this charge.

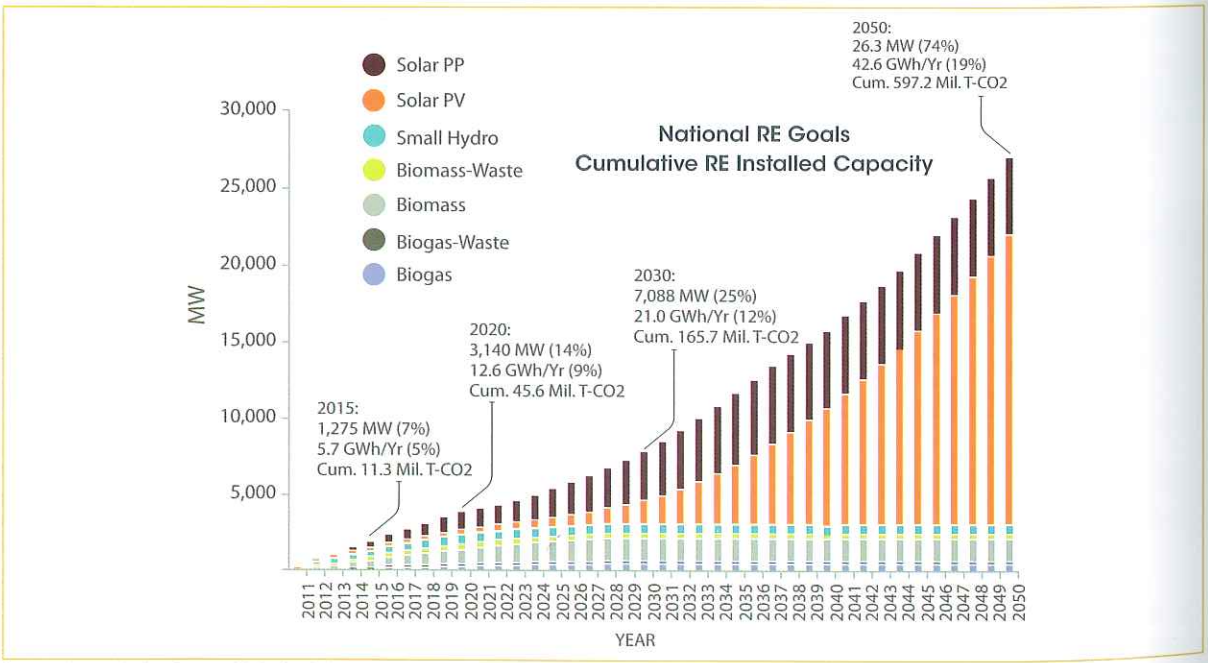
This move is inconsistent with the government's policy to remove and rationalise subsidies on essential goods and services. It has provoked a storm of criticism from ordinary Malaysians. Consumers are disinclined to support such a subsidy programme the potential benefits of which are far into the future and are dubious at best. While the use of photovoltaic (PV) cells and bio-mass in the generation of electricity is widely thought to be commercially unviable, these technologies have been identified for adoption in the future. For example, solar PV and PP are already targeted to generate more than 20,000MW in 2050 (Chart 6).

Government planners do not seem to have taken into consideration the fact that the land area required to harness solar energy is too vast for such energy to become a large scale power source. Unless break-through technology increases PV cell efficiency tremendously, it captures only a small and uneconomical amount of solar energy. Even with these generous FiT rates, the payback periods for such installations are approximately 10 years (calculated as 11.2, 10.1 and 8.6 years respectively for installations by Malaysia Green Technology Corporation).

The ten-year payback period would mean that we are encouraging the adoption of today's technology which will become obsolete well before the payback period, even with this generous FiT subsidy.

The RE fund could come from the development grant that the government is giving to TNB amounting to more than RM500 million each year.

Chart 6: Target of Solar Energy Generation



Source: Kementerian Tenaga, Teknologi Hijau Dan Air

A one-off fund of RM500 million would be sufficient to see the continuous smooth operation of SEDA in the coming years. That would probably be a better use of such funds considering that TNB revenue would increase by more than 5% every 6 months, beginning 1 June 2011. A rough calculation would show that a 7.12% increase in tariff would see an increase in TNB's revenue by RM2.16 billion (7.12% of RM30.3 billion – TNB FY 2010 revenue) every 6 months. TNB's revenue would increase by more than RM 1 billion every six months if revenue from sales of electricity by TNB is only an unlikely 50% of TNB's gross revenue for FY 2010.

The fund could also be utilized to fund EE projects such as co-generation and energy cooperative community as spelt out in Sections 12 and 13 below.

13.0 Incentives for EE Projects – Forming a Cooperative Energy Community (CEC)

Green building practices have become standard premium property features nowadays. For instance in Bandar Utama, many innovations throughout the township are geared towards conservation and environmentalism. Value-added facilities like the energy-saving iced water storage system are used for air-conditioning; the rain water harvest system is for use in air conditioning cooling towers; low-VOC paints and Low-E glass are used in all three high-rise properties. Motion-activation and LED fixtures help keep lighting costs down in the mixed-use and residential buildings while re-cycled water is used for toilet flushing and sprinklers. Low-loss transformers are standard fittings for all commercial buildings.

SERC is suggesting the formation of CECs amongst commercial and industry consumers. The CEC is commonly seen in Canada, United States and Europe as a registered provincial co-operative with the objectives of promoting and participating in renewable energy, power generation and energy conservation projects that will have environmental, economic, and social benefits for a particular community.

A CEC funded by UNDP-GEF's Small Grants Programme was first launched in Cambodia via a community-run biomass electrification system which has helped to supply 241 rural households with electricity.

In the case of Malaysia, CEC is potentially viable. Major commercial and industry players around a community could collaborate to develop a workable CEC model. There is a strong link between access to electricity and income generation. Access to affordable and reliable electricity fosters prosperity, and its prudent use reduces greenhouse gas emissions.

CEC projects should be encouraged by the government by providing a one-off tax deduction to participants for expenditure incurred in the setting up of such a co-operative.

14.0 Inefficient Electricity Delivery System Makes Malaysia's Export Uncompetitive

The Malaysian economy, being export-oriented, is very dependent on its manufacturing industries. There should therefore not be any shortcomings in the energy delivery system, particularly when they are preventable. The unwarranted inefficiency of service providers such as TNB is therefore cause for concern. This is worsened by the strengthening of the Malaysian ringgit against the US dollar for the past few years and the increased costs of raw materials in the face of China's strong economic growth.

The deficiencies in the electricity delivery system mentioned above come from:

- Non-transparent and uncompetitive PPAs between TNB and IPPs,
- Natural gas price based on MFO. MFO is priced very much higher than the actual market price of natural gas as indicated by the NYMEX natural gas futures,
- TNB's non-core businesses that distort the profit margin from its core business of generating, transmitting and distributing electricity,
- TNB's power reserve of more than 50%, which is twice that of Thailand and Indonesia,
- Expected upward revision of the natural gas price will see Malaysian electricity tariff rising to as high as that of Singapore. This high cost of electricity alone will render Malaysian economic sector uncompetitive,
- Non-optimal use of electricity during off-periods and on Saturdays, Sundays and public holidays.

15.0 Recommendations

In view of the above, SERC calls upon Suruhanjaya Tenaga to seriously consider the following proposals:

- There should be a benchmarking exercise of TNB compared with other power generating plants within the region such as Thailand and Singapore. This is in view of the fact that the commercial rates of electricity tariff for Thailand and Malaysia are only marginally higher despite the high natural gas subsidy given to TNB by PETRONAS. Thailand pays market prices for its natural gas. Benchmarking will allow corrective actions to be taken if TNB is found to be operating below the benchmark level. Such studies should be accessible to the public so that the reasons for any future increase in electricity tariff will be transparent.

- Any increase in the electricity tariff should be based on TNB's core business of generating, transmitting and distribution of electricity including direct customer service. For this purpose, ACCCIM recommends that TNB makes available a set of accounts dedicated to TNB's core business. This set of accounts will form the basis for future electricity tariff adjustment if warranted.

- SERC recommends that a study be carried out to ascertain the reasons for TNB's high reserve margin for electricity in comparison with the world's norm, and whether this high reserve is justified. The study should also look into how this reserve margin could be safely reduced without disrupting consumer demand for electricity.

- SERC believes that any negotiation on the renewal or new PPAs between TNB and IPPs should be undertaken through a competitive and transparent bidding process. The bidding should incorporate the following criteria:
  - Cap the profit that can be made by IPPs. It is unfair to pass a higher generation cost as tariff,
  - Establish an equilibrium between Return of Investment (ROI) and impact to tariff within operating licensed period. The Government must ensure a proper audit to ensure that a fair rate between ROI and impact to tariff is attained. Any subsequent extension of the licensing period would only require operating expenditure and minimal refurbishment cost to be factored into the tariff setting,
  - Emphasize generation efficiency. Efficient use of technology is vital in electricity generation and this should be prioritised.

- There should not be nine other automatic increases in natural gas price up to 2015. The increase should cease in the event that the adjusted price has reached or surpassed the market price for natural gas. Natural gas prices will then be allowed to float as dictated by the market.

- The benchmark market price for natural gas should be based on the natural gas market and not on the medium fuel oil market, which is a petroleum based commodity. SERC recommends that the market price should be the f.o.b price of natural gas ex-Bintulu as this is the price of natural gas sold by PETRONAS to its overseas customers.

- Maximizing the use of electricity by manufacturers during off-peak periods will increase the revenue and reduce capacity expenditure by TNB. SERC recommends that Suruhanjaya Tenaga should advise TNB to consider implementing the off peak phase for electricity as is happening in Thailand and in industrialized countries. The recommended off-peak phases are as follows:
  - 9 p.m. to 9 a.m. on week days
  - All day Saturdays, Sundays and gazetted public holidays.

  Coal, instead of natural gas, should be used as the basis for peak and off-peak phase calculation. A coal power plant cannot be shut down once it is in operation unlike natural gas power plant.

- SERC recommends that the 1% FiT Fund to be collected from industrial and commercial end-users and households that consume more than 300 kWh of electricity per month be abolished. RE projects funded by the FiT Fund have no near term economic viability. In addition, the long pay-pack period would render current RE technologies obsolete due to fast changing technological developments and advancements in RE technologies. Instead, R&D funding could come from the annual development grant given to TNB by the government. This is due to the fact that the adjustment in electricity tariff would ensure that TNB could more than cover the loss in development grant given by the government. A one-off payment of RM500 million would ensure the continuous viability of SEDA.

  SERC also recommends that the FiT Fund be utilized to provide incentives to industrial and commercial users that adopt EE technologies in their operations, particularly in the manufacturing sector. Such technologies could be identified and introduced by SEDA.

- SERC recommends that Suruhanjaya Tenaga look into reducing standby tariff charges for industrial and commercial consumers. This is because the current charges are unreasonable, with consumers paying even when the facility is only on standby.

  Other recommendations include:

  - Firm standby rates should not be more than 20% of TNB's actual price of capacity charge rate for each Tariff Category,
  - The concept of "If you don't use, then you don't pay" should apply to Non-firm standby rates,
  - If electricity is used within any month, the tariff that is applicable should follow the respective tariff category,
  - In addition, top-up consumers should only follow the electricity tariff as for normal consumers for each tariff category,
  - No additional penalty charge should be imposed on standby and top-up consumers that consume more electricity than the Average Load Factor of the respective tariff category,
  - To protect TNB from any unlawful manipulations by customers and avoid standby customers who are not able to maintain reference plant availability of 90%, TNB needs to draw up an equitable measurement to audit the CAPEX and OPEX to ensure its profitability.

- The government should encourage Community Energy Cooperatives (CECs) as a form of resource conservation and environmentalism. CEC is commercially viable as can be seen in the successful case of the Bandar Utama community.

  SERC recommends that SEDA takes a leading position in encouraging the formation CECs of newly developed communities and townships as part of its RE and EE projects. SEDA could coordinate with other government agencies, or operate independently to provide funding and incentives for CECs.