

TENAGALINK

KDN : PP8515/01/2013(031995)

WILL MY
ELECTRICITY
BILL HAVE
GST?



What
you need
to know
about **ELECTRICITY
TARIFF REBATE
DUE TO ICPT...**

Hydropower Malaysia
Showcasing a Century
of Success

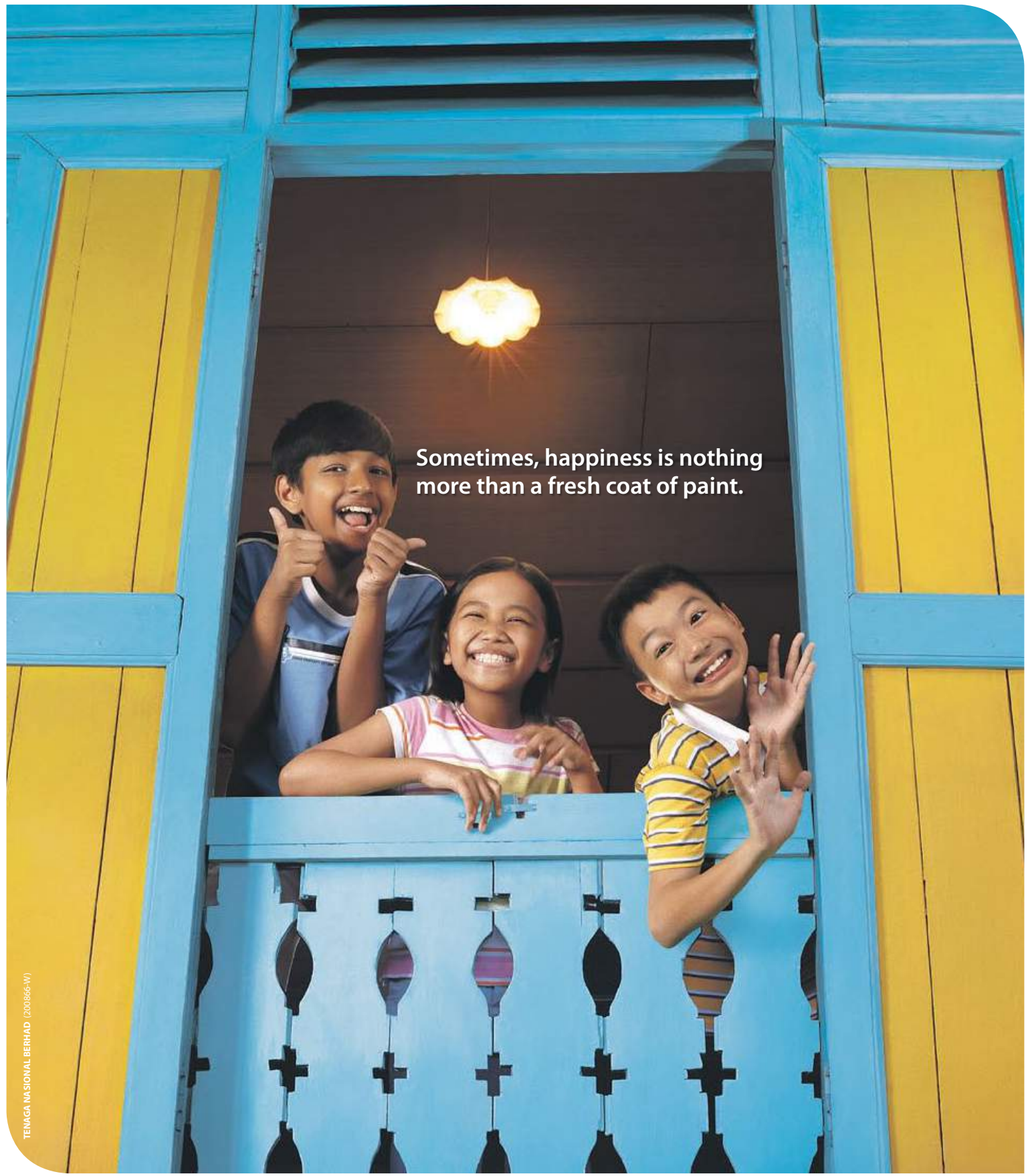
Going Paperless
with e-Billing effort

Powerline Safety,
Energy Efficiency &
Power Quality Advice

Emergency Aid
TNB Flood
Relief Efforts from
KetTHA's View



Volume 2 | 2015



Sometimes, happiness is nothing more than a fresh coat of paint.

TENAGA NASIONAL BERHAD (200866-W)

Progress means little at all if the communities in which we do business don't benefit from our endeavours too. Hence, through our community programmes such as Projek Mesra Rakyat and Projek Baiti Jannati, we have played a part to ease the burdens of the nation's needy by transforming homes considerably worse for wear into comfortable homes equipped with electricity, water and proper sanitation. We do all this to better lives for a brighter tomorrow.

www.tnb.com.my



TNB e-Services

A brighter way to manage your electricity account

It's never been easier to manage your TNB account.
With TNB e-Services, you can:

- Monitor your electricity consumption
- Monitor your billing information and payment status
- View and print your bills
- Pay your bills

Visit www.tnb.com.my/e-services to register today.



TENAGA NASIONAL BERHAD (200896-W)



5 Ways to Contact Us



Call or SMS **15454** for power outage or TNB street light malfunction



Call or fax **1300 88 5454** for billing & account enquiries
www.tnb.com.my > One Stop Engagement Centre



facebook.com/tnbcareline
tnbcareline@tnb.com.my



Notes: • Fixed line calls will be charged as local calls.

• Mobile phone calls are subject to charges by service providers.

• SMSes are free



Tenaga Nasional Berhad (TNB) is poised to build on and exceed the achievements it realised in 2014, to accomplish greater success this year.

We have made numerous efforts to ensure that we are prepared for the implementation of the 6% Goods and Services Tax (GST). At the same time, TNB has initiated a number of measures to ensure that its Large Power Customers (LPCs) are equipped with the knowledge and expertise necessary to satisfy the new compliance requirements introduced alongside the GST.

Primarily, we have revamped the electricity bills received by LPCs to allow them to serve the additional function of a tax invoice, in addition to presenting them in an electronic format which is more convenient and efficient. Aside from the enhanced speed with which TNB is now able to issue monthly bills, this also means that LPCs are provided with all the documentation necessary to file for tax returns and recover the GST-related costs attached to their electricity consumption.

Meanwhile, TNB has also instituted measures to further strengthen our operations to ensure continual improvements in terms of efficiency and reliability. In addition to raising the effectiveness and profitability of our operations, this approach is also vital towards guaranteeing that electricity supply can be provided at the electricity tariff rebate due to ICPT which was recently approved by the government.

Through these developments, TNB continues to demonstrate that in spite of fluctuations in global prices and shifts in the Malaysian regulatory landscape, we remain committed to consistently raising the standard of services rendered to our customers. 📈

Datuk Ir. Baharin Din
Vice President (Distribution)
Tenaga Nasional Berhad

We welcome your **FEEDBACK**,
COMMENTS and/or **SUGGESTIONS** to
help us **IMPROVE** our **SERVICES**.

Please email your responses to dist_news@tnb.com.my
or log on to www.tnb.com.my/customer-care.html.



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Publisher

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TENAGALINK may also be read online at
www.tnb.com.my/business/tenaga-link.html

Energy saving tips at work



1.



Turn off

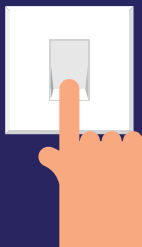
your computers
and office equipment when
not in use for more savings

2.



Wear sensible work attire
and keep the temperature
around **24-26°C**
to save more

3.



Switch off

lights when not in use e.g.
meeting room, pantry,
surau, store room.

4.



Appoint person in charge

for each room to ensure
all lights are off



**TENAGA
NASIONAL**

Better. Brighter.


SMARTER SAVINGS



“We hope to install smart meters in the households of each of our millions of domestic customers within 10 years.”

– TNB President and Chief Executive Officer
Datuk Seri Ir Azman Mohd

Tenaga Nasional Berhad (TNB) is presently in the process of undertaking a large-scale pilot project to determine the feasibility of implementing smart electrical meters across the entire national grid. This is to enable the utility's domestic, commercial and industrial customers to better manage and optimise their utilisation of electricity. According to the company's President and Chief Executive Officer Datuk Seri Ir Azman Mohd, the utility is planning to dramatically increase the adoption of such devices over the coming decade. “We hope to install smart meters in the households of each of our millions of domestic customers within 10 years,” revealed Datuk Seri Ir Azman.

Through the use of digital technology, smart meters also facilitate the sharing of information on the generation, transmission and consumption of electricity among energy suppliers, distributors and consumers. Aside from enabling all energy sector players to better monitor and predict electricity demand, Education Minister II Datuk Seri Idris Jusoh highlighted that the technology will also enable consumers to improve understanding of their own consumption patterns. He added, “It will help consumers monitor their energy consumption; for instance, they can set the washing machine to run during non-peak hours. This will allow more control over monthly electricity bills and help prevent blackouts during periods of peak demand.” 

SECURING COAL SUPPLY

To ensure the availability of adequate sources of feedstock for its coal-fired electricity generation facilities, Tenaga Nasional Berhad (TNB) had bid to takeover infrastructure firm Integrex Bhd, which operates the strategically located Lumut Port, near the utility's 2,100MW Janamanjung power plant in Manjung, Perak.

The port comprises the Lumut Maritime Terminal (LMT) and the Lekir Bulk Terminal (LBT), the latter of which has predominantly handled coal shipments in the past. Following Integrex's announcement of plans to convert the LBT into a multi-use terminal handling

limestone, iron ore and biomass in addition to coal, TNB issued a notice of intent to take over the company on 9 January 2015.

In late March 2015, Perak Corp relinquished their 15.74% share in Integrex to TNB, enabling the latter to attain a 50.83% stake in Integrex. Subsequently, the other major shareholder of Integrex at the time, Amin Halim Rasip, announced that he too has accepted TNB's offer and disposed his 24.76% stake in the company. With this new development, TNB successfully acquired 90.21% of the voting shares in Integrex, officially assuming ownership of the company. 🇲🇾

To secure reliable supplies of feedstock for its 2,100MW Janamanjung power plant in Manjung, Perak (foreground), TNB has raised its offer for the takeover of the conveniently located Lekir Bulk Terminal (LBT) (in background).



GREENER PROSPECTS

According to a recent statement by the Ministry of Energy, Green Technology and Water (KeTTHA), the continued adoption of green technology products and services is set to raise the sector's contribution to Malaysia's Gross Domestic Product (GDP) to RM22.4 billion by the year 2020 and RM60 billion by 2030. Announcing these figures during his address at the launch of the YaHijau Green Youth of Malaysia Foundation at Universiti Malaysia Sabah (UMS) in Labuan on 28 February 2015, KeTTHA Minister Datuk Maximus Ongkili also stated that this would be a result of the strategies and approaches implemented through the Green Technology Master Plan (GTMP).

Datuk Maximus also revealed that under the GTMP, the Ministry anticipated the creation of an estimated 144,590 employment opportunities by 2020 and a total of 211,500 by 2030, as compared to the 2014 figure

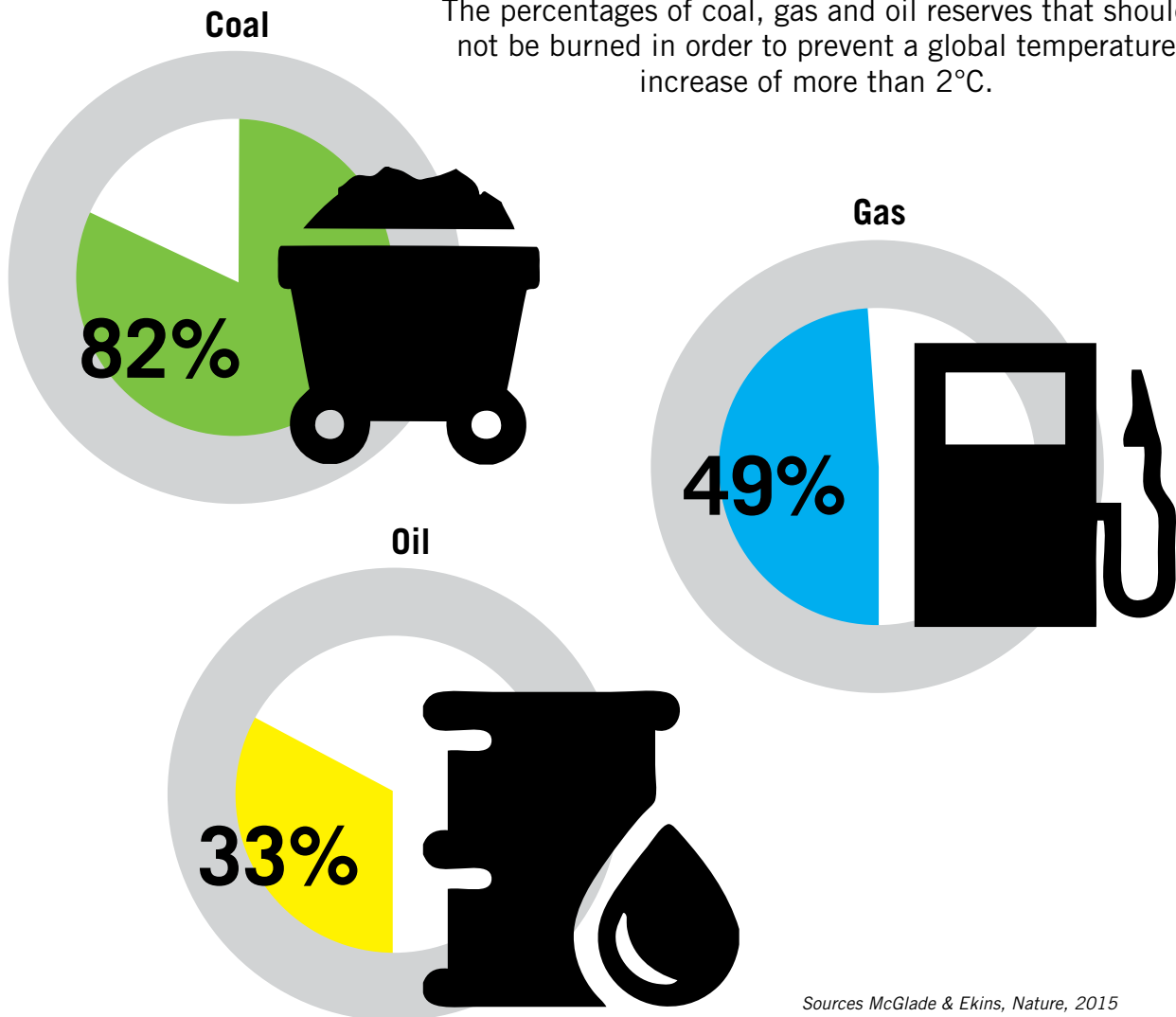
of 84,565. Meanwhile, the Minister also explained that in line with the National Electric Mobility Action Plan (NEMAP), 300 electric vehicle charging stations would be constructed across the country by the end of this year, at a projected cost of RM5 million. This initiative complements various priorities identified under the NEMAP, by promoting the use of electric vehicles in public transport, strengthening the electric mobility ecosystem and relevant infrastructure, and expediting the development of local electric mobility technology. 📍

In addition to contributing towards increased investment in the green technology products and services sector, the propagation of solar photovoltaic power plants such as this also serves to supplement energy supply through the use of renewable alternatives.



GLOBAL RESERVES


The percentages of coal, gas and oil reserves that should not be burned in order to prevent a global temperature increase of more than 2°C.

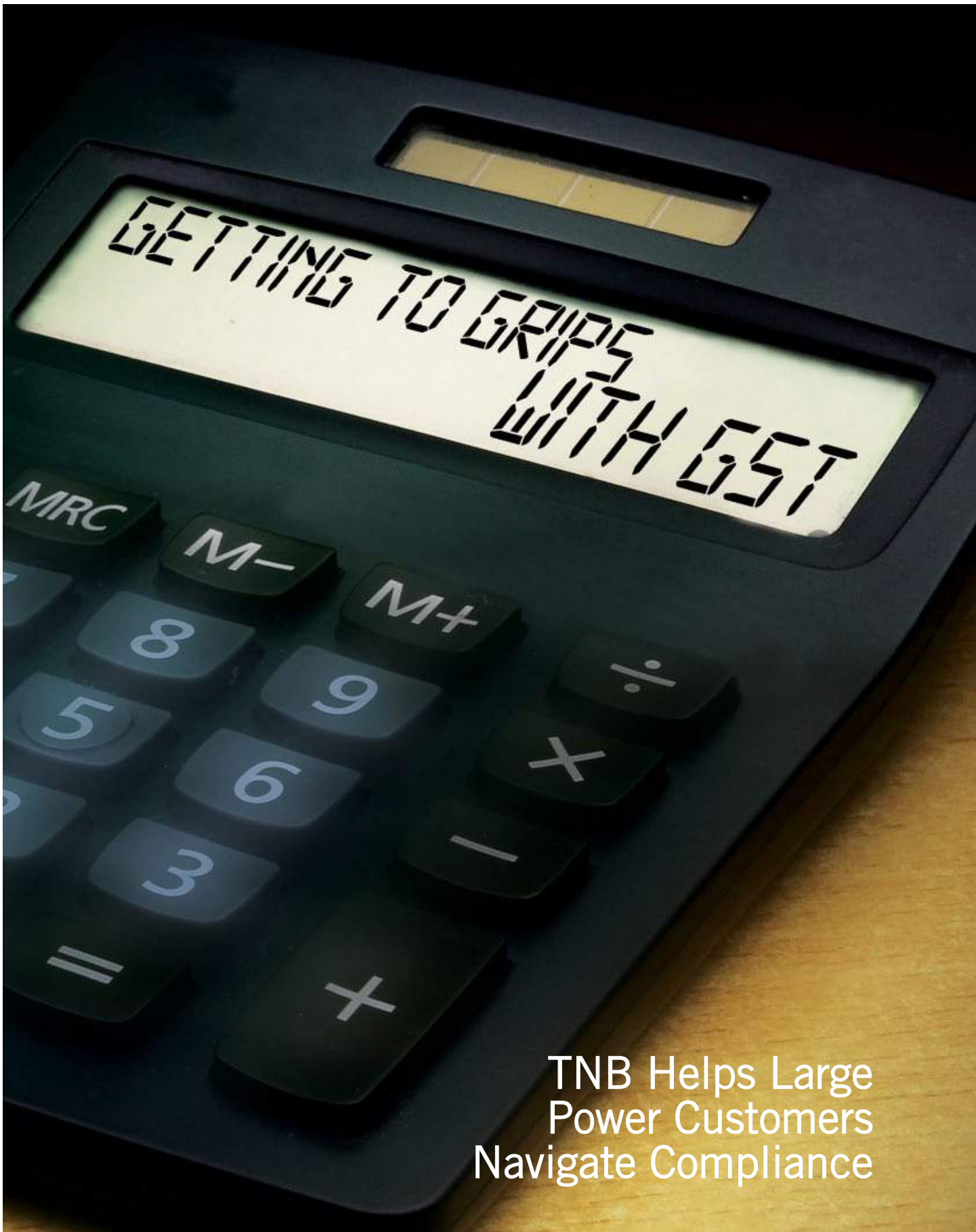


Sources *McGlade & Ekins, Nature, 2015*

PREVENTING CLIMATE CHANGE

According to a new research done by University College London (UCL), and published in the journal *Nature*, massive amounts of the world's coal, oil and gas reserves have to stay unburned if the planet is to remain under a global temperature increase safety limit of 2°C, which was agreed on by the world's nations. Vast reserves of oil in the Middle East, and coal in the US, Australia and China will have to be left in the ground.

At the current rate of fossil fuel usage, it is predicted that the world will experience a catastrophic 5°C rise in temperature. As explained by Christophe McGlade, who helmed the research team, they have tangible figures of the quantities and locations of fossil fuels that should remain unused in trying to keep within the 2°C limit. A global climate deal is expected to be established at the UN summit, scheduled to be held in Paris in December 2015. 



TNB Helps Large
Power Customers
Navigate Compliance

Introduced over three decades ago, the Sales and Service Tax (SST) utilised by the Malaysian government has been due for a revamp for quite some time. Announced in October 2013, the Goods and Services Tax (GST) replaces the SST, to enhance the efficiency, effectiveness and transparency of the tax system, while distributing the financial burden more fairly, based on consumption patterns rather than income.

In light of these developments, Tenaga Nasional Berhad (TNB) has concertedly sought to ensure that Large Power Customers (LPCs) and businesses, including SMEs, transition to the new system as smoothly as possible. For this issue's Cover Feature, **TENAGALINK** takes a detailed look at these efforts, as well as the intricacies of GST and the ways in which it impacts electricity costs faced by LPCs.

DISTINCT DIFFERENCES

In effect on 1 April 2015, the GST is a broad-based consumption tax which is levied at 6%. In addition to applying to goods and services which are supplied within Malaysia, the GST also applies to services which are imported and used in the country – which is in stark contrast to its predecessor. Aside from providing the benefit of the reduced tax rate in comparison to the previous 10% rate under the SST, the GST is also expected to improve the efficiency and effectiveness of tax administration and management as it places a greater burden of compliance on the part of companies.

In fact, it is mandatory for all companies with a yearly turnover of RM500,000 or more to register for GST with the Royal Malaysian Customs Department (RMCD) – which continues to administer the tax regime, just like it did with the SST. This is because companies play a pivotal role in the new taxation framework, facilitating the collection of taxes on behalf of the RMCD.

As explained by TNB Chief Financial Officer (CFO) and Vice President (Group Finance) Fazlur Rahman Zainuddin, the step of registering is therefore vital, as it is the only way for companies to recover the tax-related costs imposed by counterparts higher up in the supply chain. “LPCs making taxable supplies which are registered for GST will find that the GST-related costs previously incurred do not raise the cost of business, as they can recover the GST paid through the RMCD’s input tax credit mechanism,” he notes.

As a result of this, the new system is also anticipated to drastically reduce the prevalence of companies operating in the black market, as they will naturally face higher costs should they choose not to register for GST. Interestingly, the RMCD also recently reported that the number of companies which have registered to date exceeds the estimated total number of companies with turnover above the designated threshold.



“TNB has taken meticulous steps to ensure that the format of electricity bills which are sent to LPCs complies with the various criteria and requirements prescribed by the Royal Malaysian Customs Department.”

– TNB Chief Financial Officer and Vice President (Group Finance)
Fazlur Rahman Zainuddin

This demonstrates that even the operators of Small and Medium Enterprises (SMEs) acknowledge the importance of complying with the new rules and procedures, to ensure that they do not face unnecessary costs and are able to pass them on to the final consumers of the goods or services they provide.

NATIONAL SIGNIFICANCE

In addition, the GST brings Malaysia’s tax regime in line with international standards practised by an estimated 90% of countries around the world, ranging from regional nations such as Singapore to developed Western countries such as the United States and the United Kingdom. As a result, the new system also provides greater simplicity in administering the tax regime as it adopts a negative concept in which all goods and services are subject to GST unless specifically exempted. This is in contrast to the previous services tax, where only specifically identified services were taxable.

Due to the broadened scope of items which are subjected to tax under the GST, the new system also allows the government to widen and diversify the tax base. This not only creates greater flexibility in the nation’s sources of revenue, but it also allows the government to reduce its reliance on revenues obtained through direct taxes.

While the GST is designed to improve adherence through its in-built mechanisms to promote self-compliance, it should be noted that this very feature also underpins the new system’s crucial advantage of being tax-neutral to the private sector. Even so, there are significant requirements that companies must adhere to, meaning that businesses should be prepared to bear the costs associated with the administrative procedures entailed.

WORKING TOGETHER

Additionally, Fazlur Rahman highlights that in ensuring that its LPCs are well-prepared for the



Continued on page 15

UNDERSTANDING GST

Manufacturer pays 6% GST Tax to Customs

Import Raw Materials : RM100
6% GST Paid : RM 6 (Input Tax)

Manufacturer collects 6% GST based on selling price

Selling price : RM100 + RM100 (Including Profit) = RM200
6% GST Collected: RM12 (Output Tax)

Manufacturer



Supplier pays RM12 Tax to Manufacturer

Purchase from Manufacturer: RM200
6% GST paid: RM12 (Input Tax)

Supplier collects 6% GST based on selling price

Selling price: RM200 + RM100 (including Profit) = RM300
6% GST Collected : RM18 (Output Tax)



Supplier



Customer pays 6% GST for the Items

Total Price paid RM 300 + RM18 (GST)

Customer



During an outreach programme held in Klang Valley with LPCs on implementation of the GST, senior representatives from TNB were on hand to field queries and provide clarification. Among them are Commercial Management Unit General Manager Abu Bakar Ismail (far left), Revenue Management Unit Assistant General Manager (Billing) Selimin Othman (second from left), and Customer Service Senior General Manager Ir Kamaliah Abdul Kadir (fourth from left).



Right: During the Seminar and Dialogue Session on the Goods and Services Tax (GST) with TNB's Commercial and Industrial Customers, over 300 representatives from large commercial and industrial enterprises across the country were in attendance.



FREQUENTLY ASKED QUESTIONS

Are deposits subject to GST?

No, deposits are not subject to GST.

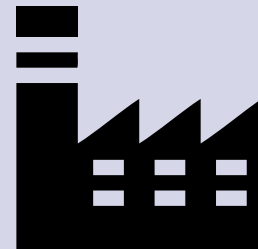
Are late payment surcharges/power factor surcharges/connected load charges subject to GST?

No, these charges are punitive in nature. So they are not subject to GST.

DID YOU KNOW?

The supply of electricity to non-domestic customers is subject to 6% GST.

Non-domestic customers who have registered for GST and are making taxable supplies can claim GST paid on their electricity bill through the Input Tax Credit (ITC) mechanism.





Continued from page 12

implementation of the GST, TNB has initiated a number of programmes and seminars to provide support and assistance. This includes explanations on the nature of GST and the ways in which it impacts upon the industry, as well as the effects of the new tax regime on the monthly electricity bills which LPCs receive.

A prime example of this was the session titled *Seminar and Dialogue Session on the Goods and Services Tax (GST) with TNB's Commercial and Industrial Customers*, which was held at the Matrade Exhibition and Convention Centre (MECC) on 11 March 2015. Attended by more than 300 representatives of large commercial and industrial enterprises from across Malaysia, this session featured numerous speakers and subject matter experts.

The impact of the Incentive Cost Pass Through (ICPT) mechanism on LPCs' bills and effective ways in which to reduce electricity-related costs by improving energy efficiency, in addition to issues related to the GST.

Among those who shared their knowledge and expertise were the Senior General Manager of Customer Service at TNB's Distribution Division Ir Kamaliah Abdul Kadir and the Assistant General Manager (Billing) at the Customer Service Department's Revenue Management Unit Selimin Othman, as well as the General Manager of TNB's Commercial Management Unit Abu Bakar Ismail, TNB Energy Services representative Ahmad Nizam Hassan and the Assistant Director of the GST Division at the RMCD Patmawaty Jubily.

"Engagement efforts such as this provide the platform for TNB to maintain communication with LPCs, especially those which require further clarification on how GST impacts their electricity bills, since it affects specific billing components in different ways," explains Fazlur Rahman. Furthermore, he adds that these efforts are in line with TNB's commitment to ensure that information on electricity billing layouts and components related to charges are consistently shared with the utility's customers in a clear and transparent manner.

BETTER BILLING

Aside from outreach programmes such as this, the utility has also taken other steps to smoothen LPCs' transition to the new system.

Why Malaysia Needs GST

First introduced in 2009, the proposal to implement GST in Malaysia underwent several rounds of deliberation before arriving at its present form. Among the main reasons for its adoption are to:

Broaden the tax base and diversify the government's revenue sources

1

2

Distribute the financial burden more fairly and evenly

Enhance the transparency and consistency of the taxation regime

3

4

Promote the practice of self-compliance among the private sector

Simplify the administration of taxable items and exemptions

5



DOMESTIC CUSTOMERS

The first 300kWh of electricity supplied to domestic customers has been gazetted by the Government as subject to 0% GST*.

Only usage above 300kWh is subject to 6% GST.

**Only for billing cycles of 28 days and above*

NON-DOMESTIC CUSTOMERS



The supply of electricity to non-domestic customers is subject to 6% GST.

Non-domestic customers who have registered for GST and are making taxable supplies can claim GST paid on their electricity bill through the Input Tax Credit (ITC) mechanism.



DESIGNATED AREAS (Langkawi & Tioman)

All electricity customers in Langkawi and Tioman will not need to pay GST.

Primarily, TNB has revamped the format of electricity bills which are rendered to LPCs, to comply with the latest requirements prescribed by the RMCD. Among these criteria is the inclusion of the term 'Tax Invoice' in a prominent location, as


well as the incorporation of TNB's GST registration number, a tax invoice serial number and the date of issuance of each invoice.

Another important requirement is the distinction of whether the

goods or services provided are categorised as zero rated, standard rated or exempt supplies. To satisfy this criterion, items are listed in a convenient two-column layout which provides at-a-glance identification of the billing components which are subject to GST.

This modification was particularly vital. Fazlur Rahman explains, "Certain billing components such as connected load charges, power factor surcharges, power factor rebates, penalty charges and Renewable Energy Fund contributions are not subject to GST, as these transactions do not fall under the definition of taxable supplies. Thus, it is worth noting that the increase in LPCs' electricity bills could amount to less than 6%, as these billing components are not affected by GST."

As a result of the comprehensive efforts that have been made to revise the structure of electricity bills which are rendered to LPCs, these bills are now able to serve the dual-purpose of a comprehensive tax invoice. This is indeed crucial, as it effectively means that LPCs are provided with the documentation necessary to file claims for tax credits to offset the GST-related costs attached to the electricity consumed, and pass these costs on to consumers or other companies in the supply chain, rather than absorb them.

The process of adapting business processes and procedures to comply with the requirements set out for the implementation of GST may prove to be a daunting task for enterprise operators, and TNB has acknowledged these challenges, seeking to extend assistance and help make the transition as painless as possible. Having made the necessary changes to the format of electricity bills sent to its LPCs, TNB also continues to demonstrate its commitment in maintaining clear communication with its various stakeholders, to effectively discuss and resolve GST-related issues affecting both the utility and its customers. For any queries on the impact of GST on your electricity bill, kindly contact TNB Careline at 15454. 

Examples of TNB's services that are subject to GST:



Electricity Bill And Tax Invoice

ABC HARDWARE SDN BHD
 LOT 1234
 JLN KAPAR
 -
 42100 KLANG SELANGOR

Total Amount Payable : RM 42,829.60

Outstanding : RM 0.00 Thank you
 Current Charges : RM 42,829.60 Pay Before 01.06.2015
 Rounding Amount : RM 0.00
 Total Bill : RM 42,829.60

Bill and Previous Payment

Previous Bill RM 45,034.95 Last Payment RM 45,034.95
 (01.04.2015) (24.04.2015)

Current Charges



Details		GST		Total
		Non-Applicable	Applicable	
Consumption kWh	kWh	0.00	76,022	76,022
Maximum Demand	kW	0.00	481	481
Consumption	RM	0.00	25,619.41	25,619.41
Maximum Demand	RM	0.00	14,237.60	14,237.60
ICPT (-RM0.0225 x 76,022 kWh)	RM	0.00	-1,710.50	-1,710.50
Welding Set Surcharge (20 kVa)	RM	40.00	0.00	40.00
Power Factor Surcharge (0.82)	RM	1,716.59	0.00	1,716.59
Current Month Usage	RM	1,756.59	38,146.51	39,903.10
6% GST (6% x RM38,146.51)	RM			2,288.79
RE Fund (1.6% x RM39,857.01)	RM			637.71
Current Charges	RM			42,829.60



Account No. : 0140 00123456 00
 Deposit : RM 90,000.00
 Contract No. : 0069812
 Tariff Code : E1:035: Industry

Bill Date : 01.05.2015
 Billing Period : 01.04.2015 - 01.05.2015 (30 days)
 Tax Invoice No. : 41909387

TNBCareLine
15454 | 1300 88 5454

☎ 1 300 88 5454 (Bill & account enquiries)
 ✉ 15454 (Power outage)
 📧 tnbcareline@tnb.com.my
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For more information on bill and previous payments please visit
<https://e-services.tnb.com.my/eservices>

For enquiries, please contact TNB office:
 TNB KLANG
 PETI SURAT 2010 JLN MERU -
 41990 KLANG SELANGOR
 Tel: 03-33412020
 Fax: 03-33422020

Fuel Cost Subsidy by Federal Government
 RM 7,319.12
 (for information only)

GST at Zero Rate for first 300 kWh consumption per month (for domestic use only)

(For further details please turnover to page 2)



ABC HARDWARE SDN BHD
 LOT 1234
 JLN KAPAR
 -
 42100 KLANG SELANGOR



Detail Information on Electricity Usage

Reading Type : Actual Reading

Calculation of Current Electricity Usage

Description	Consumption	Rate (RM)	Amount (RM)
Consumption	76,022.00	0.337	25,619.41
Maximum Demand	481.00	29.600	14,237.60
Current usage charges			39,857.01

Meter Reading

Meter No	Description	Total Factor	Previous Reading	Current Reading	Usage
M AC06000562	kWh	1.0000	0	76022	76,022.00
M AC06000562	kW	1.0000	0	481	481.00
M AC06000562	kVARh	1.0000	0	52311	52,311.00



Information on Your Electricity

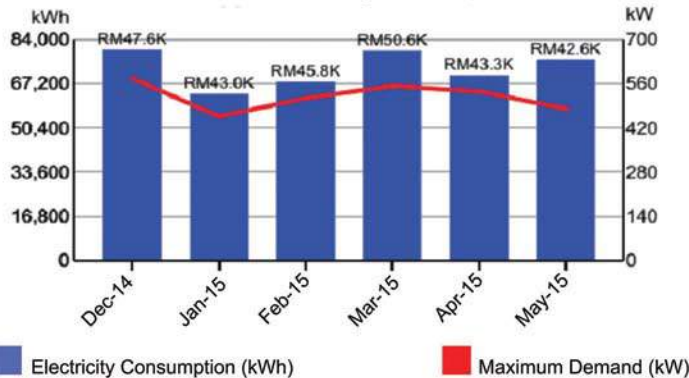
Declared Load	170.00 kW
Highest Maximum Demand	840.00 kW
Load Factor	0.21
Power Factor	0.82

A BRIGHT IDEA IN ENERGY EFFICIENCY



Review and upgrade the ventilation system. A better system will help increase efficiency in air regulation, and reduce cooling costs.

Your 6 Months Electricity Consumption Trend



WILL MY ELECTRICITY BILL HAVE GST?

Yes, the Goods and Services Tax (GST) will be calculated for Tenaga Nasional Berhad's bills.

DOMESTIC CUSTOMERS

The first 300kWh of electricity supplied to domestic customers has been gazetted by the Government as subject to 0% GST*
*Only for billing cycles of 28 days and above.

Only usage above 300kWh is subject to 6% GST.

All designated duty-free customers in Langkawi and Tioman have been gazetted by the Government as subject to 0% GST for electricity supply.

NON-DOMESTIC CUSTOMERS

The supply of electricity to non-domestic customers is subject to 6% GST. Non-domestic customers who have registered for GST can claim GST paid on their electricity bill through the Input Tax Credit (ITC) mechanism.

TNB GOODS & SERVICES SUBJECT TO GST



SUPPLY OF ELECTRICITY



If you have any questions about GST for your TNB bill, please call 1 300 88 5454 from 7am - 11pm or visit your nearest Kedai Tenaga from 9am-4pm (working days)
For more details, please visit www.tnb.com.my Effective on 1 April 2015 • Terms & conditions apply



PRIME PERSPECTIVE

IOI MALL PUCHONG AZMI YAKOB, MAINTENANCE & ENGINEERING MANAGER



As one of the oldest and most well-established commercial shopping complexes located in Puchong, Selangor, IOI Mall has undoubtedly become one of the most iconic and easily-recognisable landmarks in the area.

However, establishing this reputation has been no mean feat, requiring the mall's operators to continually elevate the shopping experience, in order to keep up with consumers' changing expectations.

Even so, one constant requirement that has not changed in the years since its inauguration is the perpetual need for a stable, reliable and consistent supply of electricity, in the volumes required by the nearly-220 tenants which operate at the complex.

As explained by Maintenance & Engineering Manager Azmi Yaakob, IOI Mall had already acknowledged the impact of the 6% Goods and Services Tax (GST) on its business processes, before he made the decision to attend a recent seminar on the implementation of the GST, which was organised by Tenaga Nasional Berhad (TNB).

“Attending this session has enabled me to make clear distinctions between the billing components which are subject to GST, and those which are exempted from the tax, such as the 1.6% Renewable Energy Fund contribution.”

“Considering that the GST-related costs attached to the inputs which are vital to our business processes can be claimed from the Royal Malaysian Customs Department (RMCD), I think it is fair to say that the impact of the GST on IOI Mall Puchong will be minimal,” he explains. “In fact, this may also mean that the impact of taxes on our operations will ultimately reduce, as compared to the Sales and Services Tax (SST) which is currently being levied,” he adds.

“Prior to this session, I had already attended some seminars and obtained information on the implementation of the GST. However, having attended this session, I realised that there are some issues which I may have overlooked, particularly relating to the registration with the RMCD, as well as the need to ensure that the account holder registered with TNB corresponds with the entity registered with the RMCD,” Azmi reveals.

In addition to gaining clarity and crucial guidance on this matter, attending TNB's seminar meant that he was able to attain information on the relevant procedures, as well as identify the TNB personnel responsible for rendering assistance in order to resolve issues such as this.

PRIME PERSPECTIVE

EPSON PRECISION MALAYSIA SHAH RIZAL HARUN, FACILITY MAINTENANCE MANAGER



ROYAL MALAYSIA POLICE GILBERD LAYANG, SUPERINTENDENT

“This was the first seminar that I have attended on the implementation of the GST and it has enabled me to better differentiate between the various taxes and levies which have been put in place in Malaysia.”

With operational facilities located across the nation, there is no doubt that the stable and reliable supply of electricity plays a pivotal role in supporting the mission of the Royal Malaysia Police, towards guaranteeing the safety and security of all Malaysians.

As such, Superintendent Gilberd Layang immediately recognised the value in attending one of Tenaga Nasional Berhad’s (TNB) most recent engagement programmes relating to the implementation of the 6% Goods and Services Tax (GST).

“From the explanations given, I understand that the implementation of GST comprises a restructure of the tax scheme,” he explains.

“While we have previously been paying taxes under the government’s Sales and Services Tax (SST), the number of taxable goods and services has expanded under the updated GST scheme,” he adds.

For Superintendent Gilberd, one of the most important facets of the new system is that it dramatically reduces opportunities for unethical entities to avert paying taxes by choosing not to declare their income.

“Aside from this, the GST increases the government’s revenue sources and widens the pool of tax collection, meaning that it will be better equipped to render



the necessary services which are essential to improving the quality of life for all Malaysians,” he notes.

He also shares that the event organised by TNB was the first seminar on the implementation of GST that he has had the opportunity to attend, finding it an invaluable experience which was both helpful and informative.

“After attending the TNB seminar, I am more aware of the ways in which the implementation of GST affects the electricity prices which we will be facing.”

Located at the Sri Damansara Industrial Park in Sungai Buloh, Selangor, Epson Precision Malaysia is the local manufacturing subsidiary of the multinational Seiko Epson Corporation, which is headquartered in the city of Suwa, in the Nagano Prefecture of Japan.

Considering that the company specialises in the manufacture of computer printers, as well as other

electronic equipment related to information and imaging, it should come as no surprise that electricity supply is one of its most vital inputs.

For Facility Maintenance Manager Shah Rizal Harun, this provided adequate impetus to attend one of Tenaga Nasional Berhad’s (TNB) recent outreach programmes on the Goods and Services Tax (GST), which was tailored to the utility’s large commercial and industrial customers.

Sharing his view that the implementation of the GST comprises a positive development for the country, Shah Rizal explains that the most important

consideration for him is that GST-related costs can be recouped by filing the relevant claims with the Royal Malaysian Customs Department (RMCD).

Aside from this, the Facility Maintenance Manager also reveals that by attending the seminar, he was able to gain a clearer picture of the impact that the new tax system will have on monthly electricity bills.

Most importantly, he notes, the revamped electricity bills supplied by TNB provide all of the necessary documentation that is required to file and secure input tax claims from the RMCD.



ELECTRICITY TARIFF REBATE DUE TO ICPT

Frequently Asked
Questions



On 11 February this year, the Ministry of Energy, Green Technology and Water (KeTTHA) approved rebates in electricity tariffs due to Imbalance Cost Pass Through (ICPT) in Peninsular Malaysia. The ICPT mechanism, which was implemented as part of the Incentive Based Regulation (IBR) framework, was first introduced on 1 January 2014.

In this Special Coverage, **TENAGALINK** addresses some of the most commonly posed queries on the IBR and ICPT systems, and provides clarity on the rules and conditions governing the tariff rebates.

Electricity Sales for FY2014

Customer Category	Unit (GWh)	RM million	No of Customers
Domestic	22,123 (21.60%)	6,908 (18.17%)	6,639,123 (82.00%)
Commercial	35,353 (34.50%)	15,885 (41.78)	1,379,796 (17.02%)
Industrial	43,026 (42.00%)	14,700 (38.67%)	25,557 (0.32%)
Mining	131 (0.13%)	30 (0.08%)	29 (0.0003%)
Streetlight	1,348 (1.32%)	321 (0.84%)	62,672 (0.77%)
Specific Agriculture	398 (0.39)	172 (0.44%)	1,543 (0.02)
Total	102,382	38,018	8,108,720

WHAT IS THE ICPT MECHANISM?

Imbalance Cost Pass Through (ICPT) is a mechanism under the Incentive Based Regulations (IBR) framework allowing TNB, as a utility, to reflect the changes (either an increase or a reduction) in fuel and other generation costs in the electricity tariff every six months.

WHO IS RESPONSIBLE FOR THE METHODOLOGY OF ICPT CALCULATION?

As the regulatory agency responsible over the domestic energy sector, the Energy Commission of Malaysia determines and implements the calculation methodology for the ICPT mechanism, with its results subject to government approval on a semi-annual basis.

WHAT ARE THE COMPONENTS OF THE ICPT MECHANISM?

There are two main components under the ICPT mechanism:

The Fuel Cost Pass Through (FCPT) mechanism, which captures variations in the cost of fuel sources (specifically piped gas, LNG and coal). This may occur as a result of changes in fuel prices, available quantities and the energy generation mix, among other factors.

The Generation Specific Cost Pass Through (GSCPT) mechanism captures variations in other generation-specific costs. This includes changes in the costs due to utilisation of distillate and fuel oil, other generation costs incurred under Power Purchase Agreements (PPA), Service Level Agreements (SLA), fuel supply contracts, interconnection and others.

HOW IS THE ICPT AMOUNT DETERMINED?

The ICPT amount is calculated based on the difference between the estimated cost of fuel and other generation cost, as compared to the actual baseline costs.

WHAT IS THE ICPT AMOUNT FROM 2014 WHICH IS BEING PASSED ON TO CUSTOMERS?

As a result of the ICPT mechanism, a tariff rate rebate of 2.25 sen/kWh has been applied to electricity customers. This rate took effect on 1 March 2015 and will remain in place until 30 June 2015. This amounts to RM727m.

CULTIVATING CAUTION

Promoting Safe Practices in Farms and Plantations

As the main energy utility serving Peninsular Malaysia, Tenaga Nasional Berhad's (TNB) primary concerns relate to ensuring the efficiency and performance of electricity generation, transmission and distribution. Considering that its ultimate goal is to support Malaysia's social and economic development, TNB also prioritises engagement with commercial energy customers, to educate and spread awareness on electrical safety.

In this issue, **TENAGALINK** sheds light on the measures that the utility has taken to ensure that those involved in the agricultural sector are aware of powerline safety efforts they can adopt for more secure farming processes.



NATIONAL FOCUS

To accomplish best practices in safety, TNB has conducted a series of seminars and other outreach programmes with farm and plantation owners and operators throughout the country. This helps reduce the occurrence of accidents

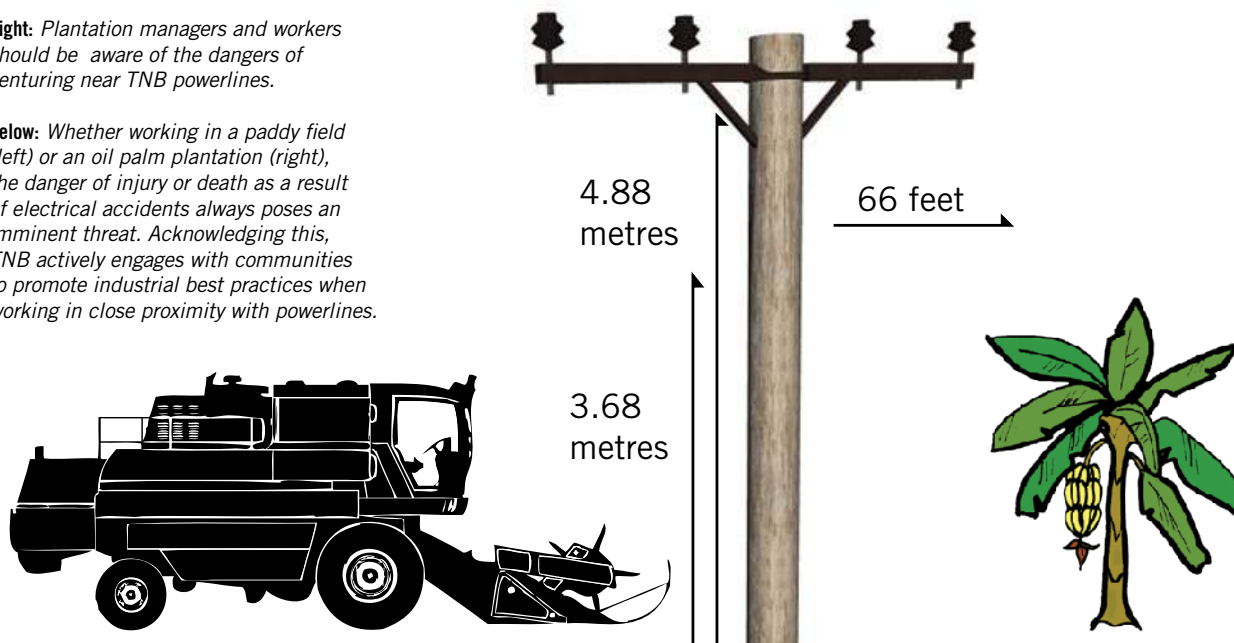
and improve operational integrity. These efforts also serve the utility by minimising avoidable outages and interruptions caused by inadvertent mistakes.

As explained by Occupational Safety, Health and Environment (OSHE) Unit Chief Mohd Farith

Osman, initiatives such as this enable TNB to engage directly with stakeholders. "This allows the company to better understand the areas in which accidents commonly occur, and offer specialised guidance that is tailored to the unique challenges and difficulties being faced," he reveals.

Right: Plantation managers and workers should be aware of the dangers of venturing near TNB powerlines.

Below: Whether working in a paddy field (left) or an oil palm plantation (right), the danger of injury or death as a result of electrical accidents always poses an imminent threat. Acknowledging this, TNB actively engages with communities to promote industrial best practices when working in close proximity with powerlines.



COSTLY LESSON

One such area that has been identified relates to farming works that involve the use of combine paddy harvesting machines. The last fatal accident involving paddy harvesters occurred on 1 February 2006, when a teenager standing on top of one such machine was severely electrocuted after coming in contact with a 33kV electrical distribution cable. Acting swiftly to initiate an annual series of talks on best practices relating to safety – TNB has contributed towards the zero-accident rate which has been realised in the years since then.

In order to ensure that incidents such as this do not recur, paddy harvesting operators are strongly advised never to stand on top of paddy harvesting machines during operations. This is particularly important considering that paddy harvesting machines typically are 3.68 metres in height and 33kV distribution lines are deployed at a


height of 4.88 metres, leaving just 1.2 metres of clearance above the machine when it passes beneath such cables.

DELIVERING INSIGHT

Aside from this, numerous accidents involving oil palm harvesting poles have been recorded over the past two years, with the majority resulting in fatal injuries. In light of this, the OSHE Unit has also made active efforts to improve awareness on electricity safety among smallholder plantation operators. This is because these operators have significantly less access to information and advice on electricity

safety, compared to their larger counterparts.

Among the specific practices which are encouraged by the utility, is ensuring that oil palm harvesting poles are never transported vertically, instead carried horizontally with the help of another person, if necessary. Additionally, the pole should be made of an insulating material such as wood or bamboo, rather than a conducting material such as aluminium. Meanwhile, plantation managers should ensure that trees are never planted beneath electrical lines, ensuring that an empty space of at least 66 feet wide is maintained on either side of the line.

Ensuring that electricity supply is utilised in a safe and secure manner is a responsibility that is shared by all stakeholders in Malaysia's energy sector, including individual and commercial electricity consumers. Despite that, Tenaga Nasional Berhad has taken bold steps to safeguard stakeholders at risk of injury, demonstrating its leadership and commitment to reduce the occurrence of both fatal and non-fatal accidents. 

ENERGY EFFICIENCY AND ENERGY COST

Contributed by Ir Dr Mohamed Fuad Faisal, Power Quality & Energy Efficiency Specialist, Asset Management Department, Distribution Division, TNB

Most customers agree that implementing Energy Efficiency (EE) measures can optimise the consumption of electricity in factories. While EE programmes assist in accomplishing this, management support and knowledge on what must be done are required to successfully implement them.



EE programmes require cost, so the engineers responsible for EE must ensure that the effort or investment put in the implementation of the programmes result in real energy efficiency and energy savings. In addition, the monetary savings due to implementation of any EE plans must be measurable.

MAKING A DISTINCTION

One important factor to note is that EE is not energy conservation. Where the latter means avoiding the use of a service to save energy – such as not turning on an air conditioner or not using the vacuum cleaner – EE means accomplishing the same

level of tasks using less power. In general, this requires purchasing energy-efficient devices and appliances. For instance, replacing an incandescent lamp (which uses more energy) with an energy-efficient compact fluorescent lamp (CFL) is EE, whereas turning off the incandescent lamp is energy conservation.

Some EE technology – for instance light emitting diode (LED) lamps – may have a higher initial cost, but the long-term savings from the reduction in monthly charges make it worth adopting. In addition to cost savings, adopting and implementing EE programmes help reduce carbon dioxide emissions and damage to the environment. This is in line with the goal of the Malaysian government to reduce up to 40% of emission intensity of the Gross Domestic Product (GDP) by 2020.

ENERGY COSTS

At the end of every month, the amount of electrical energy consumed by the customer is recorded by energy meters. The cost of energy consumption is then determined based on the existing energy tariff. This is the energy cost. This tariff is applicable to all categories of customers. Meanwhile, the term kilowatt-hour (kWh) refers to the energy consumed by customers.



Compact fluorescent lamps (CFL), which use less power than incandescent light bulbs, should be used in homes, industries and factories for higher energy efficiency.

ENERGY COST FOR DOMESTIC CUSTOMERS

Electrical energy (kWh) = Electrical power (kW) x duration (hours)
Energy cost (RM) = Electrical energy (kWh) x cost per unit

Example:

kWh consumption = 100 kWh
 Average cost per kWh (domestic) = RM0.3166/kWh
 Energy cost = 100kWh x RM0.3166kWh = RM31.66

In essence, the impetus of energy-saving rests primarily with the consumers; starting with the selection of EE appliances for homes, offices and industries, to practicing energy-conserving procedures – such as turning-off equipment, devices and lights when not in use. These provide not only financial benefits in cost savings, but also contribute to the welfare of the environment and the advancement of national goals and the economy. 🇲🇾



CONTINUOUS SUPPLY FLOW

TNB Taps into
Hydropower to Safeguard
Energy Security

Seen as an industrial undertaking of massive scale during its construction in the 1920s, the Chenderoh Power Station or Chenderoh Dam continues to reliably serve the nation until today.

To support the continued growth and development of Malaysia, it is essential that adequate sources of energy supply are maintained in an efficient and sustainable manner. Considering that hydroelectric projects comprise some of the largest power generating facilities in the world – with some even eclipsing the largest nuclear power plants – it is only natural that Tenaga Nasional Berhad (TNB) has leveraged its expertise to manage and operate a variety of such projects in the country.

In this issue, **TENAGALINK** delves into the technology behind the principles of hydropower, as well as the completed and prospective projects which put the science to work for the benefit of all Malaysians.

HYDROELECTRIC HERITAGE

The history of Malaysia’s involvement with hydropower energy predates the birth of the country itself, with construction on the first large-scale project initiated by the administration of the British Federated Malay States in the early-1920s. Completed and officially opened by 1930, the Chenderoh Power Station or Chenderoh Dam is located near Kuala Kangsar, Perak, and has five turbines which currently provide an installed generation capacity totalling 40.5 MW.

Considered to be Peninsular Malaysia’s most ambitious industrial undertaking of its time, Chenderoh Dam was built at an estimated cost of GBP 3.5 million. Aside from creating a reliable source of power supply for tin mining operators across the Kinta Valley, the dam was also built specifically to manage surges in the water level of the Perak River, which had previously resulted in disastrous floods in the state’s blossoming commercial and administrative capital of Ipoh.

CONSIDERABLE CONTRIBUTIONS

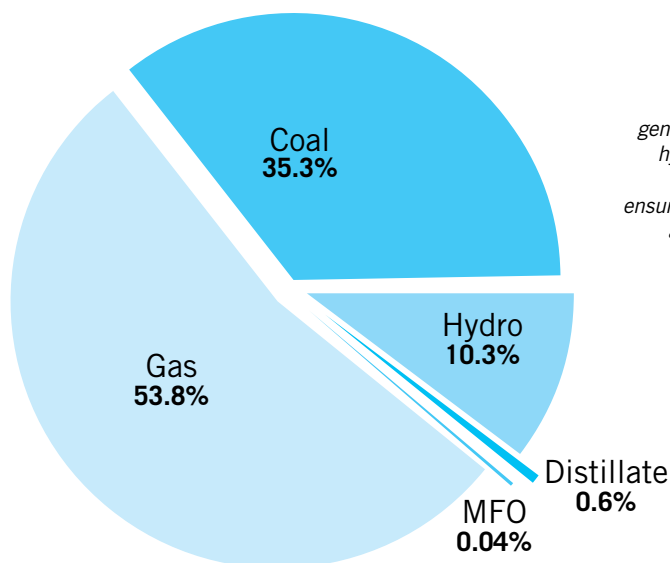
As explained by the Senior General Manager (Asset Management) at the Generation Division of TNB Azman Talib, the development of hydropower projects began to

take place with greater prominence and frequency in Malaysia, following the success of this initial undertaking. “At present, Peninsular Malaysia is home to three major hydropower schemes operated by TNB – each of which are made up of numerous individual dams with generating units integrated within,” he reveals.

These three hydroelectric schemes – which are located in Perak, Terengganu and Cameron Highlands, Pahang – currently account for a total of 21 individual dams with integrated power plants. When combined, the total installed generation capacity of these projects is 1,911MW, which corresponds with 10.3% of TNB’s overall mix of electricity generation sources.

In fact, these projects also have a significant contribution towards ensuring the electricity security of the nation as a whole. According

TNB’S GENERATION MIX IN 2014



As one of the components in TNB’s mix of generation sources, hydropower plays a major role in ensuring the stability and consistency of supply.

to the *Malaysia Energy Statistics Handbook 2014* – which was produced by the Energy Commission of Malaysia and released last year – hydropower projects such as these accounted for 7% of all power sources contributing to the generation of electricity in the country, in 2012, which is the last year for which data is available.

EXPANDING SCOPE

At present, TNB is also embarking on the development of a further four hydropower projects in Peninsular Malaysia. First, the Ulu Jelai Hydropower Project, which is located in Cameron Highlands, comprises two generating units with an installed capacity of 186MW each. Next is the Hulu

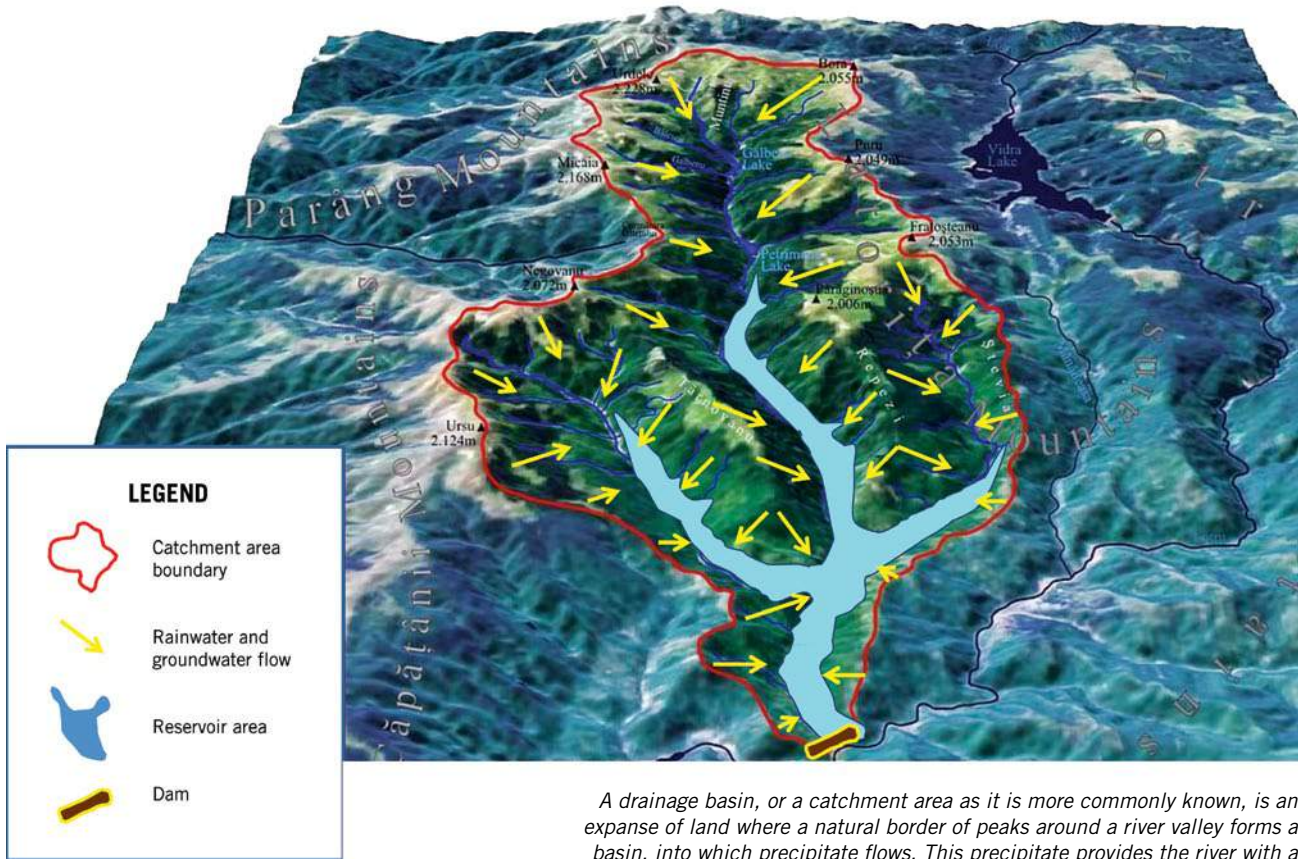
Terengganu Hydropower Project, which is located in the Puah Forest Reserve of Hulu Terengganu. This project comprises two generating units with an installed capacity of 125MW each in Puah and two generating units with an installed capacity of 7.5MW each in Tembat, with the schedule for completion of each unit ranging from September this year to April 2016.

Aside from this is the Tekai Hydropower Project, which is located in Jerantut, Pahang and consists of two cascading dams with surface power stations. The power stations at the Upper and Lower Tekai Dams will have an

installed capacity of 150MW and 5.8MW respectively, with the entire project slated for completion in 2020. Meanwhile, the Telom Hydropower Project has also been proposed and is set to be located in Kuala Lipis, Pahang, featuring a 132MW surface power station.

This project will also serve as a pilot study for the development of a public acceptance model that will address the social and environmental impact of hydropower stations. To accomplish this, TNB is adopting international guidelines published by organisations such as the World Commission on Dams (WCD) and the International Hydropower

NATURAL BASIN



A drainage basin, or a catchment area as it is more commonly known, is an expanse of land where a natural border of peaks around a river valley forms a basin, into which precipitate flows. This precipitate provides the river with a regular supply of water. In order to generate power, hydroelectric dams rely on a steady stream of water to spin their turbines. Therefore they are typically built on rivers that are liberally fed with water from their catchment areas.

Association (IHA), with the final product anticipated to be used as a reference for the development of future hydropower projects in Malaysia.

TNB also adheres to international standards and best practices in dam design and management, namely by the International Commission on Large Dams (ICOLD). These practices include subjecting the hydropower dams to monthly (daily during the monsoon season) surveillance and monitoring of the dam structure, six-monthly dam surveillance inspections by internal experts, comprehensive 10-yearly dam safety inspections by independent international experts, and controlled discharge of dam water during high water level situations.

DRIVING SUSTAINABILITY

In addition to the direct benefits derived in the form of electricity generation, hydropower dams also offer a slew of additional advantages, in terms of promoting socially and environmentally-responsible development. “Primarily, the construction of dams enables operators to manage waterways in a more exact and deliberate manner, thus having the potential to assist in mitigating the detrimental impacts of flooding,” notes the Senior General Manager (Asset Management).

Aside from this, dams serve a number of roles which are perhaps just as critical, such as facilitating the consistent provision of domestic raw water supply. This is due to the reliability associated with the availability of fresh water at hydropower stations, which positions them as a popular location for water filtration and distribution companies to establish operations. Additionally, dams have been

“Aside from driving Malaysia’s growth by supplementing the mix of electricity generation sources operated by the TNB Generation Division, the nation’s hydroelectric plants are also pivotal to flood mitigation and the provision of domestic raw water supply.”

– TNB Generation Division
Senior General Manager (Asset Management) Azman Talib

observed to serve a number of auxiliary functions as well, such as facilitating the irrigation of nearby agricultural areas, while also potentially serving as an interesting and attractive tourist destination.

On the other hand, it is also worth noting that hydropower stations still provide one of the most sustainable and environmentally-friendly methods to generate energy. Apart from the initial construction of

the dam and the regular inspections and maintenance required, the resource requirements imposed by hydropower projects remain among the lowest as compared to other power generation technologies and approaches. This is because electricity is generated from the potential energy that is embodied in dammed river water, which is extracted when the water passes through the dam and drives the turbines it contains.

Having first appeared in Malaysia nearly a century ago, the nation’s numerous hydroelectric projects have firmly established themselves as prime contributors to the country’s overall energy mix. Apart from adding crucial diversity and reliability to Malaysia’s range of energy sources, these facilities also return several well-documented benefits to society and the environment, thus enabling greater achievements in realising the nation’s sustainable development goals. 📌

STRATEGIC PARTNERSHIPS

TNB Collaboration to Advance Biogas Development



Currently in its fourth year, the Biogas Asia Pacific Forum 2015 was held on the 28 and 29 of April at the Sunway Pyramid Convention Centre. The event saw the convergence of biogas industry leaders and policy makers from across Asia Pacific, with more than 400 delegates from 27 countries present. The Biogas Asia Pacific Forum 2015, themed Commercial Integration of the Biogas Value Chain in Asia – Opportunities and Challenges for All, promoted partnership and knowledge sharing to strengthen Malaysia's position as a biogas hub, and encourage innovation, growth and commercialisation in the sector.



*Fiah Name	Installation Address	State	Capacity (kw)	Type	Actual Date Design
Megagreen Energy Sdn Bhd	Kilang Sawit Felcra Maran Simpang Jengka, Peti Surat 69, Jalan Maran 26500 Maran, Pahang Darul Makmur	Pahang	1000	BG1	2-Dec-14
Megagreen Energy Sdn Bhd	Kilang Sawit Felcra Bukit Kepong, Labis, 85300 Labis, Johor	Johor	1000	BG1	2-Dec-14
Megagreen Energy Sdn Bhd	Kilang Sawit Felcra Seberang Perak, Kampung Gajah, 36800 Perak Tengah, Perak Darul Ridzuan	Perak	2000	BG1	2-Dec-14
Megagreen Energy Sdn Bhd	Kilang Sawit Felera Nasaruddin kilometer 37, Jalan Tonoh Bota, 32600 Bota, perak Darul Ridzuan	Perak	1000	BG1	14-Nov-14
Megagreen Energy Sdn Bhd	Kilang Sawit Sungai Melikai KM9 Jalan Mersing Nitar, Peti Surat 24, 86000 Mersing, Johor Darul Takzim	Johor	1000	BG1	14-Nov-14

*Feed-in Approval Holders (FIAH)

Above: At the Biogas Asia Pacific Forum 2015, TNB exchanged documents with Megagreen for the development of five biogas plants with a total output of 6MW to help electrify rural communities, reduce carbon dioxide emissions and drive the adoption of sustainable energy in the country.

Left: Biogas Asia Pacific Forum 2015 participants during a press conference. From left to right: Dato' Dr Mohd Nazlee Kamal, Malaysian Biotechnology Corporation (BiotechCorp) CEO; Dato' Sri Dr Noorul Ainur Mohd Nur, Science, Technology and Innovation Ministry Secretary General; Datuk Dr Ewon Ebin, Science, Technology and Innovation Minister; Datuk Bung Moktar Radin, Kinabatangan MP and Felcra Berhad Chairman; and Vincent Choy, International Clean Energy Sustainability & Network (ICESN).

Bottom Left: TNB representatives Datin Ruslinda Ibrahim, Senior Manager of Communications (first left) and Ir Kamaliah Abdul Kadir, Senior General Manager of Consumer Services (third left) flank Datuk Dr Ewon Ebin, Science, Technology and Innovation Minister (second left) at the Biogas Asia Pacific Forum 2015 where TNB exchanges documents with Megagreen to advance the development of biogas in the country. Also present were Datuk Bung Moktar Radin, Kinabatangan MP and Felcra Berhad Chairman (second right) and Dato' Ir Dr Ali Askar Sher Mohamad, Sustainable Energy Development Authority COO.

As part of this initiative to advance and develop the biogas industry in the country, four significant collaborations were highlighted at the forum with the exchange of documents, witnessed by Datuk Dr Ewon Ebin (Science, Technology and Innovation Minister), Datuk Bung Moktar Radin (Kinabatangan MP and Felcra Berhad Chairman), and Dato' Ir Dr Ali Askar Sher Mohamad (Sustainable Energy Development Authority COO). The partnerships were between Gas Malaysia and Sime Darby Offshore Engineering, Megagreen Energy and Felcra; Green & Smart and Felda Global

Ventures; and Megagreen and Tenaga Nasional Berhad (TNB).

Represented by Ir Kamaliah Abdul Kadir, Senior General Manager (Consumer Services) and Datin Ruslinda Ibrahim, Senior Manager (Communications); TNB's document exchange with Megagreen Energy involved the exchange of five biogas to power plants (with a total capacity of 6MW) in Federal Land Consolidation and Rehabilitation Authority (Felcra) mills. The collaboration is part of the Sustainable Energy Development Authority Malaysia's (SEDA) Feed-in Tariff and Renewable Energy Power Purchase Agreement (REPPA) initiative.

The aim of the strategic partnership project is to provide electricity in the rural areas where the mills are located – Kilang Sawit, Seberang Perak, Sungai Melikai, Maran and Bukit Kepong – using biotechnology to convert palm oil mill effluent (POME) and agro-waste into high-value added Green energy. With the ground survey of the biogas plant construction site completed and the REPPA signed, the collaboration will also reduce diesel subsidy and cut carbon dioxide pollution. All of which are in line with TNB's commitment to sustainability in the country.

PAPERLESS BILLING

Using IT to Reduce Environmental Impact



As a major power utility both domestically and within the region – with an estimated 80,000 industrial customers which have significant monthly power consumption qualifying them as Large Power Customers (LPCs) – Tenaga Nasional Berhad (TNB) prioritises the consistent elevation of service standards to meet rising needs. Simultaneously, the emergence of environmental concerns has seen the utility seeking out new ways to improve operational sustainability. **TENAGALINK** examines the implementation of e-billing for all LPCs.

EXISTING OBSTACLES

E-billing, or paperless billing, is a measure initiated by TNB to overhaul the way bills are issued to its LPCs. Originally, meters were manually read by meter readers and the bills furnished at each address. However, this procedure occasionally resulted in inaccuracies which were caused by human error.

In an effort to facilitate a more accurate billing system, TNB saw potential in e-billing. This new method not only adds convenience to the billing process, it helps to alleviate repercussions to the environment as well, as it does away with the need for a hard copy bill.

A FRESH FRAMEWORK

To effectively mitigate these issues and practically eliminate the possibility of human error, TNB embarked on the installation of digital meters at LPCs' premises in 2009, enabling the utility to actively track electricity consumption figures in real-time, as well as monitor and predict demand in order to adequately and reliably meet it. At present, nearly all of the utility's 80,000 LPCs across Malaysia have been equipped with this modern facility, meaning

that there is no longer a need to supply the customer with a physical bill.

Even so, Senior General Manager of Customer Service at TNB's Distribution Division Ir Kamaliah Abdul Kadir said that for the past two years, eligible LPCs have been receiving both hard copy bills delivered by Pos Malaysia and electronic bills delivered via email, in order to facilitate the transition process. As TNB places importance on ensuring that its IT systems and infrastructure benefit from continual development and enhancement, she explains that a number of new systems and processes had been implemented to support the e-billing mechanism.

Primarily, the conventional electromechanical meters at the majority of LPCs' premises have been replaced with digital meters. This enables the utility to conduct meter readings remotely. Following the collection of this data, the information is relayed to a billing system and subsequently an Output Management System (OMS). At this point, a bill is generated in PDF format, which is then sent to the email address of the customer. This process requires the presence of communications equipment at the customers' premises. If the equipment is



“Apart from mitigating difficulties faced with the delivery of bills, we believe that the value-added services introduced through this initiative are enormously beneficial for the customer.”

– Senior General Manager of Customer Service at TNB’s Distribution Division Ir Kamaliah Abdul Kadir



For a larger image, turn to page 17 foldout

Electricity Bill And Tax Invoice

ABC HARDWARE SDN BHD
LOT 1234
JLN KAPAR
42100 KLANG SELANGOR

Account No. : 0140 00123456 00
Deposit : RM 50,000.00
Contract No. : 000612
Tarrif Code : E1 030-Industry

Bill Date : 01.05.2015
Billing Period : 01.04.2015 - 01.05.2015 (30 days)
Tax Invoice No. : 41909387

Thank you
Pay Before 01.06.2015

RM 42,829.60

Payment	RM	Last Payment (24.04.2015)	RM	45,034.95
Current Charges	RM			42,829.60

For further details please turnover to page 2)

ABC HARDWARE SDN BHD
LOT 1234
JLN KAPAR
42100 KLANG SELANGOR

TENAGA NASIONAL
Better, Brighter

Page 1 of 2
Arau 16, Wisma TNB, No 19, Jalan Timur, 46200 Petaling Jaya, Selangor.
GST Registration Number 001107427325

By migrating to digital bills and implementing its e-billing initiative, TNB has emphasised its commitment to saving the environment.

Detail Information on Electricity Usage

Reading Type : Actual Reading

Calculation of Current Electricity Usage

Description	Consumption	Rate (RM)	Amount (RM)
Consumption	76,022.00	0.530	29,919.41
Maximum Demand	481.00	29.000	14,237.60
Current usage charges			39,857.01

Meter Reading

Meter No	Description	Total Factor	Previous Reading	Current Reading	Usage
MA AC00000502	kWh	1.0000	0	76022	76,022.00
M AC00000502	kVAh	1.0000	0	481	481.00
M AC00000502	kVAh	1.0000	0	32311	62,311.00

Your 6 Months Electricity Consumption Trend

Dec-14: kWh 47,200, kW 370
Jan-15: kWh 48,000, kW 370
Feb-15: kWh 49,000, kW 370
Mar-15: kWh 50,000, kW 370
Apr-15: kWh 51,000, kW 370
May-15: kWh 52,000, kW 370

Information on Your Electricity

Optimal Load: 170.00 kW
Highest Maximum Demand: 640.00 kW
Load Factor: 6.21
Power Factor: 0.98

A BRIGHT IDEA IN ENERGY EFFICIENCY

Upgrade and upgrade the ventilation system. A better system will help increase efficiency in air regulation, and reduce cooling costs.

WILL MY ELECTRICITY BILL HAVE GST?

DOMESTIC CUSTOMERS: Yes, the New and Revised Tariff (NRT) will be subject to GST. Domestic customers will be notified via SMS and email.

NON-DOMESTIC CUSTOMERS: No, the NRT will not be subject to GST. Non-domestic customers will be notified via SMS and email.

TNB GOODS & SERVICES SUBJECT TO GST

NEW CONNECTION, TESTING OF METER, STREET LIGHTING, SUPPLY OF METER

Page 2 of 2

lacking, TNB will bear the cost of its installation, as part of the utility’s continuous efforts to elevate the standard of service it provides.

SAFEGUARDING THE SYSTEM

One drawback of this process is its dependence on the internet connection provided by the

customer’s telecommunications service provider, which may be subject to outage or poor bandwidth quality. As a result of this, there are challenges in maintaining the frequency of the reports returned to the control centre at TNB.

Fortunately, the smart meters installed at LPCs’ premises are also equipped with the

capability to record and store the customer’s consumption data, before transmitting it when the connection improves. In addition to overcoming this limitation, TNB has consistently reduced the margin of error associated with other unforeseen difficulties since the electronic billing of LPCs using remote smart meter readings first began in 2013, successfully

minimising the probability of failure to a mere 0.1 to 0.2%.

In spite of this, Assistant General Manager (Billing) at the Customer Service Department's Revenue Management Unit Selimin Othman assures that TNB will maintain the apparatus necessary to conduct wide-scale manual reading, as a fallback measure in the event of a large or sustained connection outage. Additionally, he explains that LPCs will still be able to liaise directly with the customer service representatives at the TNB state or regional office nearest to them.

RELIABILITY REALISED

“Benchmarking against utilities and other companies both domestically and abroad revealed that the majority had already embarked on digital or email billing,” notes Customer Service Senior General Manager Ir Kamaliah, revealing the impetus behind the initiative.

Aside from enabling the utility to keep up with developments in the international business landscape, this initiative is also part of TNB's efforts to ensure the accuracy and reliability of the 30-day billing cycle, as all bills can now be generated and distributed at exactly 12:01 am on the first day of each month. In addition, the updated system means that the utility is also provided with the ability to actively track consumption figures in real time. This allows TNB to monitor and predict demand, thus enabling it to adequately meet its customers' electricity demands.

ELEVATING SUSTAINABILITY

Besides improving TNB's compliance with the industry's




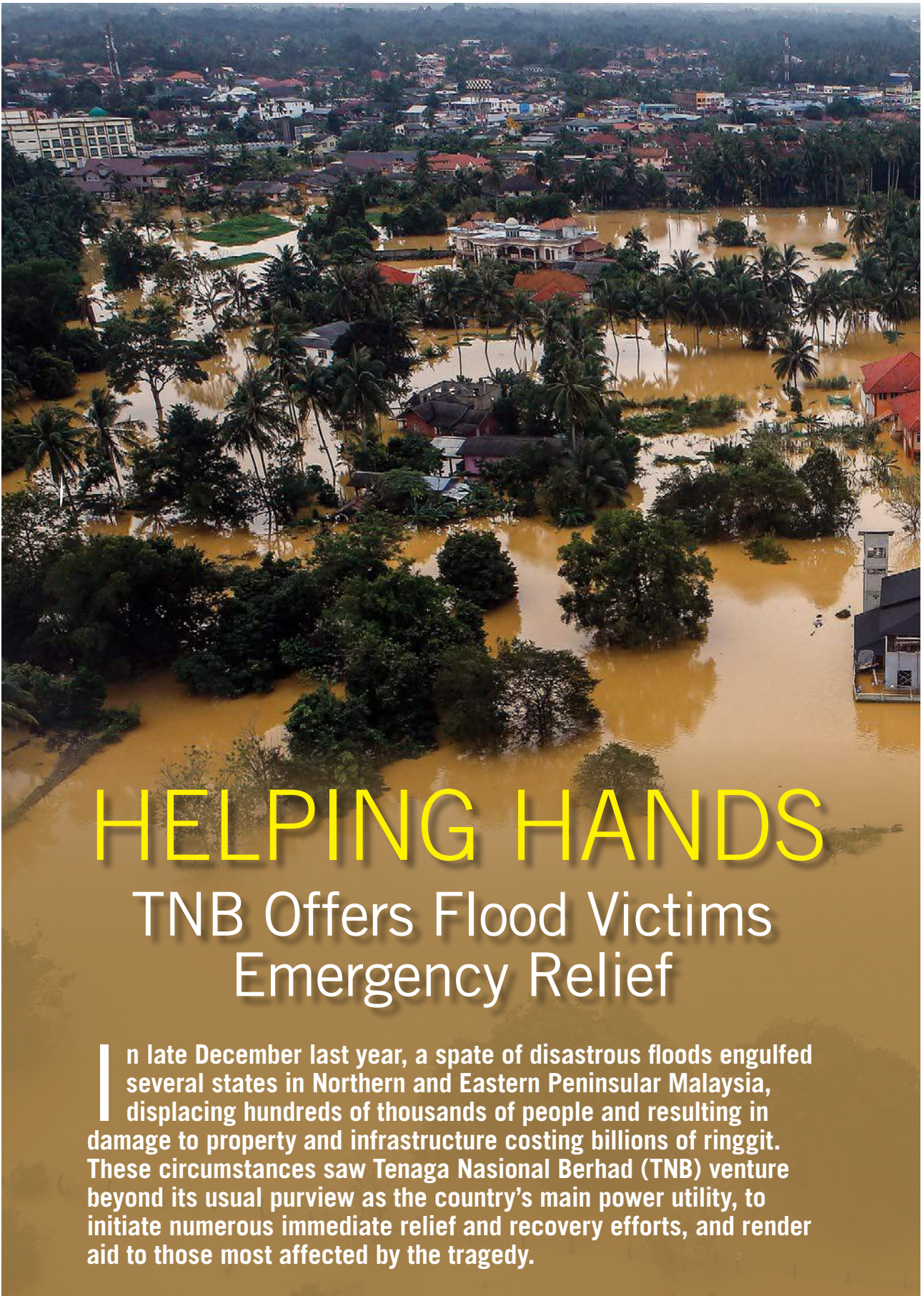
“The hard copy bills previously delivered through Pos Malaysia were limited to a size of 4 inches by 12 inches. As a result of this, there were also limitations on the amount of information which they could effectively convey.”

– Assistant General Manager
(Billing) at the Customer
Service Department's Revenue
Management Unit Selimin Othman

best practices, this initiative aligns well with the utility's overall efforts and programmes to improve environmental sustainability. Specifically, this e-billing initiative has helped TNB accomplish significant environmental gains by reducing the use of paper to produce and distribute hard copy bills for its 80,000 LPCs. In addition, the programme also mitigates natural resource use by making it unnecessary for the utility to deploy additional staff to read meters manually. This reduces fuel consumption as well as the costs associated with it.

Selimin Othman also highlights that there are other ways in which the environmental benefits offered by this programme can be maximised. “Primarily, when LPCs register the email address which will receive TNB's monthly bills, they should list one that is accessible by multiple users, especially the individuals responsible over financial and administrative matters such as this,” he said. By utilising this approach, LPCs can assist in promoting environmental sustainability, by minimising the need to generate hard copy printouts for internal circulation.

As illustrated by the utility's migration from manual meter readers and the posting of bills to the implementation of this e-billing policy, TNB is taking the latest step in its ongoing drive to improve the standard and sustainability of the services it provides while also eliminating irregularities which may prevent bills from being delivered in a timely manner. While the e-billing initiative was initially made available exclusively to LPCs, customers registered at the TNB e-services portal, which is located at www.tnb.com.my, can also enjoy the service. 



HELPING HANDS

TNB Offers Flood Victims Emergency Relief

In late December last year, a spate of disastrous floods engulfed several states in Northern and Eastern Peninsular Malaysia, displacing hundreds of thousands of people and resulting in damage to property and infrastructure costing billions of ringgit. These circumstances saw Tenaga Nasional Berhad (TNB) venture beyond its usual purview as the country's main power utility, to initiate numerous immediate relief and recovery efforts, and render aid to those most affected by the tragedy.

PARTNERING FOR THE PEOPLE

As explained by the Deputy Secretary General (Energy) at the Ministry of Energy, Green Technology and Water (KeTTHA) Dato' Dr Nadzri Yahaya, the relationship between TNB and the Malaysian government is unique and does not follow the model usually adopted by Government-Linked Companies (GLCs). Rather than having a one-directional relationship in which priorities are solely determined by the government, the energy utility often contributes its significant assets and capabilities to deliver innovative and unconventional solutions to ongoing national challenges.

According to Dato' Dr Nadzri – who was the former Director General of the National Solid Waste Management Department – this was particularly evident when TNB elected to provide aid and

“TNB staff worked round the clock to ensure that the daily routine of the flood victims is minimally affected. This was a clear demonstration of TNB’s true strength when everyone expected things to fall apart.”

– Deputy Secretary General (Energy) at the Ministry of Energy, Green Technology and Water (KeTTHA)
Dato' Dr Nadzri Yahaya



Fast Flood Aid

With the widespread flooding creating a crisis situation in which swift action was imperative, a number of steps were immediately initiated spanning all sectors of TNB's operations:



80 mobile and portable generators deployed

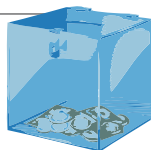


More than 2,000 technical staff members mobilised



Over RM300,000 of daily necessities handed over to flood victims

Tabung Bantuan Kemanusiaan 1TNB established, allowing TNB staff to donate via salary deduction



Satu Warga Kerja, Satu Barang campaign launched, channelling over RM600,000 in goods and donations from TNB offices throughout Malaysia to the areas affected



12,000 kg of immediate relief supplies in food and basic necessities



NATIONAL EFFORT



Perak

Weathering the Storm

“TNB staff went beyond their normal duties by innovatively using lorry batteries as a power source so that the displaced flood victims had access to lighting during night time.”

– Deputy Secretary General (Energy) at the Ministry of Energy, Green Technology and Water (KeTTHA) Dato’ Dr Nadzri Yahaya



Kelantan

In the wake of the heavy rainfall and floods which struck Northern and Eastern Peninsular Malaysia, Tenaga Nasional Berhad initiated comprehensive recovery efforts encompassing the states of Pahang, Kelantan, Terengganu and Perak.

PIVOTAL PLAYER

Dato' Dr Nadzri reveals that in addition to working hand-in-hand with the Ministry, TNB was part of a response group assembled by KeTTHA. This group comprised of members from the National Security Council (MKN), the Department of Irrigation and Drainage (JPS), the Ministry of Health (MOH), the National Water Services Commission (SPAN) and the Department of Water Supply (JBA), as well as other relevant agencies and ministries.

As part of this group, TNB communicated with the MOH on the hospitals which urgently required assistance, and SPAN on the water treatment plants which required immediate electricity supply reconnection. The utility also provided the group with live updates on its electricity restoration initiatives, as well as up-to-date reports on the reservoir levels at its hydroelectric dams across the nation, to curtail rumours of excess water being released in an uncontrolled manner, thus contributing to the floods.

relief to affected residents in the states of Kelantan, Pahang, Perak and Terengganu. This was in the wake of heavy rainfall which preceded some of the worst flooding in an estimated 30 years. "In addition to the monetary aid that was offered, TNB exhibited the willingness to get involved in many public engagement efforts, and the utility's exemplary deeds as a corporate citizen need to be recognised," he states.

To minimise the impact of the disaster on the daily routine of flood victims and ensure that relief centres, schools and hospitals were provided with continuous electricity supply, TNB dedicated considerable personnel and equipment to these efforts. Aside from this, Dato' Dr Nadzri recognises that the tireless efforts of each individual TNB staff member – in terms of working diligently to bring effective solutions to the people affected – were also integral to the success of the undertaking.

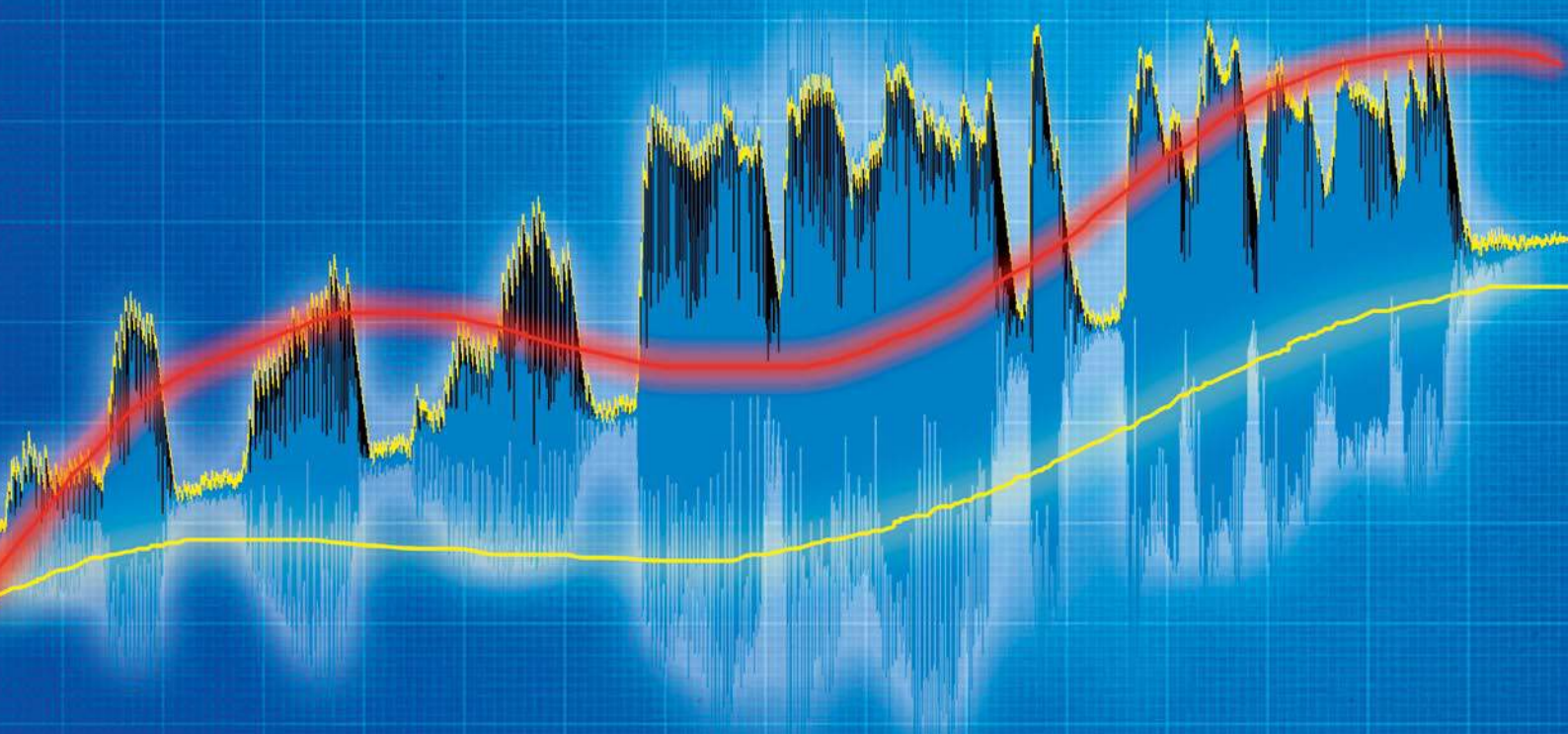
As one of the country's most successful and productive organisations, TNB has long helped enable holistic nation building by guaranteeing the stable and reliable supply of electricity to industrial, commercial and domestic customers. Through its recent efforts to give back by rendering aid in the aftermath of the East Coast floods, the utility has also shown itself to be an indispensable partner to the Malaysian government, in terms of collaboratively providing relief and assistance during disasters and other emergency situations. 🇲🇾

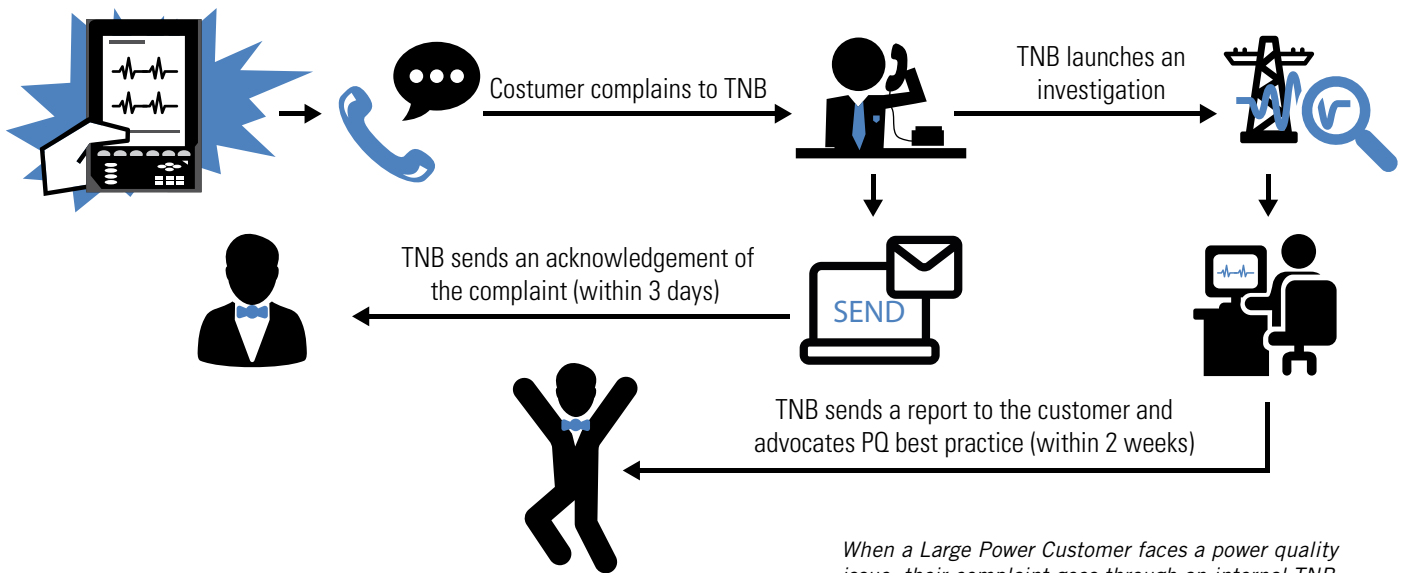
IMPORTANCE OF POWER QUALITY

Communicating with Large Power Customers

Contributed by Ir Dr Mohamed Fuad Faisal, Power Quality & Energy Efficiency Specialist, Asset Management Department, Distribution Division, TNB

Historically, most complaints received from Large Power Customers (LPCs) relate to power interruptions. But now, power quality (PQ) disturbances such as voltage sags, harmonic distortion and voltage transients have caused more problems to sensitive industries than power reliability issues. Power quality disturbances usually affect certain equipment and not all equipment in a plant. Because of this, PQ can be as big a problem to LPCs as power interruption. Therefore, TNB has increased its focus on dealing with PQ issues to ensure prime customer satisfaction.





When a Large Power Customer faces a power quality issue, their complaint goes through an internal TNB process to ensure that the customer is informed of the cause of the problem as soon as possible.

RELEVANT REQUIREMENT

Years ago, a brief voltage fluctuation or voltage sag was not considered a problem, but today’s solid-state devices are very sensitive to power system fluctuations. It is this vulnerability of modern technology that has brought an increased awareness of PQ, which is a reality of life that has always been present. Nowadays, it has become a requirement for sensitive

electrical and electronic equipment to operate with a perfect, sinusoidal voltage waveform in order to achieve continuous operation. This condition is called the PQ requirement.

STRENGTHENING RELATIONS

This sharing of information on PQ events – especially voltage sags – is very important. If any critical equipment suddenly trips during

operations, the prime customer needs to immediately know the cause of the equipment failure, whether it is due to an internal equipment failure or an external event or voltage sag. If the cause is an external event, customers can immediately restart their machines and resume operations. If the cause is unknown, customers will need to spend time troubleshooting their machines to find out the actual cause. This can be a time consuming process.



TNB regularly conducts engagement programmes with LPCs such as semiconductor manufacturing company Infineon Technologies (Malaysia), to improve the standard of relations and enable the utility to better understand the needs of customers.

The sharing of relevant information on PQ forms a very important element in guaranteeing customer satisfaction. At TNB, the management of customer complaints relating to PQ disturbances follows an internal engineering procedure (ENGR 750-31). In line with this procedure, all complaints from customers on PQ-related issues must be recorded, attended to by engineers in the respective area/state, and reports must subsequently be submitted to the customers.



Reference Number: TNB (B)/KJLO/PK 20/3/24

TNB POWER QUALITY DISTURBANCE REPORT TO CUSTOMER

No.	Item	Report															
1	Area and State	<table border="1"> <tr> <td>Area</td> <td>State</td> </tr> <tr> <td>PK (Subang Jaya)</td> <td>Selangor</td> </tr> </table>	Area	State	PK (Subang Jaya)	Selangor											
Area	State																
PK (Subang Jaya)	Selangor																
2	Date and Time of PQ Event	<table border="1"> <tr> <td>Date</td> <td>Time</td> </tr> <tr> <td>14 Apr 2015</td> <td>1:38:46.240</td> </tr> </table>	Date	Time	14 Apr 2015	1:38:46.240											
Date	Time																
14 Apr 2015	1:38:46.240																
3	Type of PQ Event	Sag															
4	Magnitude and Duration of PQ Event	<table border="1"> <tr> <td colspan="2">Nominal Voltage Monitored (kV)</td> <td>-</td> </tr> <tr> <td>Phases</td> <td>Voltage (%)</td> <td>Duration (ms)</td> </tr> <tr> <td>R-N</td> <td>93</td> <td>79</td> </tr> <tr> <td>Y-N</td> <td>92</td> <td>79</td> </tr> <tr> <td>B-N</td> <td>73</td> <td>79</td> </tr> </table>	Nominal Voltage Monitored (kV)		-	Phases	Voltage (%)	Duration (ms)	R-N	93	79	Y-N	92	79	B-N	73	79
Nominal Voltage Monitored (kV)		-															
Phases	Voltage (%)	Duration (ms)															
R-N	93	79															
Y-N	92	79															
B-N	73	79															
5	EMC Assessment for PQ Event	<table border="1"> <tr> <td>Standard</td> <td>Compliance (Yes or No)</td> </tr> <tr> <td>SEMI F47-0706</td> <td>Yes</td> </tr> <tr> <td>IEC 61000-4-34 (Class 1)</td> <td>No</td> </tr> <tr> <td>IEC 61000-4-34 (Class 3)</td> <td>Yes</td> </tr> </table>	Standard	Compliance (Yes or No)	SEMI F47-0706	Yes	IEC 61000-4-34 (Class 1)	No	IEC 61000-4-34 (Class 3)	Yes							
Standard	Compliance (Yes or No)																
SEMI F47-0706	Yes																
IEC 61000-4-34 (Class 1)	No																
IEC 61000-4-34 (Class 3)	Yes																
6	Source of PQ Event	Transmission Network															
7	Cause of PQ Event	Lightning															
8	TNB's Corrective Action Performed and Timeline	[Overhead] Repair Tower Footing Resistance															
9	Recommended Action Plan to be Performed by Customer	Customer must ensure all critical loads are properly immuned from voltage sags. Standard to refer is IEC 61000-4-34 (Class 1 & Class 3).															

Top: Upon receiving complaints on matters relating to power quality and voltage sags, staff from the respective local or state TNB office are often able to provide tailored power quality consultancy and servicing at the LPC's facility.

Left: A sample of TNB's power quality disturbance report that is provided to the customer.

Sharing information on the Power Quality is one of the major initiatives by TNB. The information will include types and causes of PQ disturbances, EMC assessment and mitigation actions. TNB also conducts frequent discussions with large power customers on issues related to PQ as well as other matters. This proactive communication on PQ events between TNB and customers has enabled TNB to better understand the needs of its commercial and industrial customers.

TNB STATE OFFICES



Wilayah Persekutuan

Kuala Lumpur

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50990 Kuala Lumpur
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Fax : 03 – 6250 6500

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Bahagian Pembahagian
Tenaga Nasional Berhad
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47620 Subang Jaya
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Fax : 03 – 8022 9554

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Bahagian Pembahagian
Tenaga Nasional Berhad
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Jln Yahya Awal
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Bahagian Pembahagian
Tenaga Nasional Berhad
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Fax : 04 – 732 4185

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Bahagian Pembahagian
Tenaga Nasional Berhad
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Fax : 06 – 282 6460

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Bahagian Pembahagian
Tenaga Nasional Berhad
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CBD Perdana, 63000 Cyberjaya
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Fax : 03 – 8886 6933

Kelantan Darul Naim

Pengurus Besar Negeri
Bahagian Pembahagian
Tenaga Nasional Berhad
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Jln Tok Hakim
15000 Kota Bharu
Tel : 09 – 745 1100
Fax : 09 – 747 3611

Pulau Pinang

Pengurus Besar Negeri
Bahagian Pembahagian
Tenaga Nasional Berhad
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30 Jalan Anson
10400 Pulau Pinang
Tel : 04 – 222 4000
Fax : 04 – 227 3110

Perlis Indera Kayangan

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Bahagian Pembahagian
Tenaga Nasional Berhad
Wisma TNB, Bulatan Jubli Emas
01000 Kangar
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Fax : 04 – 976 1921

Pahang Darul Makmur

Pengurus Besar Negeri
Bahagian Pembahagian
Tenaga Nasional Berhad
Aras 13, Wisma TNB
Lot 14, Seksyen 19
Jln Gambut, 25000 Kuantan
Tel : 09 – 515 5555
Fax : 09 – 515 5656

Perak Darul Ridzuan

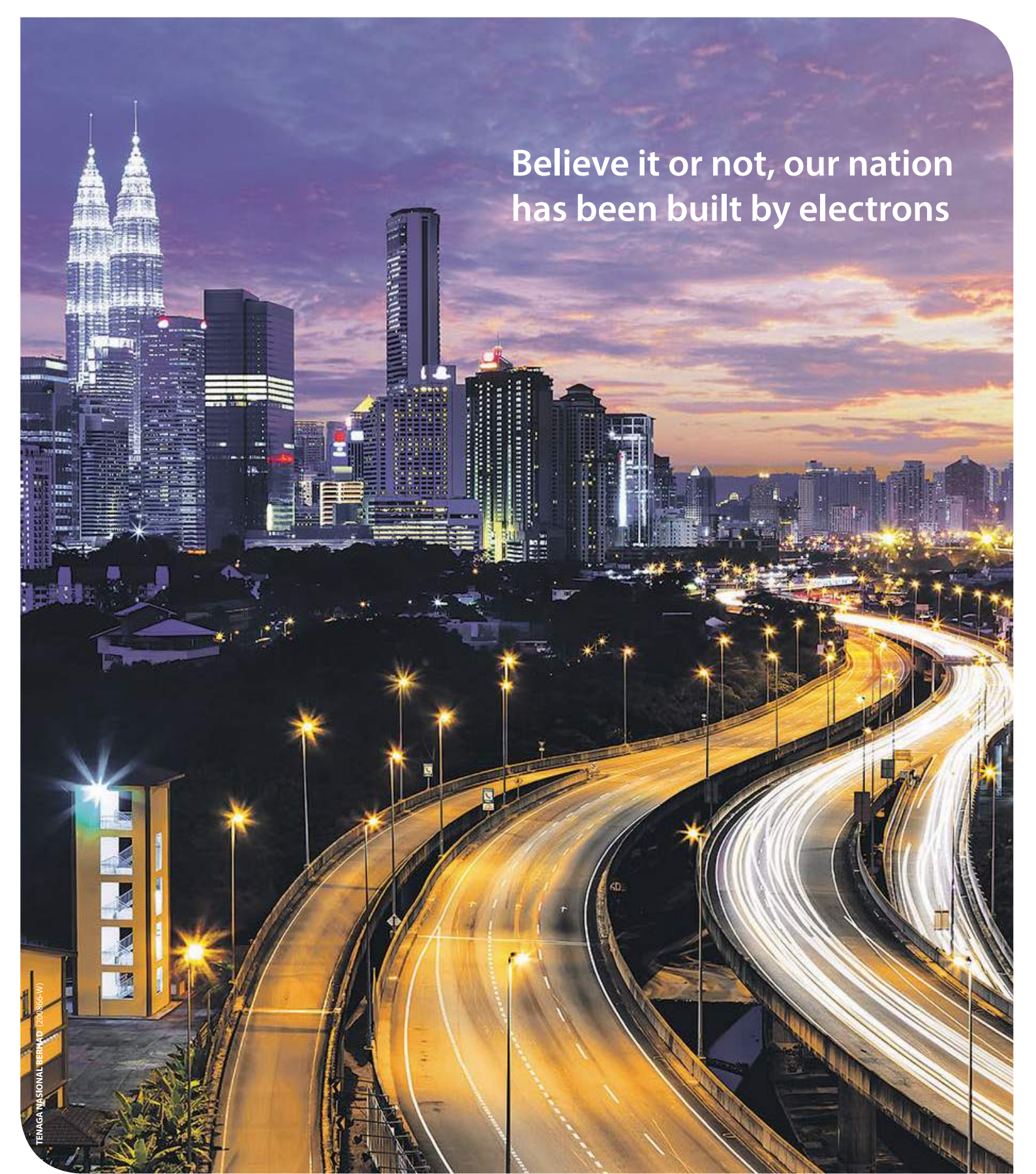
Pengurus Besar Negeri
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Jalan Lahat, 30200 Ipoh
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