Watt's Up

— electrifying the future —

Issue 01 | April 2017

www.singlebuyer.com.my

WELCOME TO THE FIRST EDITION

It is an honour to pen down a few words in the first edition of Single Buyer's Newsletter, "*WattsUp*". The past 4 years have been a remarkable journey for Single Buyer (SB) and we are pushing the momentum further by launching various projects and initiatives to support the transformation of MESI.

One of SB's major milestones as we enter into 2017 was the implementation of New Enhanced Dispatch Arrangement (NEDA) which was launched by Suruhanjaya Tenaga (ST) in September 2016. Its key objective is to enhance short-run cost efficiency in the electricity industry by allowing market players to sell energy to the grid system at competitive prices.

In ensuring system's adequacy for the long-run, SB facilitates the executions of Power Purchase Agreements (PPAs) between Generators and the Off-taker (TNB). 2016 saw the signing of major PPAs including Pengerang Co-Generation and Southern Power Generation Sdn. Bhd.

For the electricity industry, SB continues to spearhead key studies to support the transformation of Malaysian Electricity Supply Industry (MESI).

The Generation Reliability Standard Review for instance was initiated to re-evaluate the existing criteria for Peninsular Malaysia which until today, has been adopted for more than a decade. The study is essential to ensure a reliable supply of electricity in Peninsular Malaysia. The revised criteria will ensure a robust electricity supply which fosters our nation's economic growth and promotes confidence in investors and consumers.

On the same note, SB continues to enhance other aspects of its key operations by undertaking projects such as the Demand Forecast Review and the One Stop Settlement Centre (OSSC).

SB also provides technical advice to stakeholders in special projects. SB's involvement in Sabah has been a great collaborative effort. In the international arena, SB is a key member for the Lao PDR-Thailand-Malaysia Power Integration Project team.

We expect 2017 to be another exciting year. SB has rolled out a few internal initiatives to enhance its ring-fenced status such as the launching of SB's new corporate identity, migration to a new email domain and strengthening of SB's functions.

"Taking into account stakeholders' feedback and current industry's needs, SB has also identified its 10-Year vision and strategies to align itself with the aspiration as a reputable market operator and shaper of MESI."

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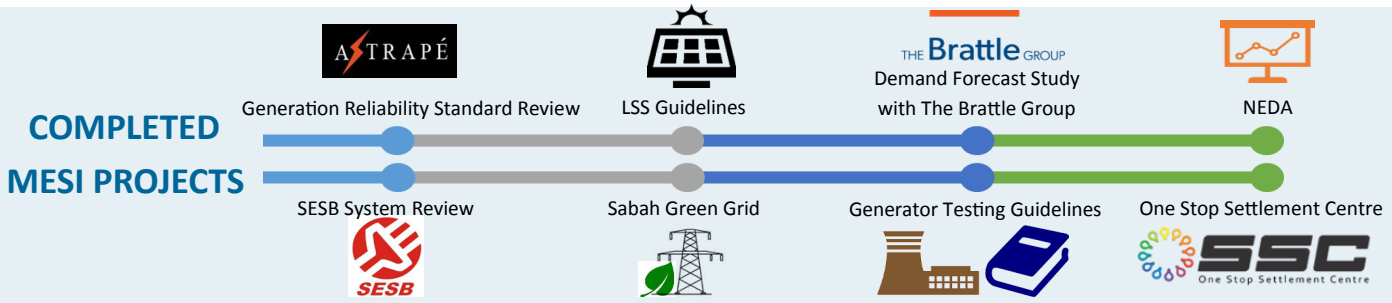
Externally, one of the key studies initiated early this year is to develop an environmental-friendly energy mix that supports the national CO_2 emission reduction target. The working group consists of SB, EPU, KeTTHA, ST and NRE.

With all these interesting developments taking place, we look forward to keep the stakeholders and market players updated with the work that we will undertake over the coming months.

We encourage everyone to utilise this platform to share your views. This will enable us to formulate informed decisions and further improve our operations and services.∞

Charanjit Singh Gill

Head, Single Buyer



LAUNCHING OF SB'S NEW CORPORATE IDENTITY

"Let's lay out a transition plan to prepare for the possibility of Single Buyer becoming an independent body", said Datuk Seri Ir. Azman Mohd, President/Chief Executive Officer (CEO) of TNB in his speech during the Single Buyer Engagement Session held recently on 28th February 2017.

The engagement session was mainly organized as a platform for SB staff to have an open discussion with the top management on SB's future directions. In this session, participants also had the opportunity to listen to Datuk Seri Ir. Azman's views and insights on SB's path of transformation.

In his speech, Datuk Seri Ir. Azman Mohd also urged SB to seize the abundant opportunities arising from SB's evolution, and to be innovative in formulating SB's business models to meet the needs of the Malaysian energy industry. "Given the outlook and challenges in the power industry, SB has a huge potential to set itself strategically as a leading organization in MESI", he added. He also acknowledged the unique set of skills and talents residing within SB and encouraged SB to leverage its expertise to set a strong presence in the industry.

"Given the outlook and challenges in the power industry, SB has a huge potential to set itself strategically as a leading organization in MESI."

The event also marks the official launch of the SB logo. The establishment of SB's corporate identity demonstrates SB's commitment in achieving its aspiration as a transparent, trusted and reputable electricity procurement organization and market operator in the region. ∞

CEO ENGAGEMENT SESSION | 28 FEBRUARY 2017 | BANGSAR

SB UNVEILS NEW LOGO

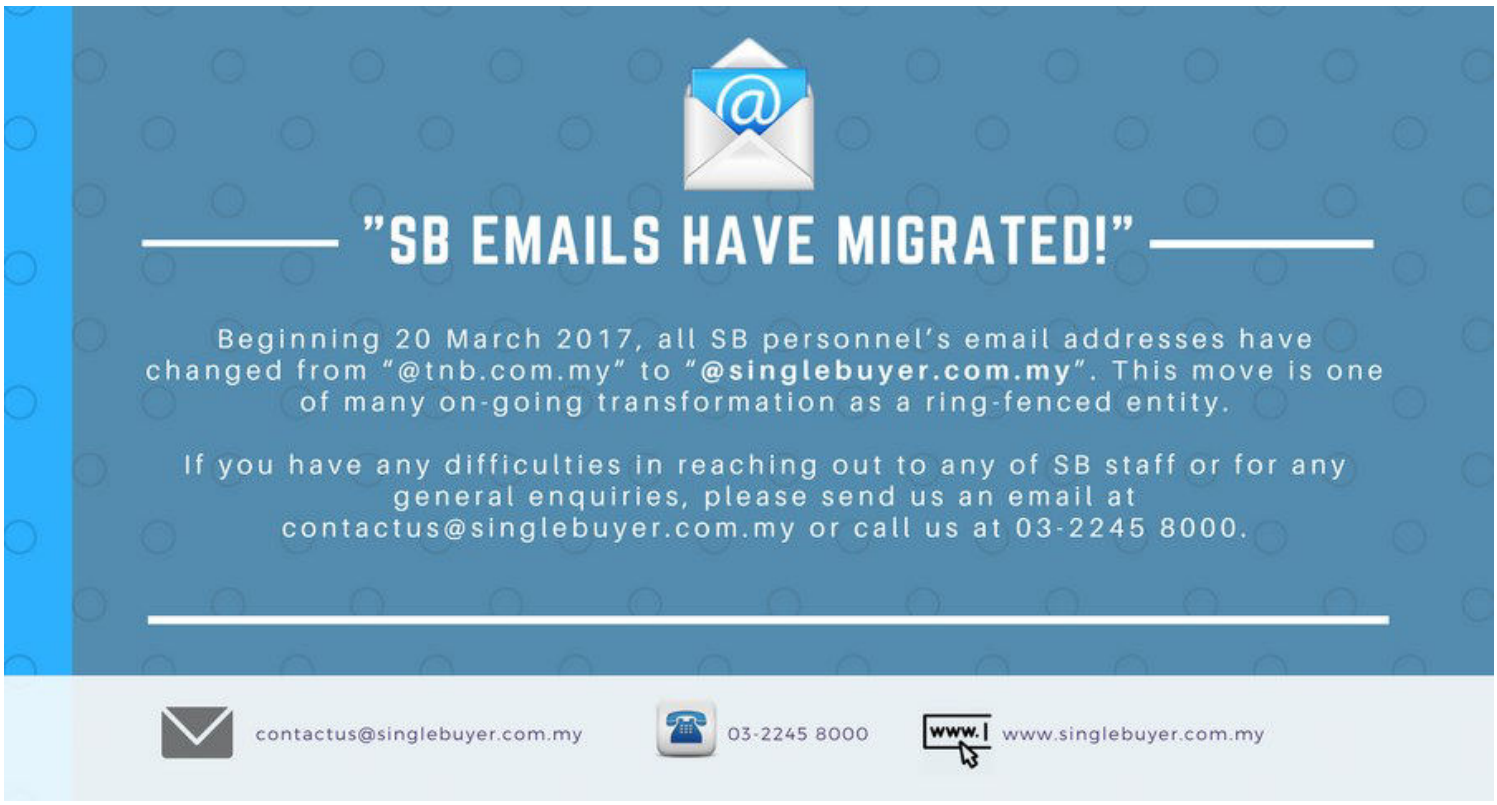
Single Buyer

This logo represents Single Buyer. The pixelated thunderbolt image symbolises roles and involvement of SB in the Electricity Supply Industry. It is also a symbol of strength and firmness.

Navy blue colour conveys trust, dignity, intelligence, authority as well as stability. It also carries a sense of elegance and sophistication.

Grey symbolises a neutral and impartial SB. This colour reflects roles of SB in enhancing transparency and efficiency in Electricity Supply Industry for Peninsular Malaysia.

The logo was designed by our colleague, Mr. Arif Hazwan Ab Wahab.



SUNNY BANGCHAK, THAILAND

FROM PHOTONS TO ELECTRONS

The word Photovoltaic (PV) is derived from the Greek word *photos* which means light and in tribute of Alessandro Volta, the Italian physicist and inventor of the first chemical-electric battery, known as "Voltaic pile"[1]. Hence, we may simply conclude that the meaning of photovoltaic is electricity from light. However, before we indulge any further into the theory, let's explore the relevance of solar PV to Single Buyer (SB) and the Malaysian Electricity Supply Industry (MESI).

DO YOU KNOW THAT THERE WILL BE A MAJOR INFLUX OF SOLAR PHOTOVOLTAIC (PV) PLANTS COMING INTO THE GRID IN 2018?

The first ever LSS Power Purchase Agreement (PPA) in Malaysia was signed between TNB and 1MDB Solar in April 2014 for the development of 50MW$_{ac}$ solar PV plant at Kuala Ketil, Kedah. However due to some commercial issues, the solar PV plant Commercial Operation Date (COD) has been delayed to February 2018.

Thereafter, the second wave of LSS PPAs (consists of three PPAs) was signed at the end of 2016 between TNB and three Quantum Solar Park companies for three different sites. Each site with a capacity of 50MW$_{ac}$ will be developed at Merchang (Terengganu), Jasin (Melaka) and Gurun (Kedah). The three solar PV plants are scheduled for COD on 31 December 2017.

Most recently, six more LSS PPAs were signed in March 2017 after an LSS competitive bidding exercise carried out by the Suruhanjaya Tenaga (ST) in 2016. Each of the six companies will be developing solar PV plants at different sites, each with a capacity ranging from 30MW$_{ac}$ to 50MW$_{ac}$. The expected COD for the seven solar PV plants are scheduled in the second half of 2018.

If all of these projects are successful, then there will be a total of ten large-scale solar PV (LSS) plants in Peninsular Malaysia by the end of 2018, with a total capacity of more than 500MW.

DO YOU KNOW THAT IF THE WHOLE AREA OF TNB HQ IN BANGSAR IS RE-DEVELOPED AS A SOLAR PV PLANT, ONLY ABOUT 11MW CAN BE EXPORTED TO THE GRID?

The area covered by the TNB HQ is about 46 acres and according to First Solar modeling tool, PlantAdvise[2], the output capacity expected using thin film type of solar cell is about 10.7MW$_{ac}$ while the output capacity using polycrystalline solar cell is about 11.03MW$_{ac}$. So, in order to produce 50MW$_{ac}$ of electricity, more than 200 acres of land are needed. Undeniably, the area required differs from site to site depending on many factors, especially the intensity of sunlight measured in irradiance (watts/area).

Source: Google Image

[1] https://www.britannica.com/biography/Alessandro-Volta
[2] http://www.firstsolar.com/Resources/PlantAdvise

See next page

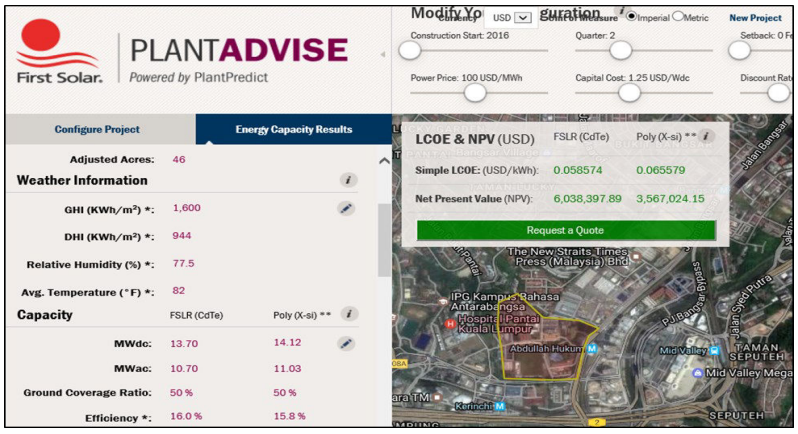
YOU MAY NOTICE THAT WHEN DESCRIBING THE OUTPUT OF A SOLAR PV, THE OUTPUT CAPACITY IS OFTEN MARKED WITH THE SUBSCRIPT OF "AC" OR "DC", E.G. $1MW_{AC}$ AND $1MW_{DC}$.

The most basic component of a solar PV plant is the solar cell which is able to convert the energy directly from sunlight to electricity without any mechanical work; this ability is called photovoltaic. The solar cell will produce direct current (DC) when sufficient light strikes the surface of the solar cell.

However, in order to export energy to the Grid, the electric current needs to be converted from DC to alternating current (AC) by a component called inverter. Hence, if the output from the solar PV plant is $1MW_{dc}$, the amount of electricity to be exported to the Grid would be less than $1MW_{ac}$ due to losses during the conversion process from DC to AC and during the transmission of electricity from the solar PV plant to the grid. A more detailed discussion on the solar cell will be published in the next series.∞

Next issue: "Solar cells theory & evolution"

Output from PlantAdvise online solar modeling tool



More information is available from the modeling tool, PlantAdvise, available online at the following website address:

http://www.firstsolar.com/Resources/PlantAdvise

PlantAdvise is a basic online solar modeling tool that enables you to easily plot any area on earth and see the expected solar output, irradiance value and many more related information!

EVENTS & HAPPENINGS

6-8 FEB 2017

End-Use Load Forecasting Workshop and Presentation to Demand Forecast Committee, KL

A workshop on End-Use Load Forecasting Using LoadMAP was conducted by the consultants from The Brattle Group (US), Applied Energy Group (US) and The Lantau Group (HK). This event is part of an on-going consultancy project to enhance SB's forecasting methods and to develop an end-use load forecasting model for Peninsular Malaysia. On 7 February 2017, the consultants delivered a presentation on the project to the Demand Forecast Committee at the Suruhanjaya Tenaga office, Putrajaya.

14-16 FEB 2017

SB's Business Plan Workshop, Melaka

A workshop amongst Single Buyer top and middle management team was held with the objective to discuss and outline SB's 10-year vision and 5-year detailed work plan to support MESI initiatives.

28 FEB 2017

The 3rd Consultative Meeting of Technical Task Force on LTM-PIP, KL

SB representative & task force delegates at the 3rd Consultative Meeting of Technical Task Force on Lao PDR – Thailand – Malaysia Power Integration Project (LTM-PIP).

27 FEB - 3 MAR 2017

Working Visit by Sabah's Single Buyer

See next page

1 MAR 2017

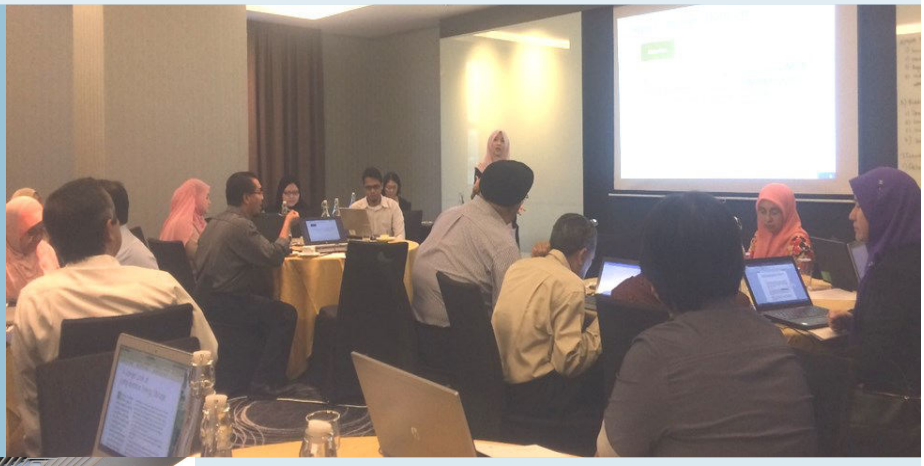
Briefing on Request for Proposal in respect of the Large Scale Solar PV Program 2019 & 2020, Putrajaya

SB legal counsel, Puan Nazrina Mohd Hilmi@Halmi, presented on the LSS PPA during the RFP briefing of the 2nd round of LSS competitive bidding for commercial operation in 2019 and 2020.

7-8 MAR 2017

NEDA Risk Workshop, KL

An internal NEDA Risk Workshop was conducted to identify key risks and mitigations in operationalizing NEDA.



15 MAR 2017

SLA Signing Ceremony between SB & TNB ICT

A signing ceremony of a Service Level Agreement (SLA) between SB and ICT Division of TNB was held to mark the collaboration between ICT Division and SB on ICT related services. The SLA which takes effect from 1 January 2017 until 31 December 2020, provides rights and obligations of both parties on ICT matters, specifically involving data confidentiality.

22 MAR 2017

NEDA Workshop for Price Takers, Cyberjaya

This 3rd series of workshop was specifically tailored for Price Takers, comprising of co-generators, RE, small franchise utilities and small generators with export capacity of 100kW to 29.9MW without any PPA/SLA. The event was officiated by Puan Azimah Abdul Aziz of ST followed by briefing sessions from representatives of ST, SB, GSO, TNB Transmisison and TNB Distribution. The workshop aims at enhancing understanding on NEDA mechanisms to enable potential Price Takers participants to register in NEDA with the Go-Live date on 1 April 2017 .

NEDA TRIAL RUN & "GO-LIVE" FOR PRICE TAKERS

A full-fledged trial run for the New Enhanced Dispatch Arrangement (NEDA) mechanism began on 15 September 2016. The trial is open for all types of generators and participants including Price Takers, existing PPA/SLA plants as well as expired PPA/SLA plants.

The objective of the NEDA Trial Run is to allow market participants to familiarise themselves with the infrastructure and processes without having financial impact to their operations. It involves dry run activities from bidding, planning, operation and commercial settlement.

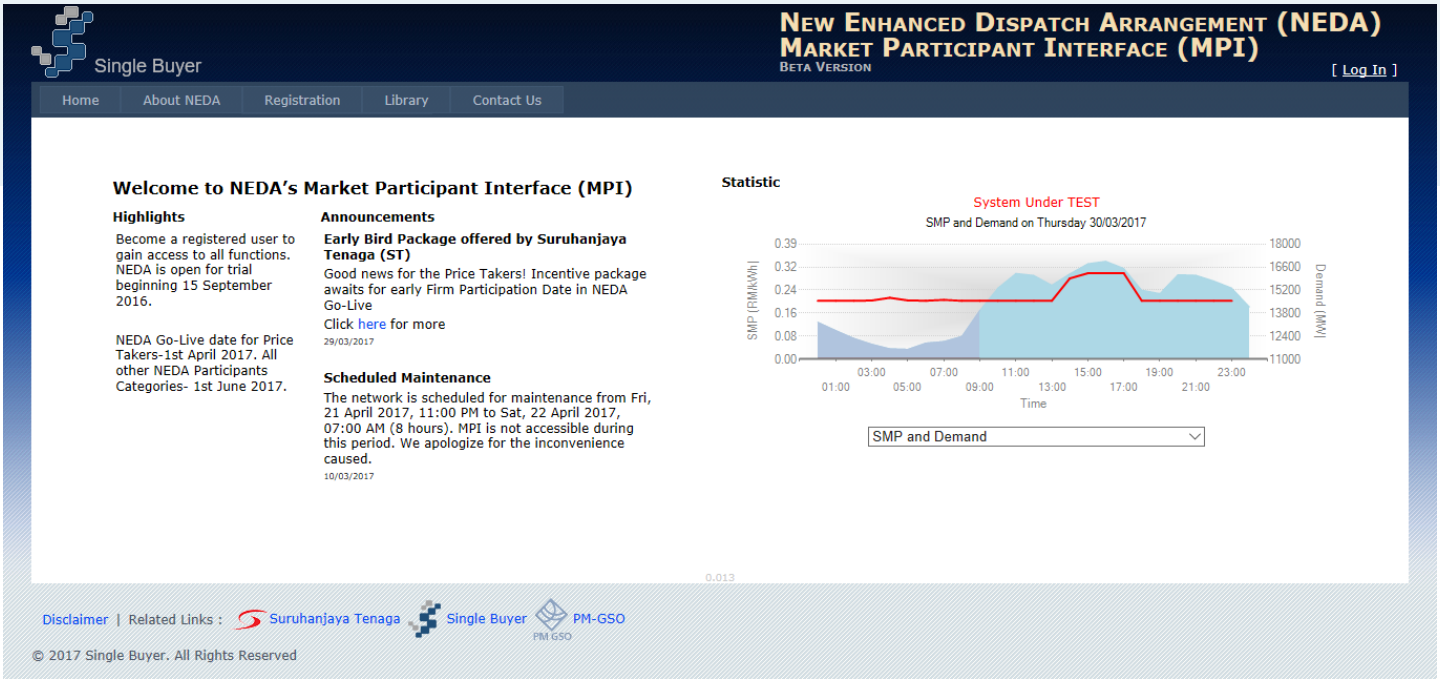
"NEDA Trial Run objective is to allow market participants to familiarise with the infrastructure, processes, and operation prior to the actual market operation without having financial impact to their operations."

To enable market players to participate effectively in NEDA, SB has developed an online bidding platform called "Market Participant Interface" (MPI). Participants can submit "mock" offers to the system and receive immediate notification if their offers are invalid, as well as information on their expected generation from the Day-Ahead Generation Schedule published on the MPI platform. Key system data such as System Marginal Price (SMP) and demand profiles are also available on the site. MPI is essential in facilitating participants to learn about the system and strategize their offers accordingly.

The duration for trial was initially set at 6 months ending March 2017. However based on SB's assessment and participants' feedback during the trial run up to February 2017, SB has made a recommendation to ST to roll out the NEDA "Go-Live" in stages, beginning with Price Takers category on 1 April 2017. For other participants, the "Go-Live" will commence on 1 June 2017.

SB will continuously monitor the Price Takers post its Go-Live date and enhance operational performance of the trial run for other participants moving towards the June "Go-Live". This includes regular engagement sessions with various entities and potential participants to promote NEDA. The aim is to achieve operational efficiency for the system and to gain the confidence of market players to move into full operation of NEDA. ∞

For more information, visit https://mpi.singlebuyer.com.my/



MARKET WATCH

20 February 2017
RFP Launching by ST for 2nd Competitive Bidding of LSS in Peninsular Malaysia

1 March 2017
RFP Briefing by ST for 2nd Competitive Bidding of LSS in Peninsular Malaysia

22 March 2017
NEDA Workshop for Price Takers

1 April 2017
NEDA Go-Live for Price Takers

1 June 2017
NEDA Go-Live for all participants

MEET THE PEOPLE BEHIND SB

In this edition, we speak to our newly joined colleague **Danial Nizam**, Legal Counsel of SB about his background, and his views on the energy industry in Malaysia.

Can you tell us a brief background of yourself?

I graduated with a Bachelor of Laws, LL.B (Hons) from Universiti Teknologi MARA. I was thereafter called to the Malaysian Bar, commenced pupillage and practised at Messrs Zul Rafique & Partners and Messrs Fuzet Farid, a specialised shipping law firm. I was a maritime lawyer based in Kuala Lumpur and practised in the shipping, offshore and construction laws before I joined Single Buyer in January 2017.

What made you decide to join SB?

I have advised on works relating to the power sector since I started my first year of practice in 2013. Therefore, joining SB seems to be a natural career progression for me. One of the reasons why I joined SB is because of the major role that SB has in the energy sector. I am happy to be a part of these exciting times of the development of MESI, particularly renewable energy in Malaysia. Also, I believe that the satisfaction you get when contributing for the betterment of national interest is invaluable.

How has it been so far in SB?

I completed (survived) my first few months in SB with the generous guidance from my colleagues. I hope to further share both our professional and personal experience and growth throughout our time in SB. It is great to see some colleagues who go the extra mile by contributing to the country for the best interest of the consumers – fellow Malaysians.

What are your views on the energy industry in Malaysia?

SB has since evolved together with the development of energy sector in Malaysia. Expansion into renewable energy sources is inevitable as energy demand is expected to grow in the future. This move requires collaborative efforts from SB to ensure government's MESI transformation programs are achieved. Challenges include maintaining transparency for market players, ensuring security of supply at least cost and meeting the expectation of more sophisticated consumers. As employees, we have to ensure that SB remains as a trusted and reputable electricity procurement organization and market operator in the region. I think it is time for us to use our trump card. ∞

UPCOMING EVENTS

4-6 April 2017
Market System Overview Workshop

25-27 April 2017
Thermoflow Software Advanced Training

FOREVER
IN OUR HEARTS

ZUBLI QUZAIROV BIN ZUBLI

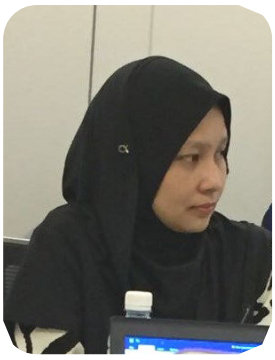
We pay our sincere tribute to the memory of our beloved colleague, Allahyarham Zubli Quzairov Bin Zubli who passed away on 7 February 2017. Allahyarham first joined TNB in 2010 as an executive in the Fuel Management Unit, and was later promoted to become a manager in the Capacity Planning Unit of Single Buyer in 2015. His biggest contribution during his assignment to this unit is his involvement in the Generation Reliability Standard Review Study.

Zop, as Allahyarham was known, was much liked by his colleagues for his friendly demeanour, warmth, kindness and humble self -being. Allahyarham never failed to put a smile on the faces of his loved ones and colleagues. Even to his last days, the family conveyed that Allahyarham was very grateful of his bosses and colleagues for being supportive of his well-being.

To the family of Allahyarham, we express our heartfelt condolences for the loss of their loved one and Allahyarham will be dearly missed. All our prayers are with Allahyarham.

إِنَّا لِلّٰهِ وَإِنَّـا إِلَيْهِ رَاجِعُونَ

"We belong to Allah and to Him we shall return"



"Quzairov was a truly sincere and passionate person in living his life. He never worked for positions or to impress others but rather to fulfill his passion and satisfaction. His works are impressive and beneficial to others." — Akmarhayu Abd Rahim

"Tentu sekali saya merasa sedih dan amat terkesan sekali dengan pemergian arwah. Arwah merupakan sahabat karib saya di SB. Selama 6 tahun saya mengenali arwah, setiap kali berjumpa arwah tidak pernah lekang dengan senyuman dan gurau senda. Dalam aspek kerja, arwah merupakan pekerja yang sangat berdedikasi dan amat menepati masa. Arwah juga sangat suka membantu rakan sekerja yang memerlukan bantuan. Semasa beberapa kali saya melawat arwah di rumah dan hospital arwah sering bercerita tentang kerja beliau dan arwah memberitahu saya bahawa arwah sangat merindui rakan sekerjanya. Ini menunjukkan betapa SB dan rakan-rakan berada dekat di hati arwah. Satu pekara lagi yang membuat saya rasa kehilangan ialan arwah sering kehadapan tanpa perlu disuruh untuk mengetuai solat fardhu di surau pejabat."— Rayyen Khalis Zainal

"Quzairov was not only a colleague, but a really helpful and cheerful close friend. He likes to motivate and bring enjoyment to others. His passing was a big loss to us but he remains in our thoughts and prayers forever." — Ahmad Nurhazafi Ahmad Rani

WHAT'S UP FROM SBET

We are privileged to take this opportunity to welcome readers to the first edition of SB Newsletter "*WattsUp*" and to introduce the SB Editorial Team ("SBET").

As interest in the energy sector has grown rapidly over the years, this newsletter is therefore created as a medium to share amongst others SB's on-going developments and achievements not only within the SB community, but with the power industry players as a whole. In addition, *WattsUp* intends to provide information on the Peninsular Malaysia energy market.

Our regular publications will also feature upcoming SB events, articles and energy information. We will also have a recurring column which takes you behind the scenes to introduce the people involved in SB's daily operations.

To give some personal touches to this newsletter, we conducted a "Name Our Newsletter" contest opened to all SB personnel. The responses were tremendous with over 50 creative and interesting proposals submitted. The shortlisted proposals were up for votes by none other than the SB staff themselves.

On that note, we wish to congratulate our colleagues, Mr. Thivanan Narayanan (in name category) and Ms. Goh Yin Lee (in design category), for receiving the highest number of votes. The winning name and design have inspired the birth of not only the header, but also the overall design of the newsletter.

Support from readers particularly SB personnel, is important for the success of *WattsUp*. We encourage any suggestions, feedback and enquiries on the newsletter by sending them to our email at sbet@singlebuyer.com.my. We hope to keep the readers engaged with *WattsUp* and look forward to your on-going interest and support!

Sincerely,

SB Editorial Team

SB EDITORIAL TEAM

ADVISOR

Abdul Malik Mohd Jaafar

THE TEAM

Maszatul Akmar Mustafa

Syazwani Aman

Hartini Kamaruzzaman

Aniza Ali Mohamad

Marlia Adilah Mohammad

Aizuddin Mohd Sopian

Fairuz Ab Talib

Muadz Wan Khairuzzaman

Muhammad Danial Mohamad Nizam

WORDS OF WISDOM

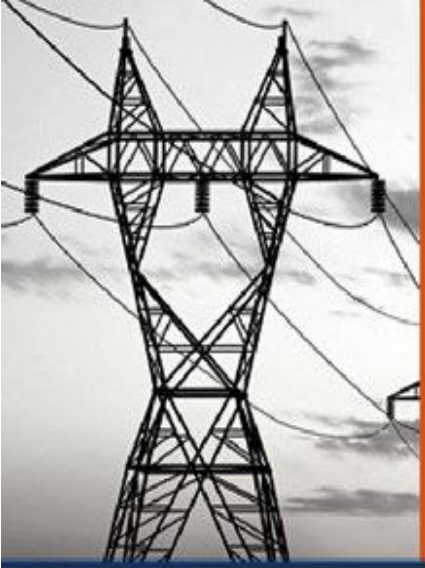
"The strong person is not the one who overpowers and brings his opponent to the ground, but the strong one is he who controls himself when he becomes angry"

— Muhammad PBUH (ﷺ) as narrated by Imam Al-Bukhari

YOUR FEEDBACK MATTERS!

We welcome any comments or suggestions to improve our newsletter. If you have any feedback or content that you would like us to include in the upcoming editions of WattsUp, please email us at sbet@singlebuyer.com.my

Disclaimer: The contents of this newsletter are of a general nature and intended for informational purposes only. You are advised to seek specific advice on any matter that may be affected by such information.



SAVE ENERGY BY

ENERGY CONSERVATION & ENERGY EFFICIENCY

7 WAYS TO SAVE ELECTRICAL ENERGY AT HOME

LOAD 'EM UP

Run washing machine on full load

KEEP IT CLOSED

Keep doors and windows closed when using air conditioner

LEDS DO IT!

Use LED lights

5 STAR SAVINGS

Use 5-star rated appliances

TURN OF BEFORE YOU TAKE OFF

Switch off and unplug appliances when not in use

CLEAN IT UP

Service air conditioner regularly

GET SMART

Use sensors or timers