Journey to A Sustainable Future

Lee Yeet Chuan

Environment Health in The New Era 2024

26 September 2024
Corus Hotel Kuala Lumpur

About The Speaker

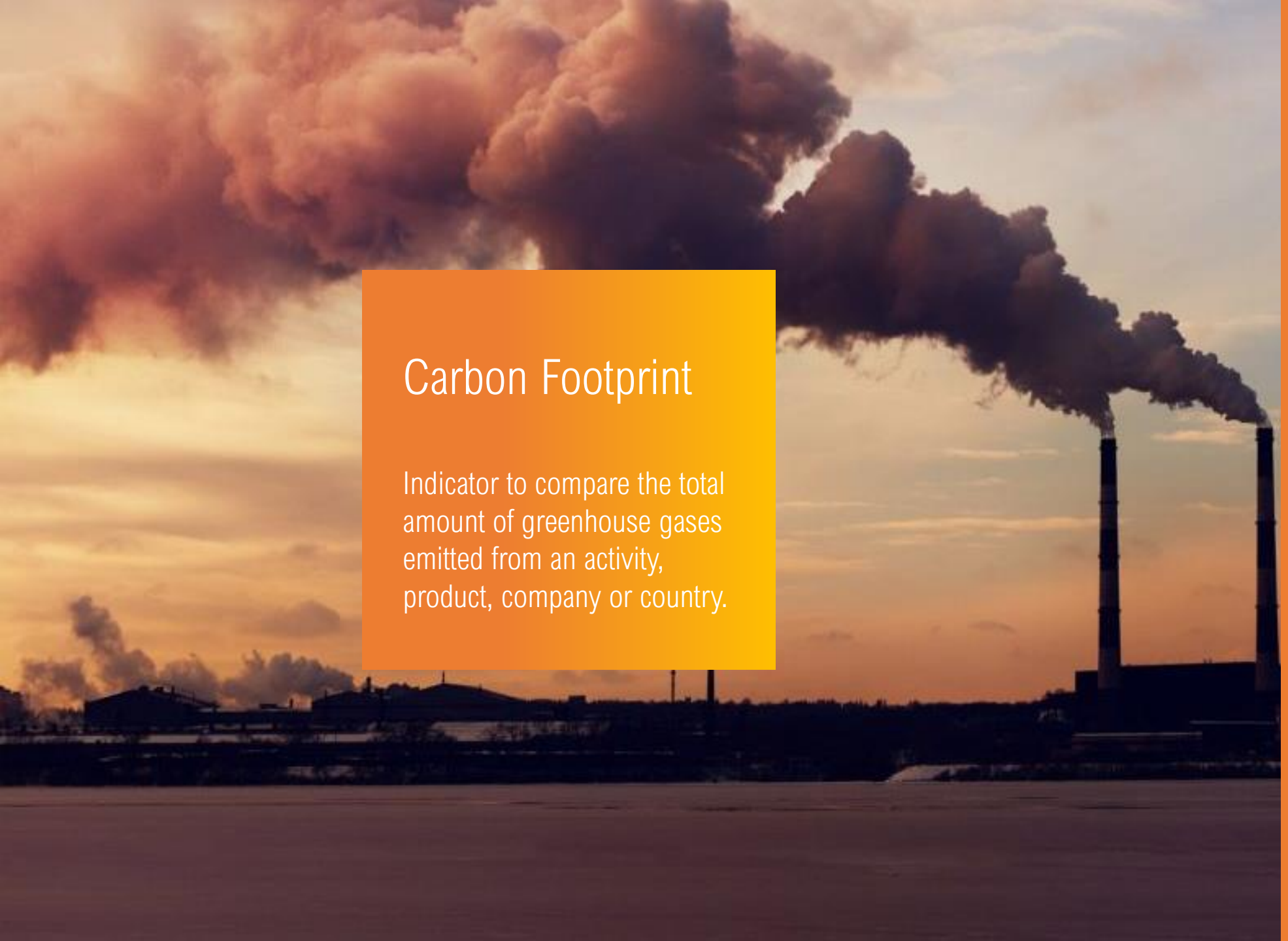
Lee Yeet Chuan

CEO, Proton Global Services

Mr. Lee Yeet Chuan is a mechanical engineer by profession and has a passion for championing energy efficiency and renewables energy initiatives in the automotive industry.

He graduated with an MBA in Finance from Graduate School of Management, UPM and had implemented various energy initiatives such as the 12MWp Solar PV project in PROTON Tanjong Malim, 400RT magnetic chiller in PROTON Shah Alam HQ, various LED re-lamping projects, and introduced the Energy Management System (EnMS) into automotive production plant in PROTON Shah Alam and PROTON Tanjong Malim.

Mr. Lee is also a Registered Electrical Energy Manager (REEM) and Certified Professional in Measurement and Verification (CPMV) as well as trained by UNIDO as Energy Management Expert. His ambition is to spearhead PROTON's decarbonization initiatives and create a bigger impact to the automotive supply chain in Malaysia.



Carbon Footprint

Indicator to compare the total amount of greenhouse gases emitted from an activity, product, company or country.

01.

Greenhouse Gas Emissions

GHG
by type

65%
from fossil fuels and industrial processes

11%
from deforestation and degradation of soil

16%
from agricultural activities and waste management

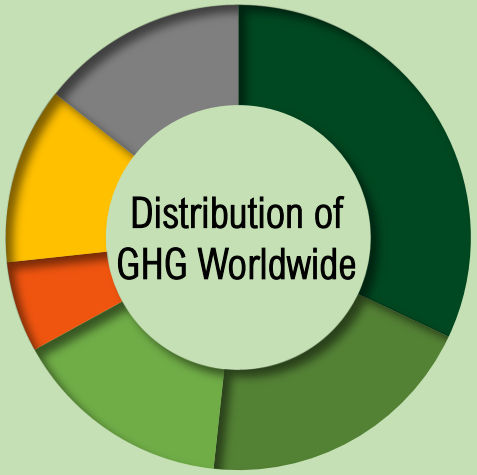
6%
from fertilizer use

16%
from industrial processes and refrigeration

Source: https://www.c2es.org/content/international-emissions/#:~:text=by%20Sector%2C%202013Notes,72%20percent%20of%20all%20emissions.

Greenhouse Gas Emissions

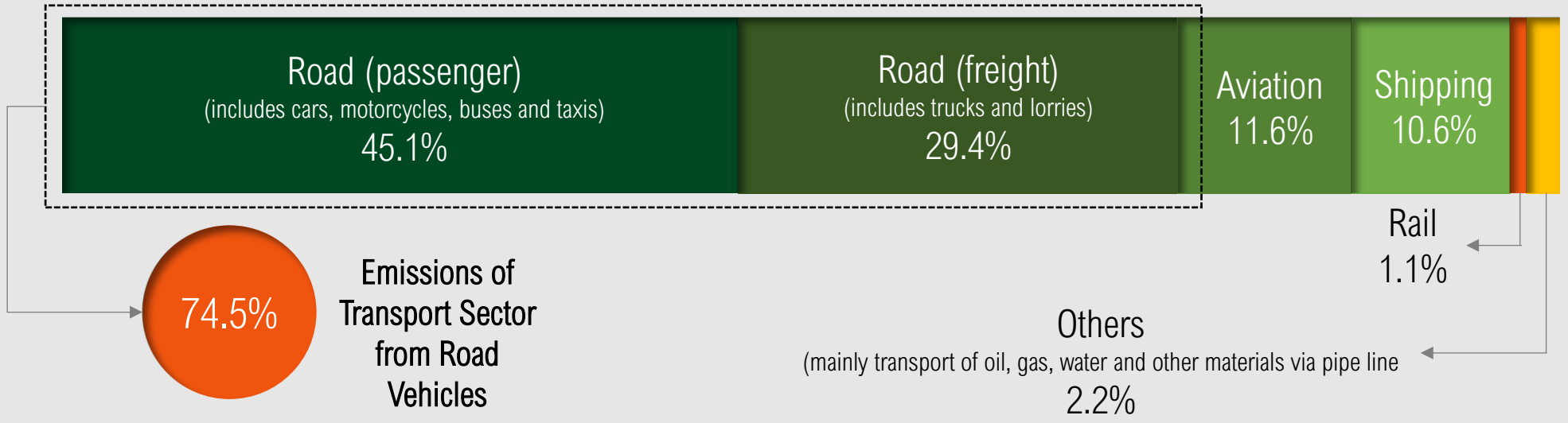
GHG by sector



- 32.0% Electricity and Heat Production
- 19.7% Industry
- 15.3% Transportation
- 6.3% Buildings
- 12.3% Agriculture, forestry & other Land Use
- 14.4% Other Energy

Global greenhouse gas emissions amounted to roughly **54.6 billion metric tons of carbon dioxide** equivalent ($GtCO_2e$)

Transport Sector

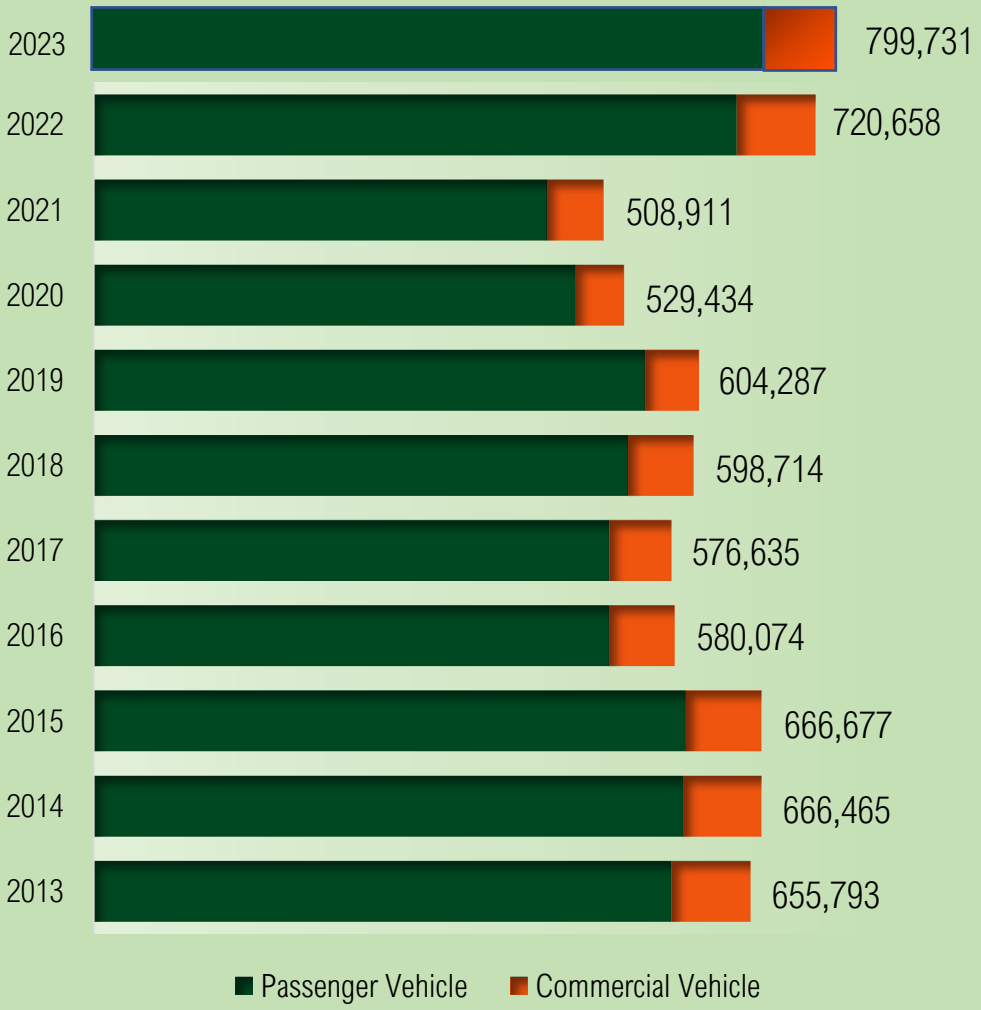


Source: https://www.frontiersin.org/journals/environmental-science/articles/10.3389/fenvs.2021.774164/full

Greenhouse Gas Emissions from Malaysia's Vehicles on the Road

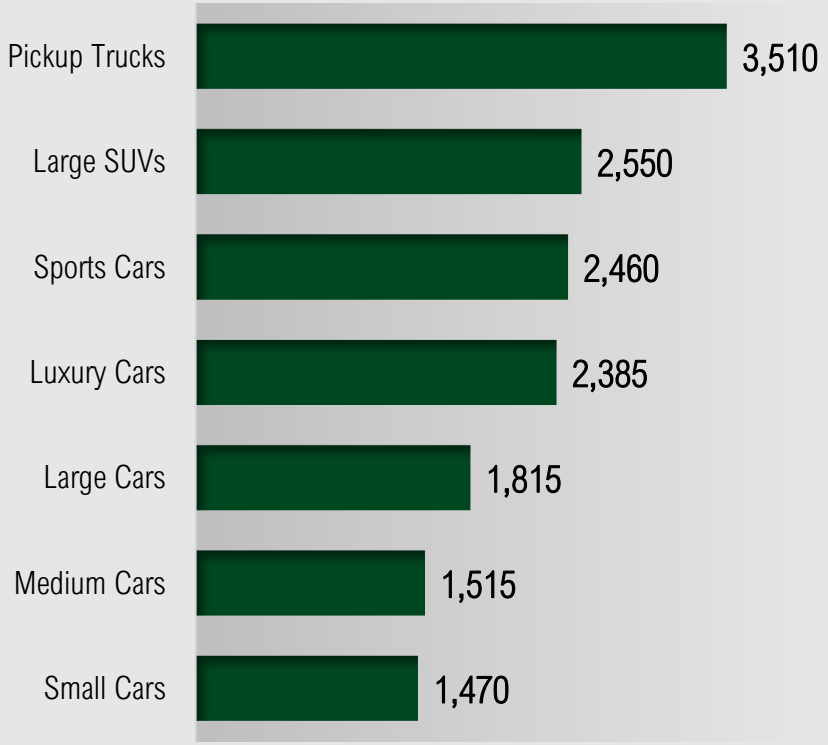
Transport Sector

Malaysia Total Industry Volume (TIV)



Car CO_2 Emissions

Global average emissions of passenger cars in 2022 in kg CO_2/year, by type

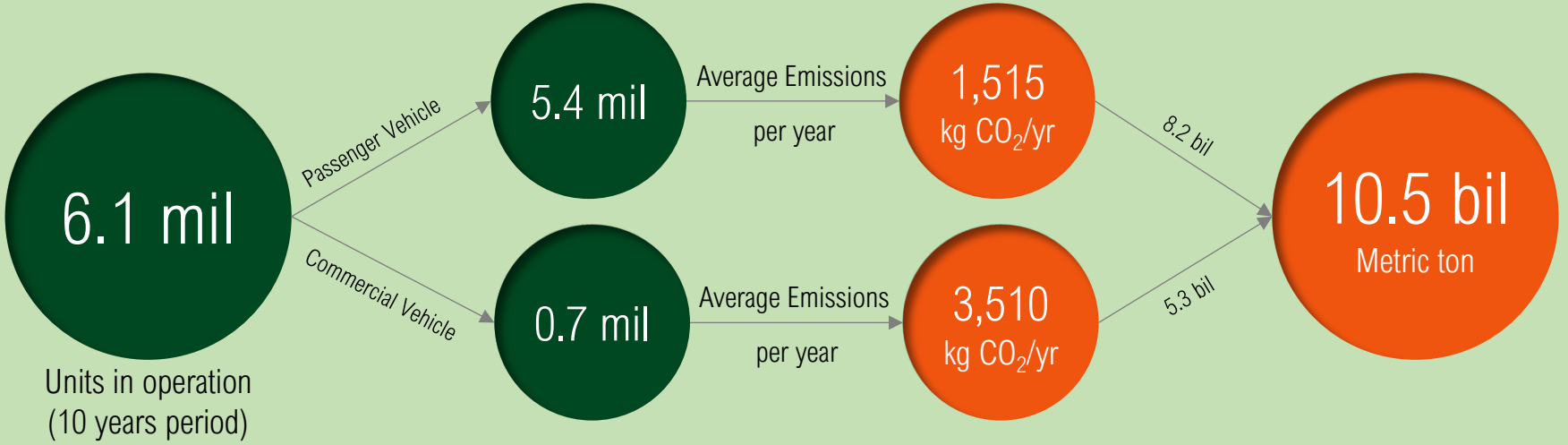


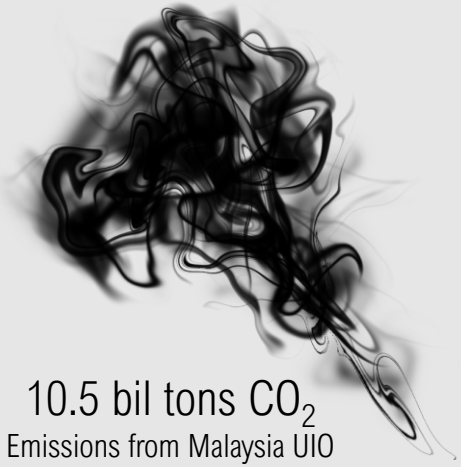
* Based on annual distance traveled of 15,000 km.

Source: https://www.maa.org.my/pdf/2023/Market_Review_2023.pdf

Greenhouse Gas Emissions from Malaysia's Vehicles on the Road

Emission From Malaysia UIO





10.5 bil tons CO_2
Emissions from Malaysia UIO

=

Equivalent to the Weight of
105,764
KL Tower

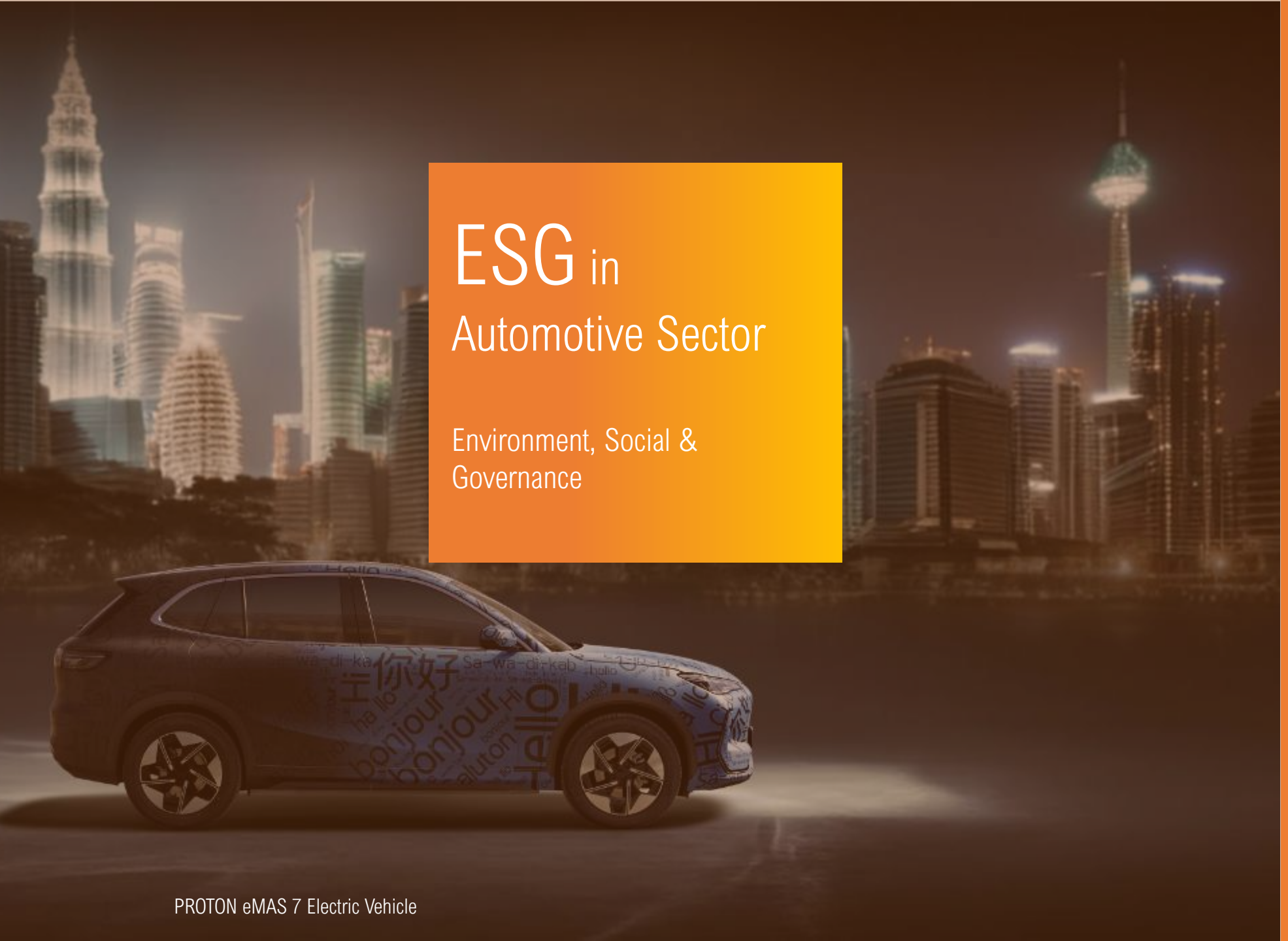
=

Equivalent to the Weight of 5,769,230 Smart #3

ESG in Automotive Sector

Environment, Social & Governance

02.



PROTON eMAS 7 Electric Vehicle

What is ESG?

ESG

ESG – Environment, Social & Governance

- **ESG is a specific set of metrics** with **key performance indicators (KPIs)** that are used to **assess and quantify** a company's exposure to a range of **environmental, social and governance risks**.

1. ESG has come down to **investment** and **reporting.**
2. Most **investment firms and banks** has made ESG **a top priority** within their daily business.
3. In their view, **ESG** is here to **STAY.**

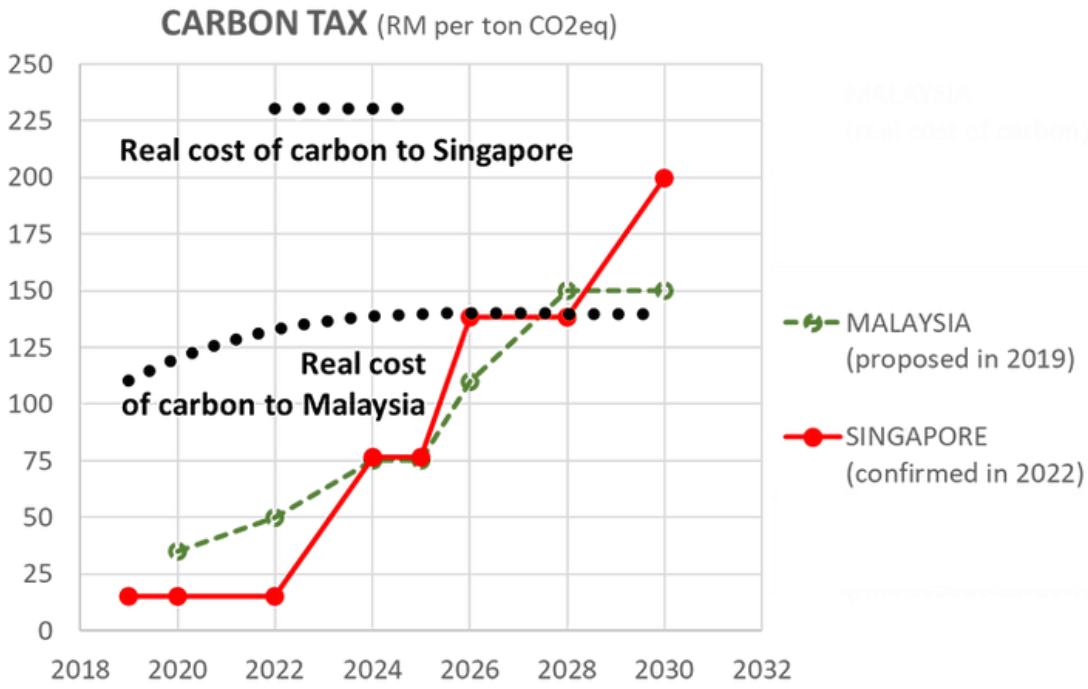
How will ESG Benefits the Automotive Industry

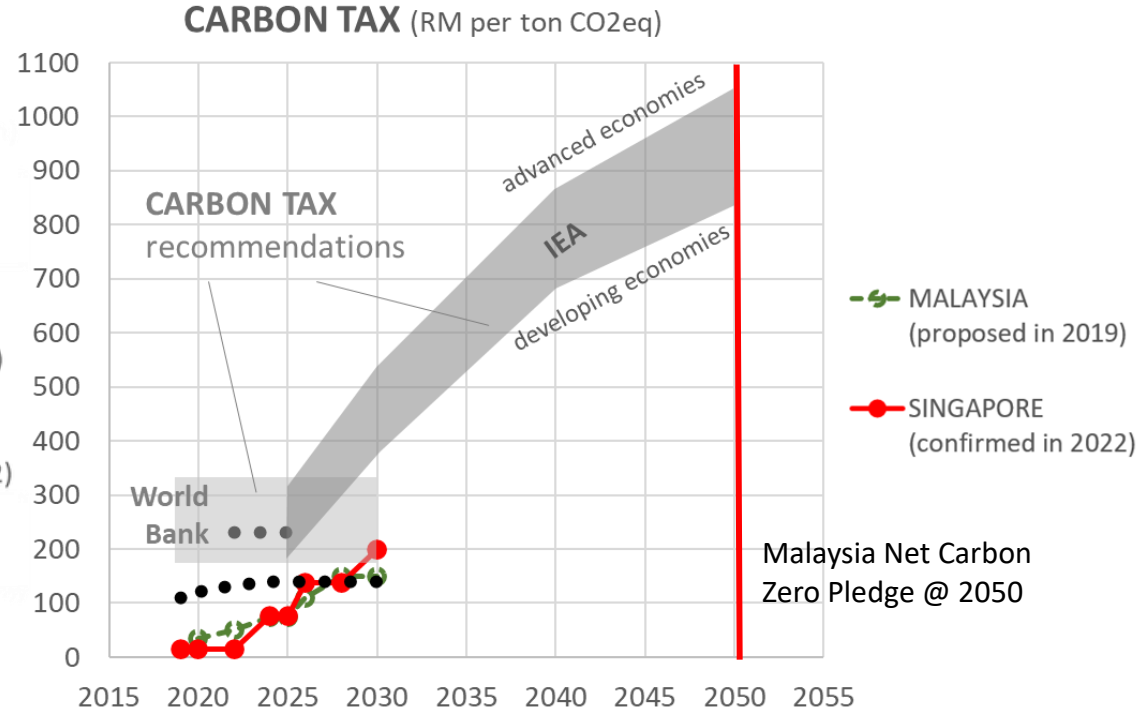
ESG Benefits

What is Carbon Tax?

ESG Carbon Tax

Carbon Tax or Carbon Pricing provides economic incentives for businesses to **reduce their carbon emissions** by **internalising the costs of GHG emissions**, which encourages investment in cleaner technologies, **energy efficiency (EE)** measures and **renewable energy (RE)** energy sources





Source: https://www.ien.com.my/post/carbon-tax-projections-for-malaysia

How do we practice ESG in Automotive Industry

ESG Practices

- Businesses that adopt ESG practices can **improve their performance**, **reduce risks** and **create positive impacts** for society and the environment.

How is your organization's business operation impacting the environment?

- Use of **energy (electricity, thermal)** and **water**
- Discharging water responsibly
- Reduce carbon emissions (Reporting to Implementation)

How are your current practices impacting the Society?

- Staff
- Community
- Labour Relations
- Diversify & Inclusion

How is your organization's management practices (Internal system of practices, controls and procedures) impacting the way you do business?

- Board diversity
- Executive Compensation
- Risk Management
- Transparency
- Compliance to regulations

Environment Initiatives

Real life production equipment upgrading / retrofitting to achieve Cost Reduction (CR) via energy efficient equipments

3MWp rooftop solar PV system at PROTON Tanjung Malim Plant

03.

Energy Pyramid

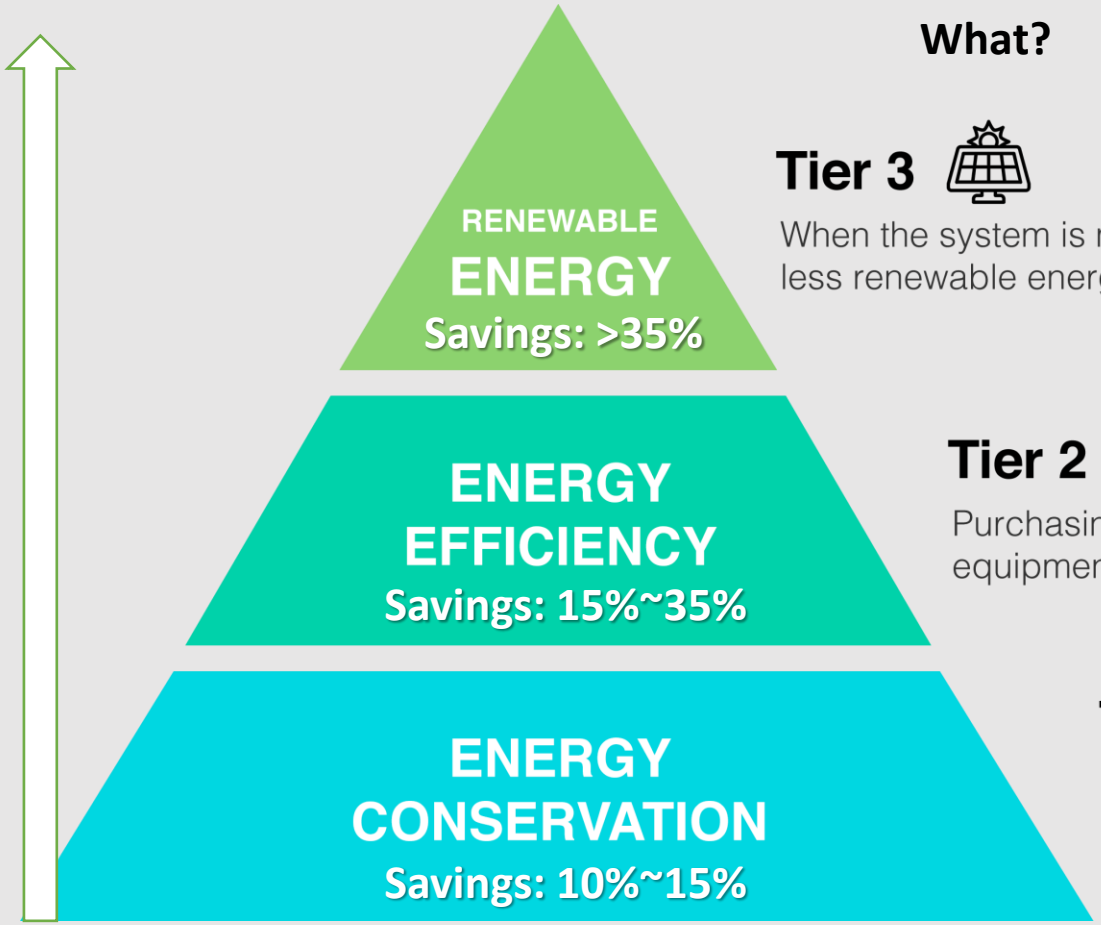
Energy Pyramid

- Businesses that adopt ESG practices can **improve their performance**, **reduce risks** and **create positive impacts** for society and the environment.

High Investment
> RM 3mil

Medium Investment
RM 100k ~RM 3mil

Low Investment
< RM 100k



What?

Tier 3

When the system is modified to use efficiency, less renewable energy is needed

Tier 2

Purchasing and installing efficient equipment and processes

Tier 1

Largely based on behavioural & operational practices.
Best return on investment.

How?

Install renewables energy (e.g Solar PV, mini wind turbine, mini hydro, etc)

Replace conventional lighting CFL to LED & energy efficiency appliances (5 star rating)

Awareness on green practices (i.e A/C setting 24◦C, switch light off, when no in use, window blinds instead of curtain)

Source: https://www.greenrevolutionltd.com/first-solar-steps/

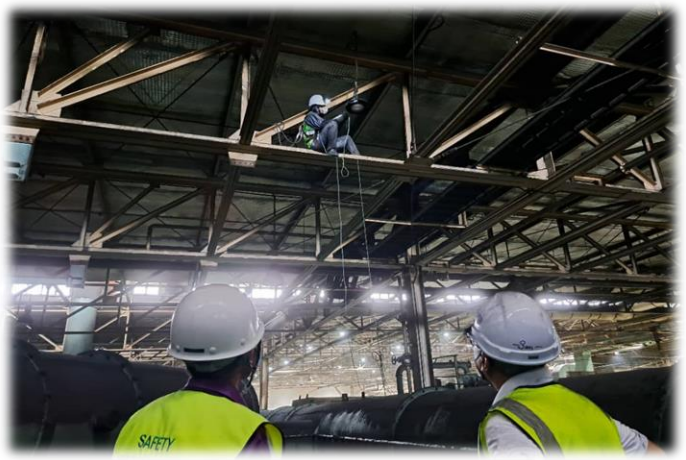
Energy Conservation Initiatives

EC Initiatives

The Goal of Energy Conservation is to Create Awareness and Motivate Change

Energy Efficiency Initiatives

EE Initiatives



Energy Efficiency Initiatives generated savings over RM 20mil for PROTON group

ENERGY SAVINGS (kWh/Year)	506,205 kWh (-18%)	ENERGY SAVINGS (kWh/Year)	1,005,164 kWh (-25%)	ENERGY SAVINGS (kWh/Year)	1,617,890 kWh (-35%)
COST SAVINGS (RM/Year)	RM 179,703 (-18%)	COST SAVINGS (RM/Year)	RM 464,386 (-25%)	COST SAVINGS (RM/Year)	RM 744,229 (-35%)

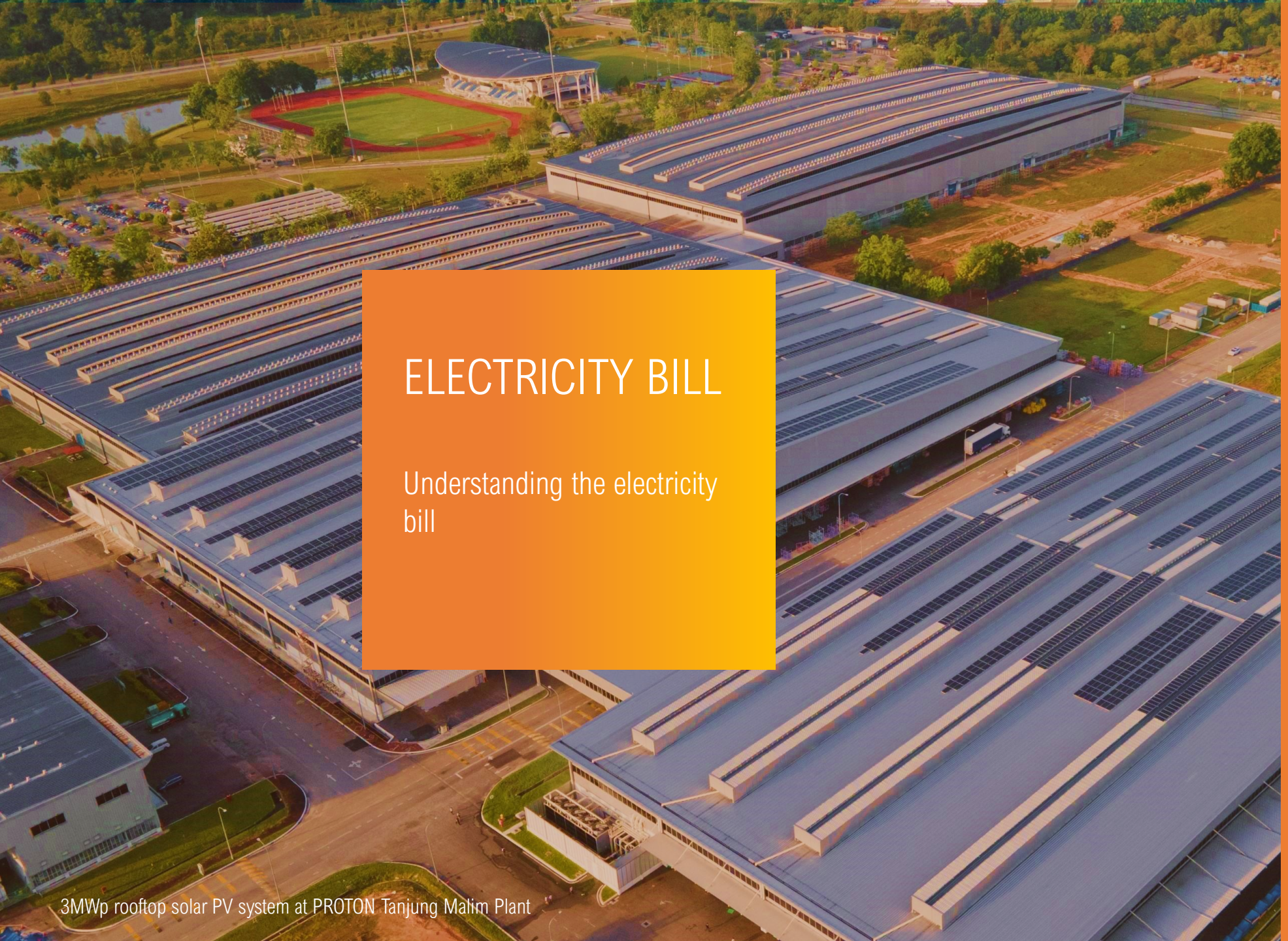
Renewables Energy Initiatives -12MWp Solar PV Farm

RE Initiatives

Renewables Energy Initiatives –Rooftop Solar at PROTON Dealers

RE Initiatives

SUSTAINABLE ENERGY FOR SUSTAINABLE FUTURE



3MWp rooftop solar PV system at PROTON Tanjung Malim Plant

ELECTRICITY BILL

Understanding the electricity bill

04.

ELECTRICITY CHARGES BREAKDOWN

- 4 main charges (Peak & Off Peak Consumption in kWh, Maximum Demand (kW), ICPT – Imbalance Cost Pass Through and KWTBB 1.6%)

Penerangan	Penggunaan	Kadar (RM)	Amaun (RM)
Puncak (kWh)	218,961.00	0.3550	77,731.16
Luar Puncak (kWh)	141,144.00	0.2190	30,910.54
Kehendak Maksima (kW)	827.00	37.0000	30,599.00
Jumlah			**139,240.70**

	Keterangan		Tanpa ST	Dengan ST	Jumlah
1.	Jumlah Penggunaan Anda (360,105 kWh)	RM	108,641.70	0.00	108,641.70
2.	Kehendak Maksima	RM	30,599.00	0.00	30,599.00
3.	ICPT (RM0.17/kWh)	RM	61,217.85	0.00	61,217.85
	Caj Penggunaan Bulan Semasa	RM	200,458.55	0.00	200,458.55
4.	Kumpulan Wang Tenaga Boleh Baharu (1.6%)	RM			2,227.85
	Surcaj Lewat Bayar	RM			1,526.84
	Caj Semasa	**RM**			**204,213.24**

Maklumat Meter

No. Meter	Bacaan Meter		Penggunaan	Unit
	Dahulu	Semasa		
M 918702115	0	218,961	218,961	kWh P
M 918702115	0	141,144	141,144	kWh O
M 918702115	0	827	827	kW P
M 918702115	0	741	741	kW O
M 918702115	0	116,610	116,610	kVARh

Maximum Demand (MD)
= 827kW MD x RM37/kW

ICPT
= (Puncak + Luar Puncak) x RM0.17/kWh

KWTBB (1.6%)
= Total Bill x 1.6%

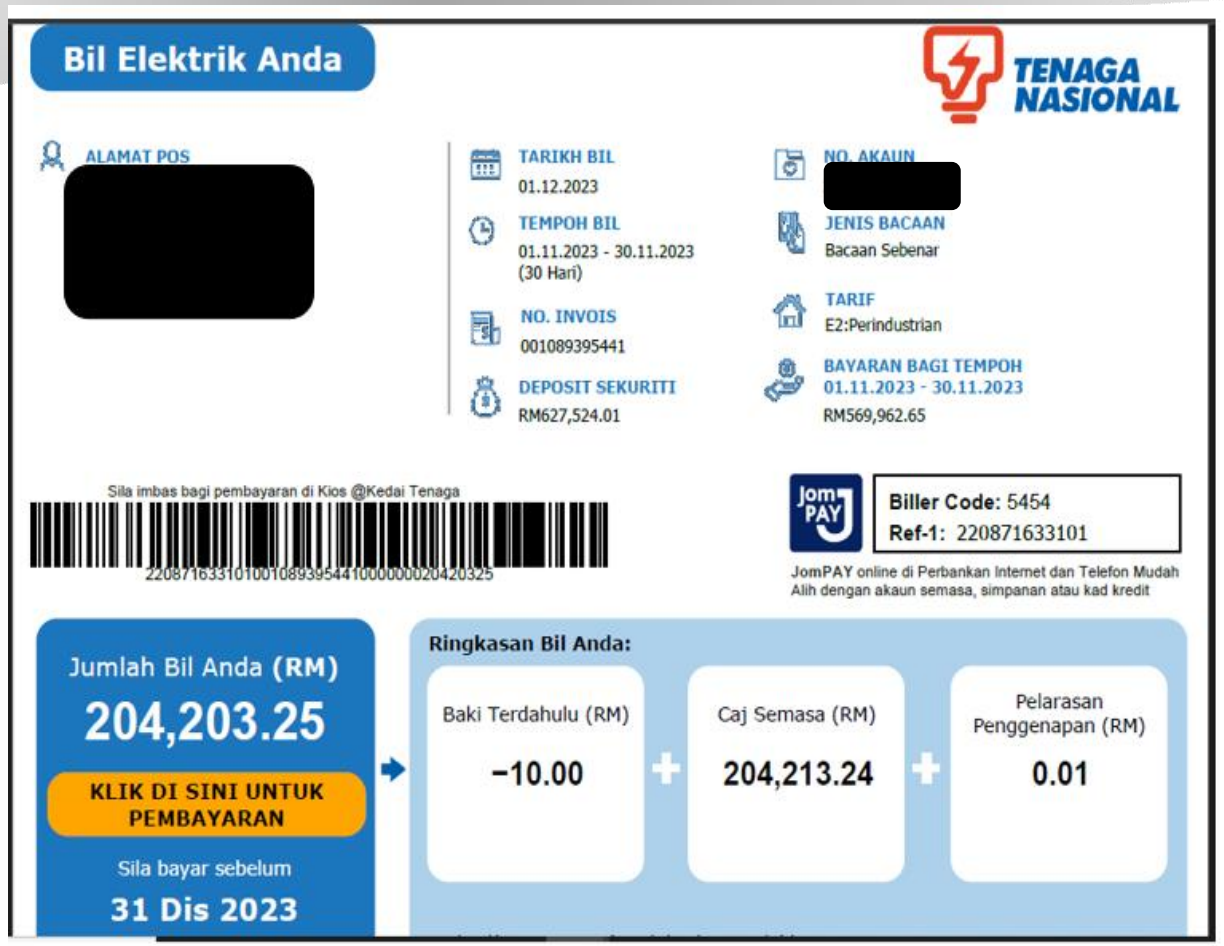
SOLAR PV (Photovoltaic)

Industrial
Commercial
Residential

05.

9MWp solar carpark PV system at PROTON Tanjung Malim Plant

Industrial – PROTON VENDOR



- **1080kWp system / 1847panels**
- 8 String Inverters
- **116,670 kWh** generated per month on average
- Before installing Solar PV, average monthly bill of **RM 200,000.**
- After installed Solar PV, **achieved 18% savings** of **RM 36,854**

Commercial – PROTON DEALER

[redacted]

[redacted]

Tempoh Bil : 01.02.2023 - 28.02.2023 (28 Hari)

Anda Guna

Blok (kWh)	Penggunaan (kWh)	Kadar (RM)	Amaun (RM)
200	200.00	0.43500	87.00
>200	6,483.00	0.50900	3,299.85
Jumlah	**6,683.00**		**3,386.85**

Lebihan Tenaga yang Dijana Anda

Blok (kWh)	Penjanaan (kWh)	Kadar (RM)	Jumlah (RM)
Energy Rate <= MAQ	1,705	0.2432	-414.66
Energy Rate > MAQ	0	0.0000	0.00
Jumlah	**1,705**		**-414.66**

Keterangan		Tanpa ST	Dengan ST	Jumlah
Jumlah Penggunaan Anda (6,683 kWh)	RM	3,386.85	0.00	3,386.85
ICPT (RM0.037/kWh)	RM	247.27	0.00	247.27
Caj Penggunaan Bulan Semasa	RM	3,634.12	0.00	3,634.12
Kumpulan Wang Tenaga Boleh Baharu (1.6%)	RM			54.19
Lebihan Tenaga yang Dijana	RM	-414.66		-414.66
Nett Offset	RM			0.00
Caj Semasa	**RM**			3,273.65

- **96kWp system / 192 panels**
- 48 micro-inverters
- **12,897 kWh** generated per month on average
- Before installing Solar PV, average monthly bill of **RM 8,440**
- After installed Solar PV, achieved **61% savings of RM 5,167** with monthly bill of **RM 3,273**

Residential – Proton Staff

System details

Program: NEM 3.0
Ownership: Outright
Capacity: 15.30 kWp
Number of panels: 28

Aug 2024 Bill

Bil Terperinci Anda

NO. AKAUN
210200507100

NO. SIJIL NEM
RYT202309970

ALAMAT PREMIS
[redacted]

MAKLUMAT BAYARAN AKHIR
Amaun : RM89.00
Tarikh : 03.08.2024

Tempoh

Anda Guna

1 - 200kWh	201 - 300kWh	301 - 600kWh	601 - 900kWh
200kWh x RM0.21800 RM43.60	100kWh x RM0.33400 RM33.40	300kWh x RM0.51600 RM154.80	300kWh x RM0.54(RM163.80

Lebihan Tenaga yang Dijana Anda

Blok (kWh)	Penjanaan (kWh)	Kadar (RM)	Jumlah (RM)
200	0	0.2180	0.00
100	0	0.3340	0.00
300	239	0.5160	123.32
300	300	0.5460	163.80
>900	469	0.5710	267.80
Jumlah	1,008		554.92

Keterangan		Tanpa ST	Dengan ST	Jumlah
Jumlah Penggunaan Anda (1,369 kWh)	RM	231.80	431.60	663.40
ICPT (RM0.00/kWh)	RM	0.00	0.00	0.00
Caj Penggunaan Bulan Semasa	RM	231.80	431.60	663.40
Service Tax (8%)	RM			34.53
Kumpulan Wang Tenaga Boleh Baharu (1.6%)	RM			10.61
Lebihan Tenaga yang Dijana	RM	-554.92		-554.92
Nett Offset	RM			0.00
Caj Semasa	RM			153.62

Cukai Perkhidmatan 8% dikenakan kepada pelanggan kediaman (Tarif A) bagi penggunaan melebihi 600 kWh untuk tempoh bil 28 hari dan ke atas

- **15.3 kWp system / 28panels**
- 7 Micro Inverters
- **1008 kWh** generated per month on average
- Before installing Solar PV, average monthly bill of **RM 663.**
- After installed Solar PV, **achieved 77%** savings of RM554 per month.
- The TNB monthly bill is only **RM 153**

Battery Energy Storage System BESS

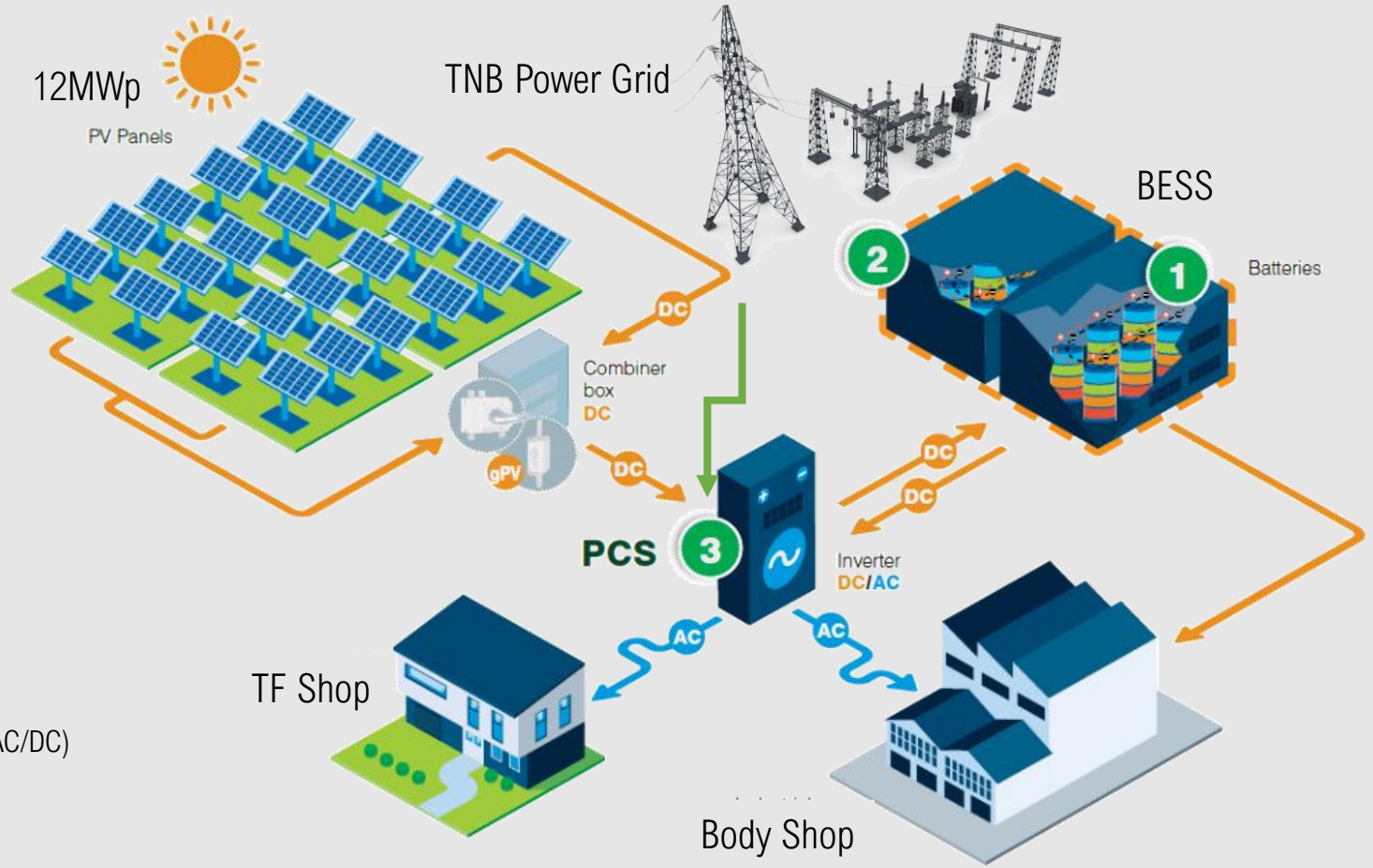
Industrial Application

06.

Battery Energy Storage System (BESS)

BESS

- BESS known as big power bank is used to charge at night and discharge during daytime (peak demand 8am - 10pm).
- They are rechargeable batteries that can store energy from different sources and discharge it when needed.



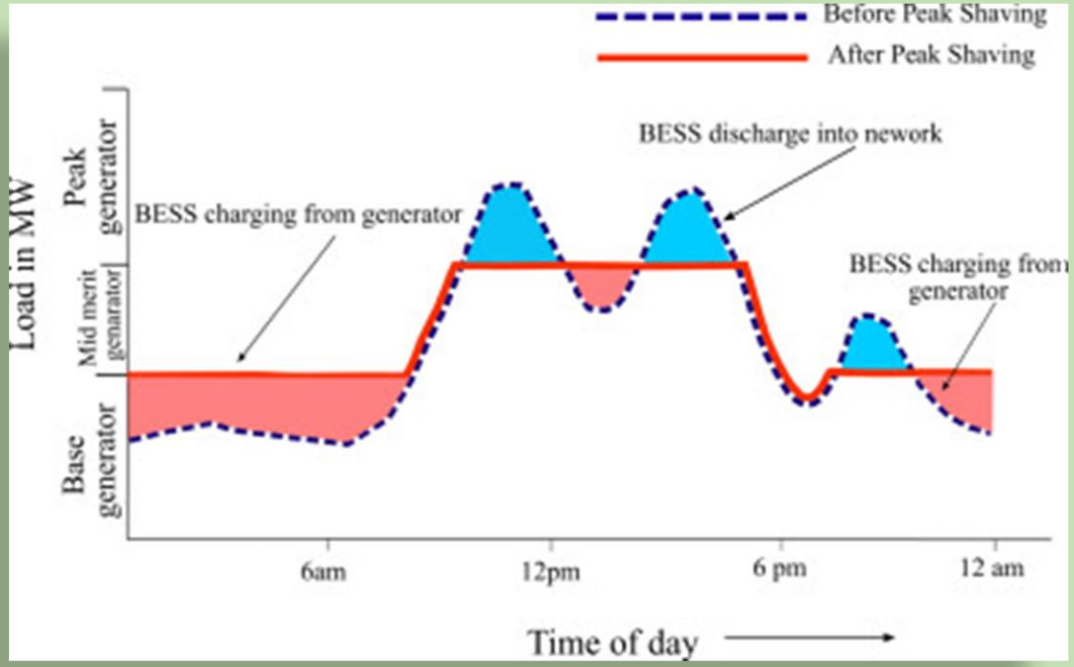
NOTE:

1. Battery Energy Storage System
2. Battery Energy Storage System
3. PCS – Power Converter System (bidirectional inverter – DC/AC, AC/DC)

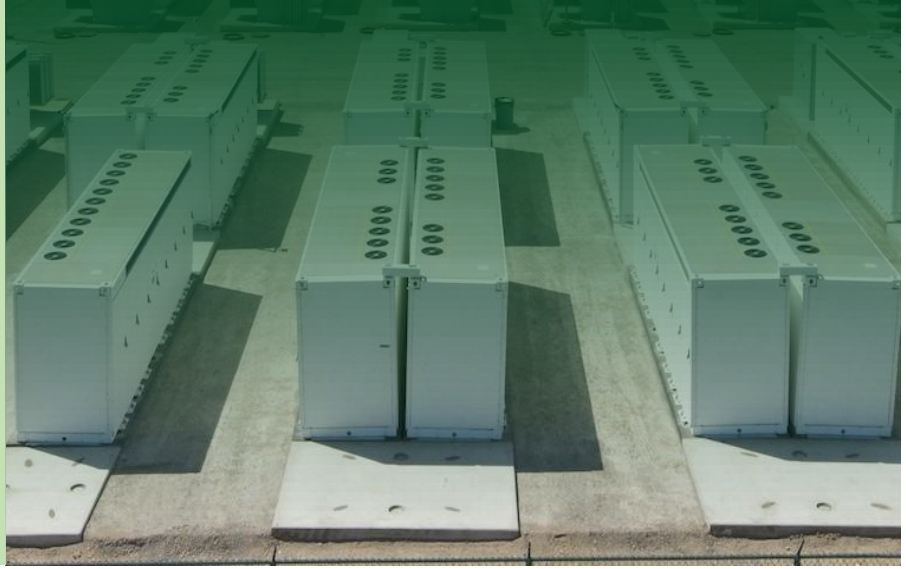
PTMSB 4MWh BESS System Project

BESS

Peak-shaving eliminate short-term demand spikes and reduces the overall MD charges.



Item	Details
Investment	RM 6.45 mil
Savings	MD Savings -RM 888k/year Energy Arbitrage – RM 100k/year
Total Savings	~RM 1mil / year
ROI / Payback	6.45 years
Battery Type	Lithium-Ion Phosphate (LFP)
Battery Life	6,000 cycles / 16 years




THANK YOU
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