



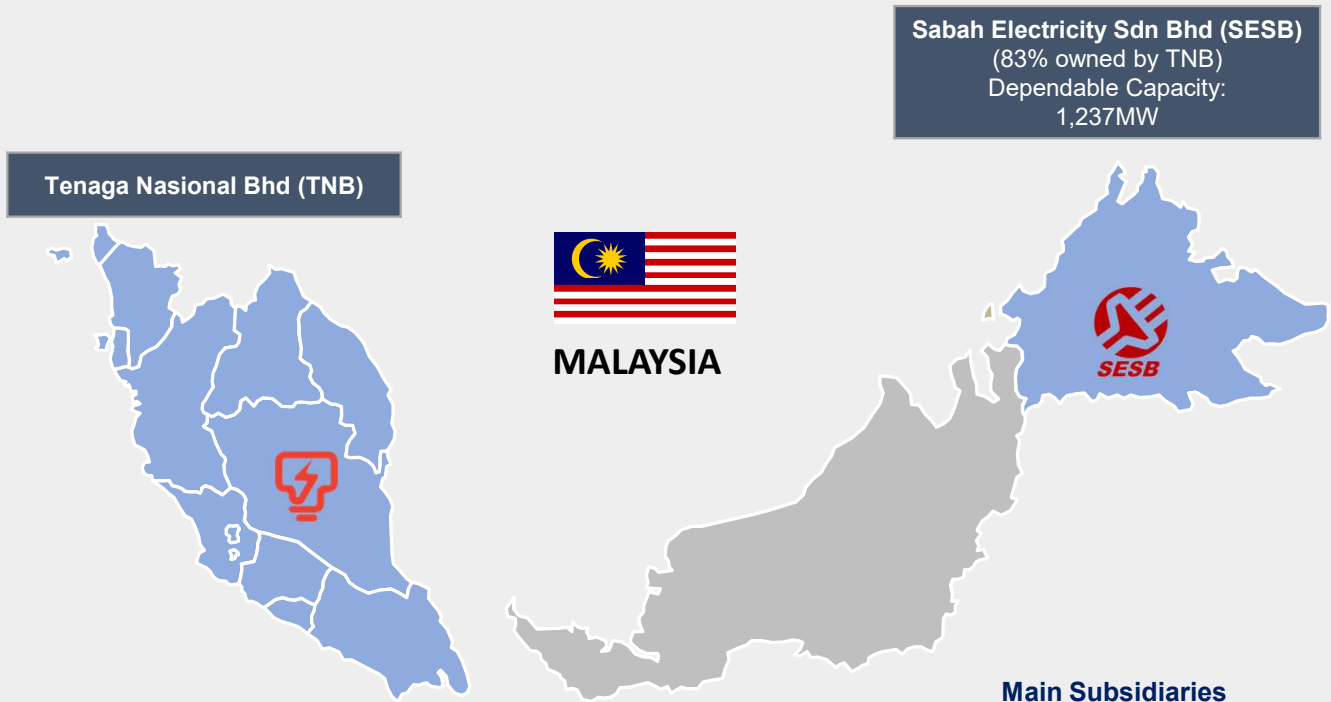
TENAGA NASIONAL BERHAD PRESENTATION TO INVESTORS



Investor Relations
Group Finance Division
As of December 2022






TNB is the largest electricity utility company in Malaysia and a trailblazer in the country's energy transition



Sole Network & Retail Provider in Peninsular Malaysia

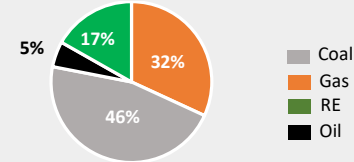
Our grid network & retail business are governed by the Incentive Based Regulation (IBR) framework

-  Transmission length: 25,186 km
Substations: 472
System Minutes: 0.09
-  Distribution Network: 723,134 km
Substations: 86,468
SAIDI : 42.25 minutes
-  Retail customers: 9.7 mil
Customer Satisfaction Index (CSI): 8.7

Holds 64% of Domestic Generation Capacity

Total TNB Installed Capacity: 23,184MW (Dec 2022)

- Domestic: 18,085 MW
- International: 5,099 MW



Notes:
 1. RE inclusive of large hydro and small RE
 2. Data is based on gross installed capacity (exclude SESB)

Our International Presence



Main Subsidiaries





We are also a global player; through our New Energy Division (NED), we strive to future proof our business by expanding our RE footprint and establishing strategic partnerships with leading RE players

NED'S PORTFOLIO

2021 VANTAGE RE

- **Equity stake:** 100%
- **Capacity:**
 - 123.9MW in onshore wind (100% equity)
 - 365.0MW in solar (55% equity)
 - 41.5MW in offshore wind (49% equity)

2018 TNB RENEWABLES

- **Equity stake:** 100%
- **Capacity:**
 - 123.0MW Large Scale Solar (LSS) parks (100% equity)
 - 3.2MW in biogas (49% equity)

2016 GAMA ENERJI A.Ş.

- **Equity stake:** 30%
- **Capacity:**
 - 1,134.1MW in gas, hydro and wind.
 - Water conveyance in Jordan

2005 SEPCO SWEC

- **Equity stake:** 6% effective equity stake
- **Capacity:**
 - 1,190.0MW in IWPP
 - Water desalination of 1,039,000 m³/day

2016 GAR

- **Equity stake:** 30%
- **Capacity:**
 - 2,244.0MW in coal, gas, solar and hydro





CHAIRMAN
DATO' ABDUL RAZAK ABDUL MAJID



EXECUTIVE DIRECTOR/CEO
DATO' INDERA IR. BAHARIN BIN DIN

**Senior Independent
Non-Executive Directors**



ONG AI LIN
Expertise: Audit &
Finance

Independent Non-Executive Directors



**GOPALA KRISHNAN
K.SUNDARAM**
Expertise: Law



**DATUK
RAWISANDRAN A/L
NARAYANAN**
Expertise: Business



**JUNIWATI
RAHMAT HUSSIN**
Expertise: Corporate
Planning and Human
Resource



**DATO' MERINA BINTI
ABU TAHIR**
Expertise: Accounting



**DATO' ROSLINA BINTI
ZAINAL**
Expertise: Engineering
& Business

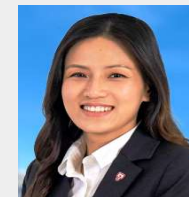
Non-Independent Non-Executive Directors



**DATUK AMRAN HAFIZ
BIN AFFUDIN**
Khazanah Nasional
Berhad



**PUAN ROHAYA BINTI
MOHAMMAD YUSOF**
Employees Provident
Fund (EPF)



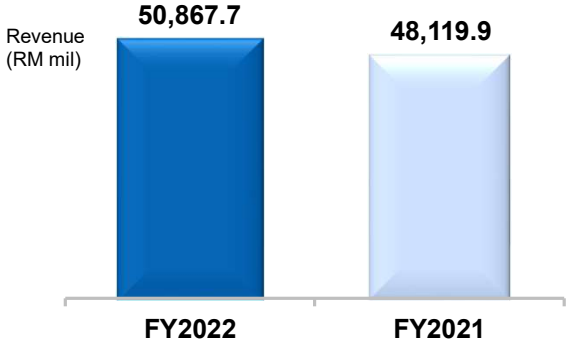
ELAINE ONG YEE LYNN
Alternate Director to Datuk Amran
Khazanah Nasional Berhad



Strong FY2022 financial performance (EBITDA) supported by higher Peninsular electricity demand at 6.0% year-on-year

REVENUE

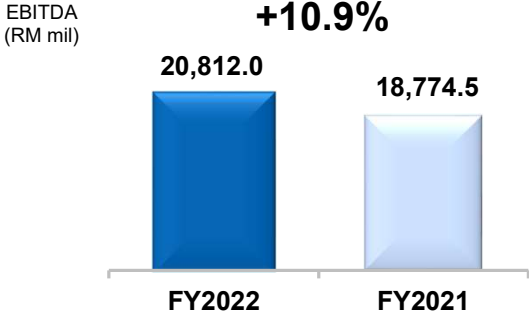
+5.7%



- Improved Y-o-Y electricity demand (+5.2% year-on-year), mainly in industrial and commercial sector.
- Peninsular Malaysia electricity demand grew by 6.0% year-on-year.

EBITDA

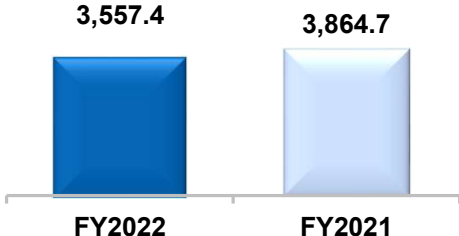
EBITDA margin **40.9%** **39.0%**



- Driven by higher Group electricity revenue and lower Allowance for Doubtful Debts, contributed by the improvement in collections (ADD FY2022: RM126.9 mil, FY2021: RM714.5 mil).
- EBITDA margin has improved to 40.9% from 39.0% as compared to the same period last year.

PAT

PAT (RM mil) **(8.0%)**



- PAT impacted by higher taxes due to deferred tax movement of RM520.7 mil and Prosperity Tax of RM340.8 mil.



Group earnings supported by; (i) Improved generation business (ii) World-class network performance



Equivalent Plant Availability Factor, EAF
(Generation)
%

Year	Achievement	Target
2021	83.0%	86.1%
2022	83.2%	82.8%

2023 Target: 81.8%



EAF performance secured **generation assets' capacity revenue**



System Minutes
(Transmission)
Minutes

Year	Achievement	Internal threshold
2021	0.1	2.0
2022	0.2	2.0

2023 Internal Threshold: 2.0



World class network performance safeguarded our regulated business earnings



SAIDI
(Distribution Network)
Minutes

Year	Achievement	Internal threshold
2021	45.3	55.0
2022	45.1	55.0

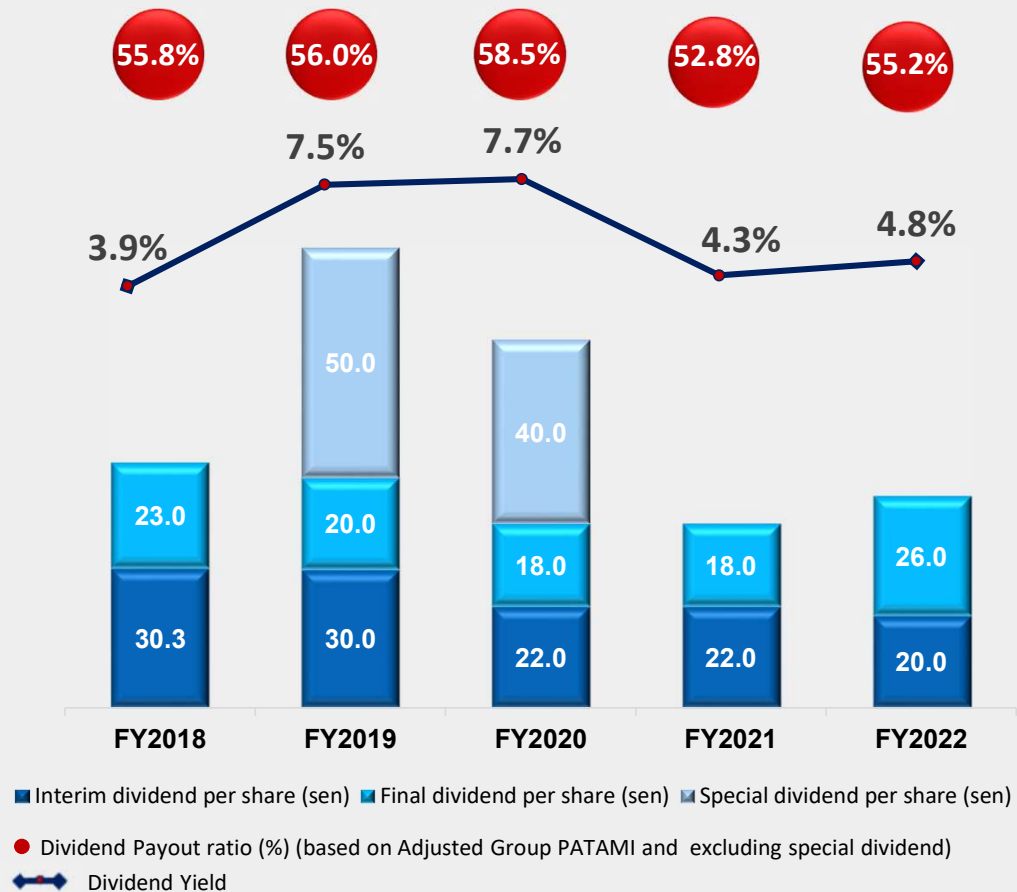
2023 Internal Threshold: 53.0



We strive for sustainable dividends to ensure long term value for the shareholders, proven by our historical dividend payout record

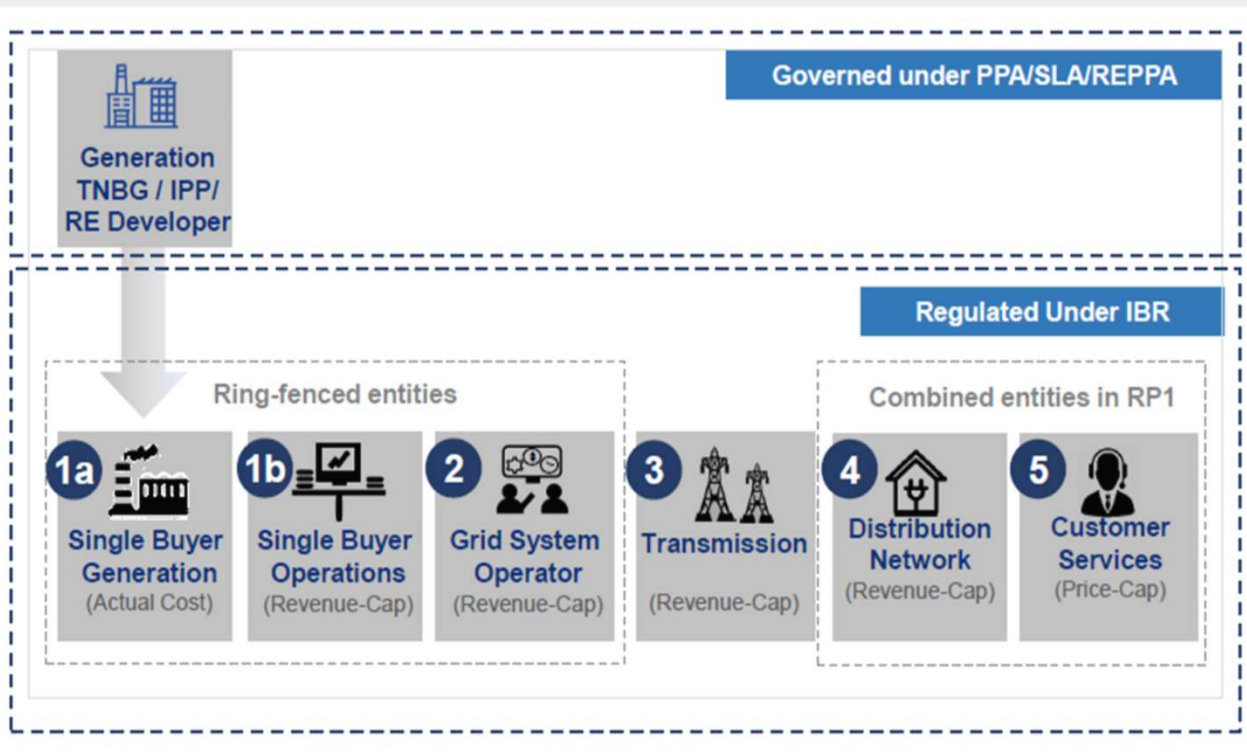
DIVIDEND POLICY

We will continue to honour our dividend policy of 30% to 60% dividend payout ratio, based on the reported Consolidated Net Profit Attributable to Shareholders After Minority Interest, excluding Extraordinary, Non-Recurring items





Our regulated business is governed by the Incentive-Based Regulation (IBR) framework which provides stable returns to the Group while ensuring a more efficient energy sector



The IBR mechanism provides:

- Clear and transparent regulatory framework
- Consistent and stable returns
- Shield against uncontrollable swings
- Incentives for operational efficiencies

- Regulated business made up more than 70% of the overall Group earnings.
- **Revenue cap:** Allowed annual revenue based on approved demand growth. Any excess/shortfall is adjusted through revenue adjustment mechanism.
- **Price cap:** Any excess/shortfall of revenue made due to higher/lower average selling price compared to base tariff is adjusted through revenue adjustment mechanism.



Regulatory > IBR Regulatory Period 3 (RP3) Parameters

The Government has approved the RP3 parameters and we have secured higher CAPEX with a fair WACC for the next 3 years (2022-2024)

RP3 determination (2022 -2024)



Base Tariff, sen/kWh

39.95
RP2: 39.45



WACC, %

7.3
RP2: 7.3



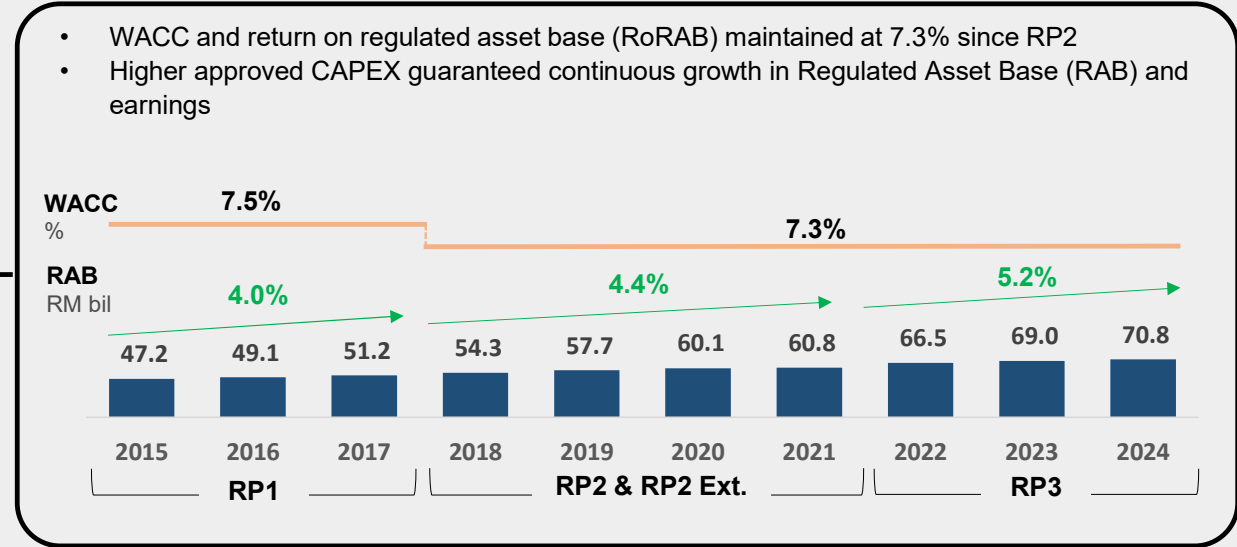
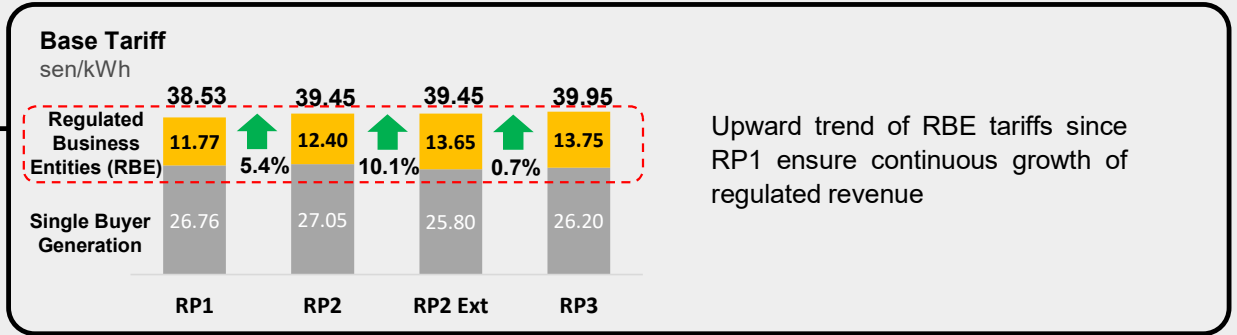
CAPEX, RM bil

20.555
RP2: 18.8



RAB, RM bil

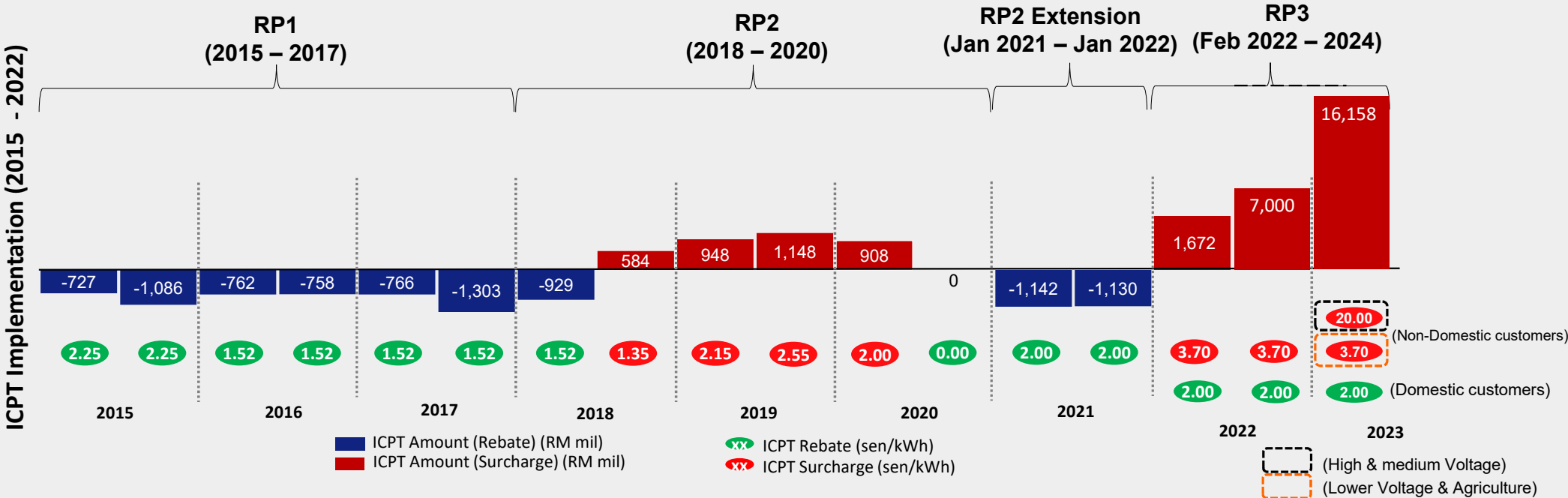
70.8
estimated closing 2024 RAB





Regulatory **ICPT Mechanism**

To date, the Government has successfully managed the impact of fuel prices volatility for the past 17 ICPT* cycles since 2015



Amidst the high global fuel price environment, TNB managed to recover the additional costs with government support:

<p>ICPT Cost Recovery</p> <p>Cost recovery from the Government of RM10.4 bil for 1HFY'23</p> <p><i>Received RM4.0 bil for January 2023 and balance to be paid in five equal instalments</i></p>	<p>Government Guarantee</p> <p><i>The Government has provided Government guarantee of RM6.0 billion to support TNB's working capital</i></p>
--	---

*Imbalance Cost Pass-Through



The Malaysian Government's commitment towards net zero at COP26; our Energy Transition Plan supports the nation's climate commitments



Malaysia Climate Commitments

- ❑ Committed to **45% reduction of GHGs by 2030**
- ❑ Committed to become **carbon neutral as early as 2050**
- ❑ Established the **Joint Committee on Climate Change** to build climate resilience within Malaysian financial sector
- ❑ Established a mandate to develop a **voluntary carbon market to promote offsetting**



Key focus areas to facilitate the transition to carbon neutrality

Encourage low-carbon economy transition

- Implement carbon pricing policy
- Implement the Low Carbon Mobility Blueprint 2021-2030 which outlines low-carbon alternatives
- Increase renewable energy generation capacity to 31% in 2025 and 40% in 2035
- Transform cities toward low-carbon pathway outlined in the National Low Carbon Cities Masterplan

Protect the environment and biodiversity

- Implement nature-based solutions to lower GHG with planting up to 100 million trees
- Maintain at least 50% forest cover
- Adopt Zero Waste through the Waste to Energy programme and improve recycling rate to 40% by 2025

Climate change adaption

- National resilience to climate change through the National Adaptation Plan

TNB's Energy Transition Plan Net Zero & Coal Free by 2050



We are committed to our Energy Transition Plan – The journey towards Net Zero 2050 Aspiration will bring positive business growth and enhance value to our shareholders

Achieving these key deliverables is a testament of our commitment in realising our Energy Transition Plan:

- Nenggiri Hydro Project of 300MW
- Sungai Perak Life Extension Programme (LEP) of 650.75MW
- Paka Repowering of 1,400MW
- New Combined Cycle Power Plant Kapar of 2,100MW
- Acquired solar farms in the United Kingdom (UK) of 102MW and option to develop 65MW co-located Battery Energy Storage Systems
- Acquired 97.3MW Onshore Wind Portfolio in the UK
- Commencement of LSS4 project, TNB Bukit Selambau 2 of 50MW
- Regional Interconnection and Smart Grid
- Electron Charging Points

Our Target for 2025

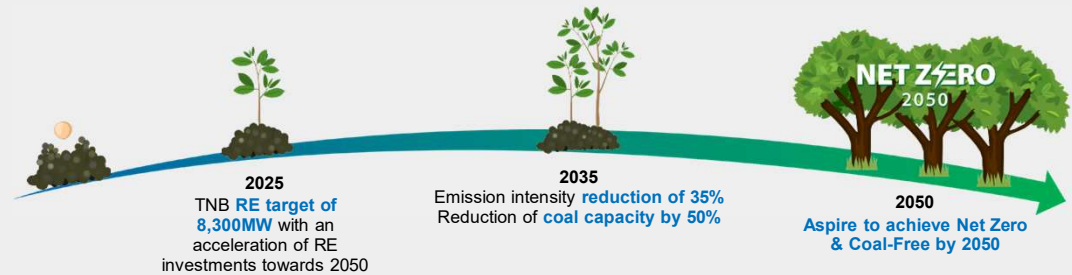
- Build scale in renewable generation
- Improve thermal plant efficiency

Our Commitment to 2035

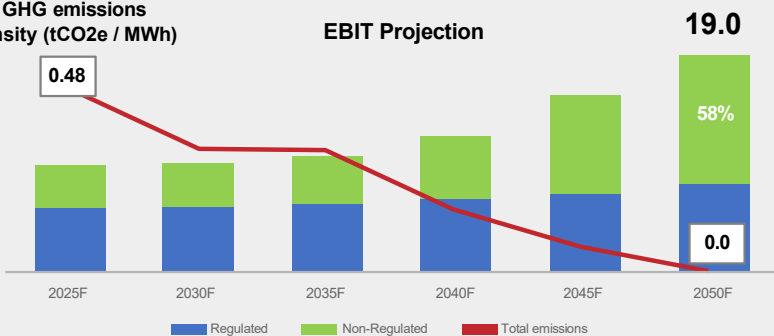
- Significant renewable generation growth
- 50% reduction in coal generation capacity

Our Aspiration to 2050

- Invest and grow our emerging green technologies including Hydrogen and Carbon Capture & Utilization (CCU)



TNB GHG emissions intensity (tCO₂e / MWh)



EBIT Projection

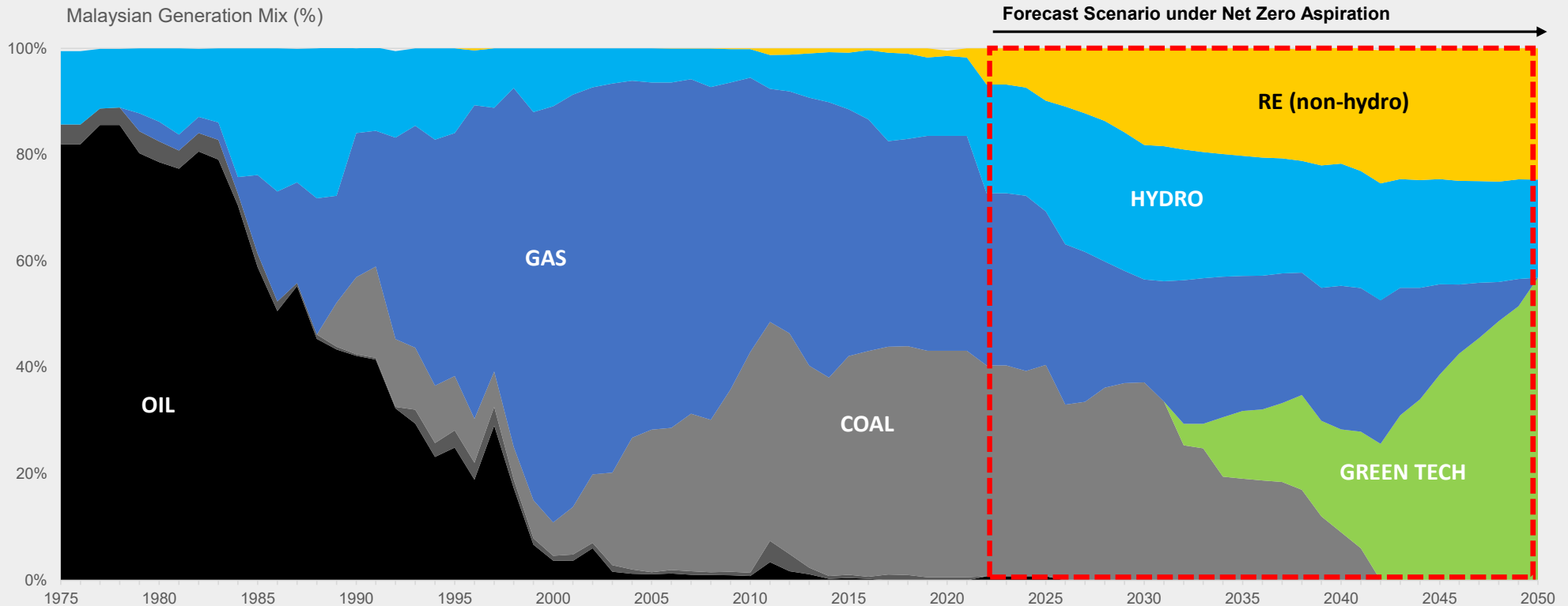
Projected EBIT (RM bil)

Future Generation Sources & New Green Business
Grid of The Future

We believe our pathway will bring positive business growth to the Group while **creating long-term value to our shareholders** through earnings growth.
















The nation's current generation mix reflects the diversification required for security of supply, and will continue to shift as we take a responsible approach towards energy transition






- Historically, Malaysia's generation mix was dominated by the use of oil as we transitioned into gas and then coal
- Moving forward, RE will grow significantly as costs rapidly decline**
- Green Tech (Green Hydrogen, Gas + CCUS) will be a key lever in decarbonisation**



A look back at year 2022, we saw encouraging and exciting accomplishments as we intensified our strategic initiatives across our businesses

 GenCo	 NED	 Grid	 Electric Vehicle (EV)
<p>2022 Key Achievements</p> <p>Awarded 950MW RE assets consist of:</p> <ul style="list-style-type: none"> Sungai Perak Life Extension Programme (LEP) Project (650MW) Nenggiri Hydro Project (300MW) <p>Commenced work on 3,600MW consist of:</p> <ul style="list-style-type: none"> Paka Repowering (1,400MW) New Combined Cycle Power Plant (CCGT), Kapar (2,100MW) Electricity Export to Singapore (100MW) 	<p>2022 Key Achievements</p> <p>Successfully grow RE assets & refinance UK portfolio:</p> <ul style="list-style-type: none">  Onshore Wind Portfolio 97.3MW  TNB Bukit Selambau 2 (LSS4) 50MW  £275 mil refinancing of solar portfolio 365MW 	<p>2022 Key Achievements</p> <ul style="list-style-type: none"> Completed the upgrading of the electricity interconnector for Malaysia and Singapore. Accelerated efforts towards an Interconnected ASEAN Power Grid in support of the region's collective goal of reaching Net Zero. Achieved Smart Grid Index (SGI) of 71.4%, improvement from 2021. 	<p>2022 Key Achievements</p> <ul style="list-style-type: none"> Signed 6 MoUs with prominent partners in e-mobility to stimulate the growth of BEV ecosystem. MoU with Gamuda to build the nation's first solar-powered electron stations for EV at Gamuda Cove & Gamuda Gardens. <p>       </p>
<p>Q4 Highlights</p> <ul style="list-style-type: none"> Sungai Perak Life Extension Programme - Completed EPCC's Proposal Nenggiri Hydro Project – Started in Mar'22 (10.5% completion) New CCGT Kapar – conduct feasibility study with consultant 	<p>Q4 Highlights</p> <p>Vantage RE Ltd:</p> <ul style="list-style-type: none"> Successfully acquired 102MW of solar farms in the UK & potential development of 65MW for battery storage; and Completed a £72 mil refinance package for its UK Offshore Wind Investment. 	<p>Q4 Highlights</p> <ul style="list-style-type: none"> Smart meter installation >800,000 units (exceeding the target of 600,000 units for the year). High level discussion with PLN to collaborate & explore opportunities on interconnection between Malaysia and Indonesia as well as other Energy Transition initiatives. 	<p>Q4 Highlights</p> <ul style="list-style-type: none"> Completed 2 TNB Electron Charging Points at R&R Ayer Keroh Northbound and R&R Paka Northbound. Completed the first rural electric bus service infrastructure in Langkawi and expected to commence during LIMA 2023.

2022 Awards & Recognition

 <p>Gold Winner of the 2022 National Integrity, Governance and anti-corruption Award (AIGA)</p>	 <p>Won Energy Advocate of the Year under smart grid category for Advanced Metering Infrastructure (AMI) Project</p>	 <p>Gold Award for Best Shared Services Team at the Shared Service & Outsourcing Network (SSON) Asia Impact Award</p>	 <p>Allo has won the Malaysia's Broadband Telecom Company Of The Year at the 2022 Asian Telecom Awards</p>
---	--	---	--



Looking ahead into 2023, we will continue to drive our strategic initiatives in reaching our Net Zero commitments while ensuring business growth

GenCo

Continue to explore and build pipelines while enhancing plant performance

Hydro

- Sungai Perak LEP Project**
 - Finalised New PPA
- Nenggiri Hydro Project**
 - COD: Q2 2027

Continue investments in green technologies as part of our Energy Transition journey (domestically & regional)

Gas

- Paka Repowering**
 - Establishment of Feasibility Study
- New CCGT Kapar**
 - Collaborative Agreement with partner

Continue focus on plant performance enhancement programmes at 5 key domestic plants

NED

Continue to grow RE portfolio with good quality assets and improve performance of NED

Legends:
● Existing Investments
● Main target markets

FOCUS MARKETS

CURRENT	SEA	EU	APAC
UK, MY	TH, PH, VN	ES, IE, FR	AU, TW, KR

Strong 4.4GW pipeline of renewable assets, continue to build pipelines and explore opportunities

Grid

Investments in the Grid (TX & DN) ~RM 9 bil for 2023 & Enabler for investment in ASEAN green generation

1 Regional Interconnection

- Collaboration with PT Perusahaan Listrik Negara (PLN) – conduct feasibility study
- Collaboration with Electricity Generating Authority of Thailand (EGAT) – conduct feasibility study

2 Green Energy Islands

Road to Net Zero emissions by 2040

Customer Experience

Shaping and enabling customers to adopt a sustainable lifestyle

1 EV Ecosystem

- FY2023 Spending Outlook ~RM 22 mil**
- Reskill & upskill workforce**
ILSAS as training center for Electric Vehicle
- 2030 Market EV potential**
2.318 TWh annual electricity sales RM 1,258 mil annual electricity revenue

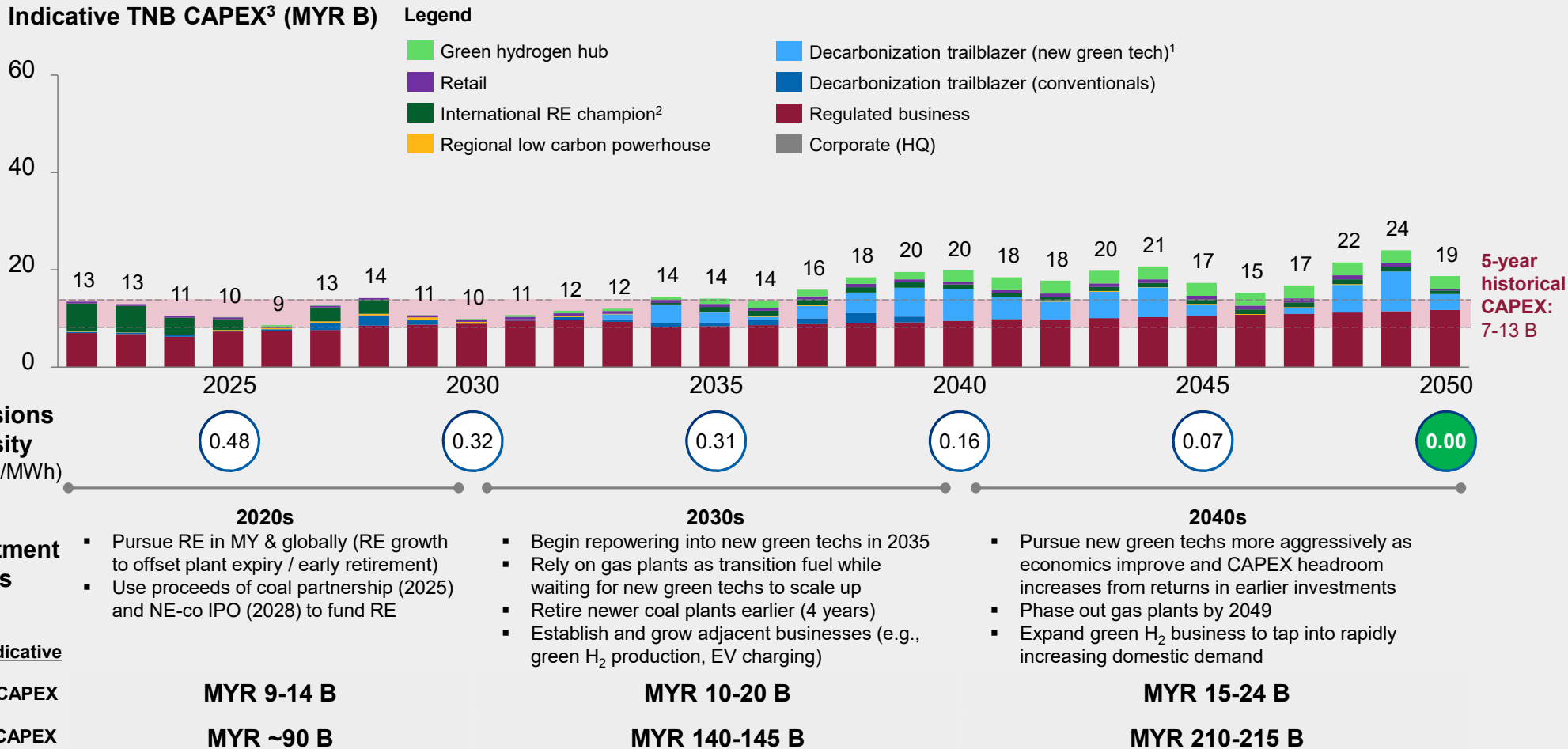
2 Energy Management

Driving changes in customer behaviour via myTNB

- 100% increase to ~250k users of Energy Budget feature in myTNB:
- 8,071 tonnes of CO2 avoided from the potential savings of ~11GWh in household energy consumption



Pathway will require investment of 10-20 B MYR yearly over next 30 years



1. New green tech includes nuclear SMR, CCGT + CCUS, and green H₂ CCGT; 2. RE includes solar and wind; 3. CAPEX accounts for equity stake; Source: Internal analysis,



Latest Development ▶ Future Generation Sources & New Green Business

To date, GenCo and NED have a strong ~8,000MW pipeline ready to be explored for opportunities...

GenCo

2022 Key Achievements

- Nenggiri Hydro Project** **300MW**
COD: Q2 2027
 - Construction works commenced in March 2022.
 - Progress as of Dec 2022; 10.5%
- Sungai Perak Life Extension Programme (LEP)** **650.75MW**
COD: Q3 2025
 - Completed EPCC Proposal

Pipeline Projects


- Paka Repowering** **1,400MW**
COD: 2030
 - Ongoing discussion between TNB GenCo and related party.
- New Combine Cycle Power Plant (CCGT), Kapar** **2,100MW**
COD: 2031
 - Discussion with consultant on feasibility study
- Electricity Export to Singapore** **100MW**
COD: 2023
 - Export 100MW of electricity to Singapore, potential revenue contribution ~RM500 mil

2023 Outlook

- Nenggiri Hydro:** Expected to COD in Q2 2027
- Sungai Perak LEP:** Finalised new PPA
- Paka Repowering:** Establishment of feasibility study, as per Energy Commission's scope.
- New CCGT, Kapar:** Collaborative Agreement with partner
- Continue focus on plant performance enhancement programmes at 5 key domestic plants, i.e. JMJG, JEP, SPG, TJPS, TNBP


New Energy Division (NED)


2022 Key Achievements


-  **102MW solar farms** in the United Kingdom (UK) and an option to develop **65MW co-located Battery Energy Storage Systems (BESS)**
-  Acquired **97.3MW Onshore Wind** Portfolio in the UK
-  Completed **£72 mil refinance package** for TNB's offshore wind investment in Blyth Offshore
-  Commencement of LSS4 project, TNB Bukit Selambau 2 of **50MW**


Pipeline Projects

Pipeline totaling **~4.4GW** across focused markets to support our growth targets.







Large-scale Solar PV


Onshore wind


Offshore wind

2023 Outlook

- Expand focus beyond ASEAN into APAC (South Korea, Taiwan and Australia)
- 


- Growing UK/EU renewables portfolio
 - To pursue opportunities in the pipeline of 4.4GW
 - LSS4 expected COD in Dec 2023



We play a key role in regional interconnection...one of our trailblazing initiatives towards a successful

<p>RP3 Approved Capex 13% (RM2.54 bil) Supporting the Energy Transition (ET) and RAB growth</p>	<p>Key Projects</p>	<p>Towards becoming a Smart Utility by 2025</p>
<p>Progress as of December 2022:</p> <p>2022 ET related CAPEX (Total: RM915 mil)</p> <p>Underutilised CAPEX will be brought forward to FY2023</p> <p>■ Utilised ■ Not utilised</p>	<p>Smart Meter Installation progress: >100% Total 2.4 mil units installed to date</p> <p>LED Relamping Installation progress: 100% Achieved 50,000 units installation in 2022</p> <p>Volt-Var Optimisation (VVO) progress: 100% Achieved 140 MVAR</p>	<p>85% TNB Smart Grid Index (SGI) target by 2025</p> <p>2022 SGI: 71.4% <i>2021 SGI: 67.9%</i></p>

Regional Interconnection

Regulated Business

<p>2022 Key Achievement</p> <p>Malaysia – Singapore Interconnection</p> <ul style="list-style-type: none"> i. Completed the upgrading of the electricity interconnector between both countries in October 2022. ii. The interconnector able to accommodate bidirectional electricity flows of around 100MW between Malaysia and Singapore. 	<p>2023 Outlook</p> <p>TNB Collaboration with PLN and EGAT</p> <ul style="list-style-type: none"> • Collaborate and explore opportunities on interconnection as well as other Energy Transition initiatives between countries. • To conduct feasibility studies to enhance the interconnection capacity between respective countries. <p>PLN EGAT </p>
--	---

2023 Outlook

Key Projects Target Installation

- Smart Meter: 0.6 mil units
- VVO: Additional 140 MVAR

Green Energy Islands

- RE (Solar, BESS & Energy Management System) Phase 2 Award at both Pulau Perhentian and Pulau Redang



Latest Development Winning the Customer

Establish partnership with prominent industry leaders to develop extensive electric vehicle ecosystem for the nation

Electric Vehicle Infrastructure Development

Electron Charger Hub

Launched 2 hubs for pilot testing; first highway equipped with Direct Current Fast Charger (DCFC) along north-south highway (R&R Ayer Keroh and Paka).



TNB to invest ~RM22 million in 2023 to spur the development of EV ecosystem

2023 Outlook

- Deployment of 40 EV charging stations along Peninsular highway roads and trunk roads. To date, TNB has identified 18 charging stations along highways.
- Collaborate with local petrol stations on EV charging points at Peninsular trunk roads
- Deployment of EV charging stations within SP Setia townships
- To build the nation's first solar-powered electron stations for electric vehicle (EV) in Klang Valley (Gamuda Cove and Gamuda Garden)

Electric Vehicle Training Hub



ILSAS Electric Vehicle (EV) Training Hub

In January 2023, the NRECC Minister launched ILSAS EV Training Hub: provides reskilling training for the EV industry, focusing on fundamental knowledge covering basic battery storage and EV technology.

ILSAS is equipped with:

- Simulator for the AC and DC charging system
- EV Battery Management System simulator
- EV Air-condition system and
- EV Battery technology



Offer trainings certified by International bodies and develop more related courses on EV in order to support Malaysia EV Industry.

2023 Outlook



ILSAS expected to train ~400 participants in 2023 for EV and Battery Storage training starting in 2QFY2023.

TNB signed six Memorandums of Understanding (MoUs) with various industries to proliferate EVs in Malaysia



Energy Efficiency

100% increase to ~250k users of Energy Budget feature in myTNB:



8,071 tonnes of CO2 avoided



Potential **savings of ~11GWh** in household energy consumption



GSPARX will provide the 'extra' push on renewable energy penetration while growing TNB's revenue source

2022 Key Achievements



Partnership with Smart Modular Technology

- GSPARX will install over 1MWp solar rooftop capacity with the combined solution of Green Electricity Tariff at Smart Company



Collaboration with Felda

- GSPARX will install solar rooftop in 14 premises owned by FELDA across Peninsular Malaysia with capacity totaling 1.6MWp



Universiti Malaysia Pahang (UMP)

- TNB has secured a project with UMP Pekan campus. This marks GSPARX third public university collaboration



Collaboration with McDonald's – Gerbang Alaf

- TNB will collaborate with McDonald's – Gerbang Alaf to install 1.2MWp across 39 sites throughout Peninsular Malaysia

GSPARX aims to secure ~145MWp for 2023

Targeted Market Segments



Residential

- Klang Valley customers



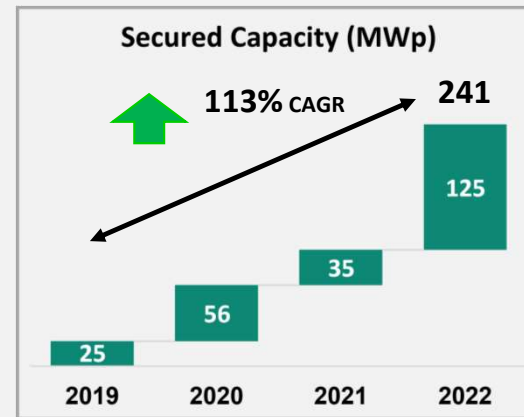
Industrial

- Companies exporting goods and products overseas who require carbon credits
- Medium voltage customers impacted by ICPT



Government

- Government buildings



Rapid growth since inception:

1774

Projects secured

241

MWp capacity

RM70 mil

2023 Expected Revenue





THANK YOU


For further enquiries, kindly contact us at:

Investor Relations Office:

**Investor Relations
Group Finance Division
Tenaga Nasional Berhad**
4th Floor, TNB Headquarters
No.129, Jalan Bangsar,
59200 Kuala Lumpur, MALAYSIA

 +603 2108 2128


 +603 2108 2034

 tenaga_ird@tnb.com.my

 www.tnb.com.my


Investor Relations Team:

Ms. Sarah Keok Chui San

 +603 2108 2126


 sarahk@tnb.com.my


Ms. Sakinah Mohd Ali

 +603 2108 2840

 sakinah.ali@tnb.com.my

Ms. Intan Nur Najihah Basiron

 +603 2108 2134

 najihah.basiron@tnb.com.my

Disclaimer

This presentation and discussion may contain forward looking statements by Tenaga Nasional Berhad related to financial trends for future periods. Some of the statements contained in this presentation or arising from this discussion which are not of historical facts are statements of future expectations with respect to financial conditions, results of operations and businesses, and related plans and objectives. Such forward looking statements are based on Tenaga Nasional Berhad's current views and assumptions including, but not limited to, prevailing economic and market conditions and currently available information. These statements involve known and unknown risks and uncertainties that could cause actual results, performance or achievements to differ materially from those in the forward-looking statements. Such statements are not and, should not be construed, as a representation as to future performance or achievements of Tenaga Nasional Berhad. It should be noted that the actual performance or achievements of Tenaga Nasional Berhad may vary significantly from such statements.

All information contained herein is meant strictly for the use of this presentation only and should not be used or relied on by any party for any other purpose and without the prior written approval of Tenaga Nasional Berhad. The information contained herein is the property of Tenaga Nasional Berhad and it is privileged and confidential in nature. Tenaga Nasional Berhad has the sole copyright to such information, and you are prohibited from disseminating, distributing, copying, re-producing, using and/or disclosing this information.