

The 61st Meeting of APEC Expert Group on Energy Efficiency & Conservation and 59th Meeting of APEC Expert Group on New and Renewable Energy Technology

*“Reinforcing Relevant Laws for a Comprehensive Approach to Energy Efficiency and Conservation,
Renewable Energy, Electric Vehicle, and Sustainability in the APEC Region”*



MINISTRY OF NATURAL RESOURCES,
ENVIRONMENT AND CLIMATE CHANGE



Asia-Pacific
Economic Cooperation



MALAYSIA'S UPDATES ON EE&C LEGISLATIONS & EE INITIATIVES

16 October 2023

Makati City, Metro Manila, Philippines



PRESENTATION OUTLINES



Participants:



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MALAYSIA ENERGY POLICY

National Petroleum Policy (1975)

- Efficient utilization of petroleum resources
- Ensuring the nation exercises majority control in the management and operation of the industry

National Depletion Policy (1980)

- To prolong the life span of the nation's oil and gas reserves

Four-fuel Policy (1981)

- Aimed at ensuring reliability and security of supply through diversification of fuel (oil, gas, hydro and coal)

Five-fuel Policy (2001)

- Encourage the utilization of renewable resources such as biomass, solar, mini hydro etc
- Efficient utilization of energy

National Renewable Energy (RE) Policy + Action Plan (2010)

- Outlines the major strategies to promote RE in the country. Main highlight is the Feed-in-Tariff (FIT) mechanism.

National Energy Policy 2022-2040 (2022)

- Enhancing macroeconomic resilience and energy security, achieving social equitability and affordability, as well as ensuring environmental sustainability

NATIONAL ENERGY TRANSITION ROADMAP (NETR)

Driving energy transition and socio-economic advancement

Climate Change and Principle-based Taxonomy

Optimise



Energy Efficiency

Shift to Renewables



Renewable Energy



Hydrogen



Bioenergy



Green Mobility

Abate

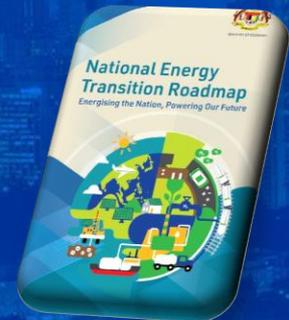


Carbon Capture,
Utilisation and
Storage

Energy transition levers

Prioritisation criteria

- + Emission reduction potential**
Advancing green growth and enhancing sustainability to become a low-carbon nation while addressing energy trilemma.
- + Economic opportunities**
Propelling strategic and high impact industries, especially for SMEs, strengthening investments and create job opportunities.
- + Cost effectiveness**
Promoting investments, especially in nascent technologies to yield long-term benefits.
- + Social inclusiveness**
Strengthening the security, wellbeing and inclusivity through clean energy sources that would benefit communities without compromising future generations.

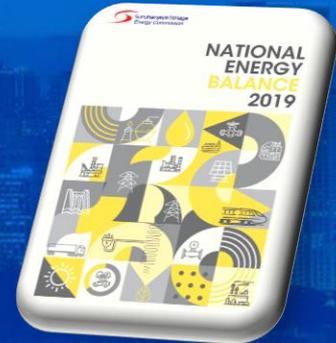
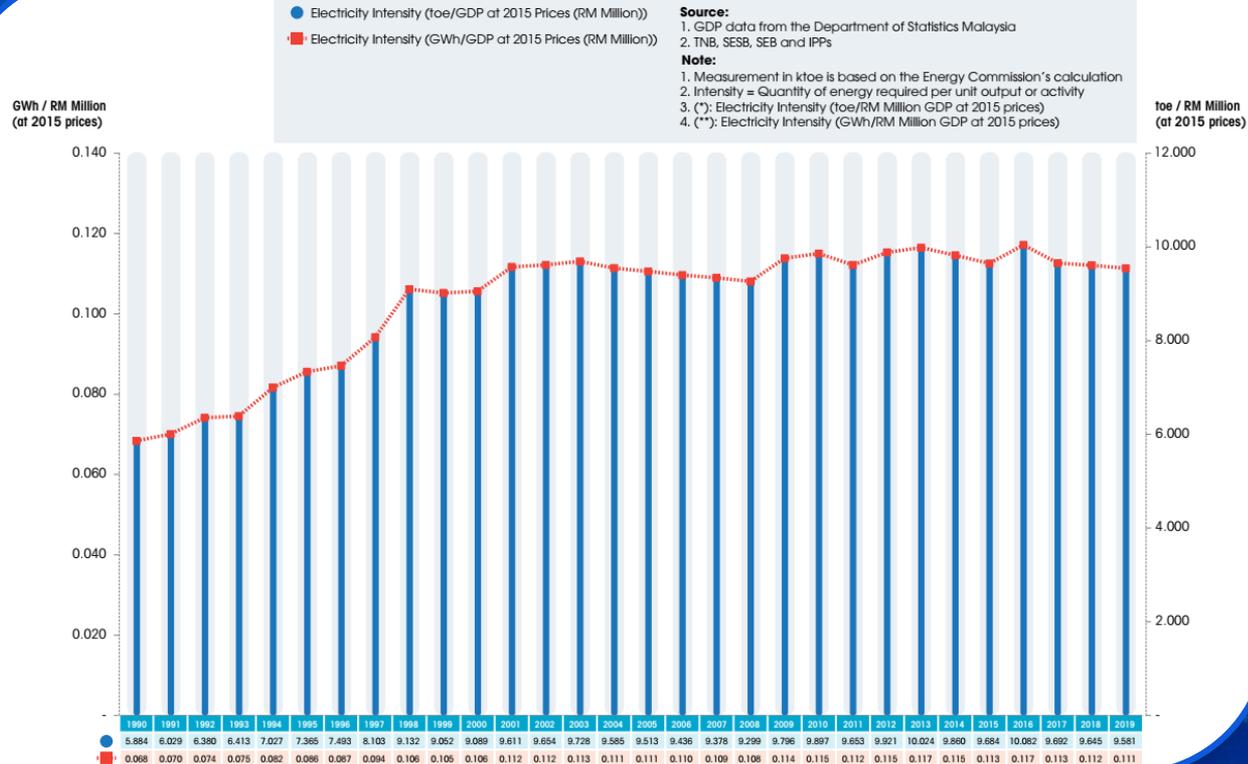


Sources: National Energy Transition Roadmap

ELECTRICITY INTENSITY

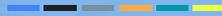


Malaysia's Electricity Intensity



Sources: National Energy Balance 2019

LEGAL FRAMEWORK



LEGAL & REGULATORY FRAMEWORK

CURRENT

Acts of Parliament

- ~~1. Energy Commission Act 2001~~
2. Electricity Supply Act, 1990

Regulations – Power of the Minister to make regulations

3. Electricity Regulations, 1994
4. Licensee Supply Regulations, 1990
- ~~5. Electricity Supply (Exemption) Notification 1994~~
6. **Efficient Management Of Electrical Energy Regulations 2008**

Licences – Issued by Energy Commission and approved by Minister

7. Licences issued to generators, distributors and suppliers

Licence Conditions

Industry Codes and guidelines – Issued By Energy Commission

9. Grid Code, Distribution Code, Guidelines provide guidance for industry

Agreements – Between Industry Players

10. Power Purchase Agreements
11. Fuel Supply Agreements

FUTURE

- Electricity Supply (Amendment) Bill 2023

- The removal of words related to efficient management of electrical energy.

- Energy Efficiency & Conservation Bill 2023

- **Comprehensive legislation** to drive energy efficiency

CURRENT: EFFICIENT MANAGEMENT OF ELECTRICAL ENERGY REGULATIONS (EMEER) 2008

Duties and Responsibilities of Affected Installation

Applicable to:

Consumer

Any installation which receives electrical energy from a licensee or supply authority— Consume equal or exceeding **3,000,000 kWh** any period of **6 consecutive months**

Generator

Installation worked or operated by a private installation licensee— Generate equal or exceeding **3,000,000 kWh** any period of **6 consecutive months**



To appoint or designate a registered electrical energy manager ;



To submit a written confirmation of such appointment or designation (name, particulars, date of expiry of registration);



To submit information:

- The statement of Policy for Efficient management of Electrical energy
- The Objectives of Efficient management of Electrical energy
- The Accounts & Document pertaining to Efficient management of Electrical energy



To submit reports

3 months from the date of notice

Every 6 Months



CURRENT:EMEER 2008 ACTIVITY

Enforcement of EMEER 2008

Enforcement to installations not comply to the EMEER 2008.

Energy Management Information System (EMIS)

Online web-based reporting portal for owner of installations under EMEER 2008 to submit report every 6 months

Energy Management Audit

Conduct compliance audit to installation complied to EMEER 2008 to ensure accurate project reported.

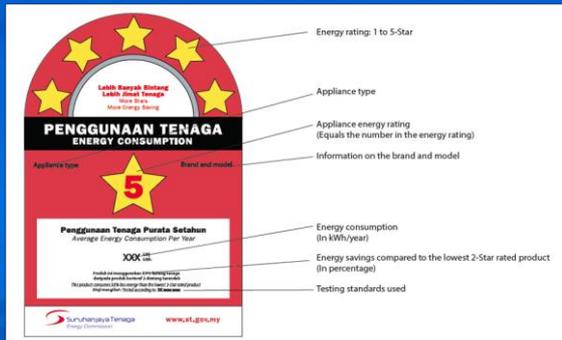
Continuous monitoring of EMEER 2008

EC monitor the compliance aspect of the affected user and monitor performance progress using info in the online system



CURRENT: MINIMUM ENERGY PERFORMANCE STANDARDS (MEPS)

Govern by Electricity Regulation 1994 gazetted on 3rd May 2013



MEPS Requirement is 2 Star.



More Stars More Efficient



Air Conditioner



Domestic Fan



Refrigerator



Television



Lighting



Washing Machine



Washing Machine



Electric Rice Cooker



Freezer

FUTURE: ENERGY EFFICIENCY & CONSERVATION (EECA)



Energy Efficiency And Conservation Act (EECA)

Part I PRELIMINARY

Part II Functions And Powers Of The Commission

Part III Duties of Energy Consumer

Part IV Duties of Person in Charge of Building

Part V Provisions Relating to Energy Using Product

Part VI Registration of Energy Manager & Energy Auditor

Part VII Registration of Training Institution

Part VIII Information Gathering Powers

Part IX Enforcement

Part X General



EE&C Bill been Approved by the House of Representatives in Parliament of Malaysia on 11/10/2023 after the 3rd reading.

This bills will undergo few process before it is approved to gazette.



OBJECTIVE OF EECA DEVELOPMENT

- The need for a **comprehensive legislation** to drive energy efficiency
- To **reduce 45% of carbon emission** pledged in COP21 (Paris Agreement) by 2030 based on 2005 level
- To effectively **manage energy demand, promoting efficient and sustainable energy consumption practices**
- To **improve energy efficiency initiatives** in industrial, commercial and residential sectors
- To support the Government's aspiration to **achieve net zero GHG by 2050**

FUTURE: PARTIES REGULATED BY THE ACT

Large Energy Consumers (Industries & Commercial)

Large energy consumers that meets the minimum prescribed **threshold of 21,600 Giga Joule (GJ)** annually.

(Equivalent to RM 1.0 million for natural gas & RM 2.4 million for electricity bill)

Buildings

Buildings as specified in Schedule 3 which states the type of building subjected under this Act.

Currently, Schedule 3 states **Office Building** will be subjected to the Act.

Manufacturers & Importers Of Energy Using Products

Requirement to obtain:

- Certificate of Registration (**COR**)
- Certificate of Efficiency (**COE**) and to be affixed with an **energy efficiency rating label**

Energy Managers, Energy Auditors, Training Institutions

Requirement to register:

- Energy Managers
 - Type 1 - Electricity
 - Type 2 - Electricity & Thermal
- Energy Auditors
- Training Institutions

FUTURE: LARGE ENERGY CONSUMERS

INDUSTRIES & COMMERCIAL

Required to **appoint** a Registered Energy Manager

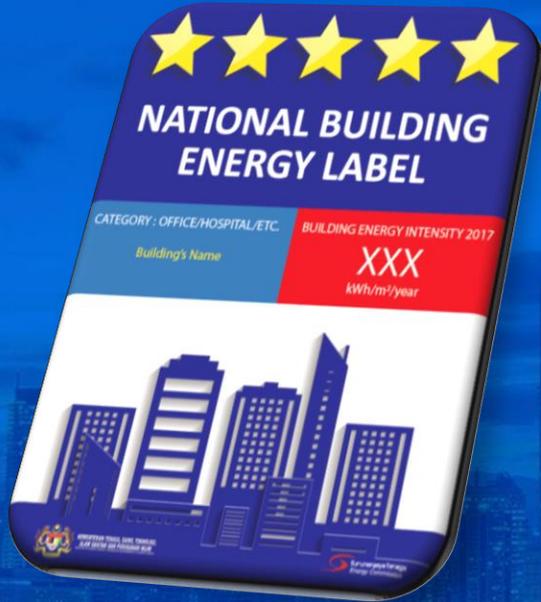
Required to implement mandatory energy management system



Required to conduct mandatory periodic energy audit by a Registered Energy Auditor and submission of energy audit report

Periodic submission of annual energy efficiency and conservation report

FUTURE:BUILDINGS



Requirement to label the building with a **Building Energy Intensity (BEI) Label** and the person in charge of the building is required to apply for a new label annually

Energy Intensity Label will define the building's energy intensity (**BEI – kWh/m²/yr**), Star Rating and energy consumption

Required to **comply with the minimum BEI** within the period prescribed in the regulations

Any **non-compliance**, the person in charge of the building is required to conduct energy audit and submit energy audit report together with the improvement plan

BEI RANGE



Current Implementation of
BEI Star Rating Table for
Government Offices

EXAMPLE OF BUILDINGS



Office Building



Office Building



Shopping Complex



Hospital

FUTURE: MANUFACTURERS AND IMPORTERS OF ENERGY USING PRODUCTS



Requirement for Manufacturers and Importers to **obtain Certificate of Registration (COR)**

Requirement for energy using product to **meet the prescribed minimum requirement and obtain a Certificate of Efficiency (COE)**

Requirement for energy using product in the domestic, commercial and industrial sector to be affixed with an energy efficiency rating label

Any energy using product as specified in the guidelines



FUTURE: ENERGY MANAGERS, ENERGY AUDITORS & TRAINING INSTITUTIONS

Registration of Energy Manager Type 1 (Electricity) and Energy Manager Type 2 (Electricity & Thermal) to monitor the implementation of the energy management system

Registered of Energy Auditor to conduct the mandatory energy audit

Registration of Training Institutions to conduct the training for future Energy Managers, Energy Auditors and Continuous Development Program (CDP)



FUTURE: IMPACT OF EECA

Growth of 8.24 billion trees for a period of 10 years

RM97.1 Billion saving of utility bill



Total Energy Saving of 2,017 Million GJ

197,877 ktCO₂ of carbon avoidance

EE INITIATIVES



ENERGY EFFICIENCY INITIATIVES

Energy efficiency promotion in the Seventh Malaysia Plan

Malaysian Industrial Efficiency Improvement Programme (MIEEP)

Fiscal incentives for EE
Development of Malaysian Standard MS 1525

Capacity building in the Energy Commission and related key institutions on energy efficiency and Demand Side Management

1996-2000

1999

2001

2002

Green Building Index (GBI)

Efficient Management Of Electrical Energy Regulations

Development of EE guidelines for Malaysian Industries

- Energy audit on government buildings
- EE and RE in education curriculum and university courses

2009

2008

2006

2002

Minimum Energy Performance Standards (MEPS)

Monitoring of Ministries Electricity Consumption

Retrofit and Relamping of LED in selected Ministries

National Energy Efficiency Action Plan (2016-2025) and Implementation of EE Projects during 11th Malaysia Plan (2016-2020)

- EPC Fund
- DSM Preliminary Study

Building Energy Intensity (BEI) Labelling in Government Buildings

Energy Performance Contracting (EPC) in Government Building – Pilot Projects

2013

2014

2015

2016

2017

2018

2019

- Energy Efficiency and Conservation Act (EECA)
- NEEAP 2.0

- MTR NEEAP
- Sustainability Achieved Envia Energy Efficiency (SAVE) 3.0 Programme

- Sustainability Achieved via Energy Efficiency (SAVE) 2.0 Programme
- Energy Audit Conditional Grants (EACG) 2.0

2023

2022

2021



MINISTRY OF NATURAL RESOURCES, ENVIRONMENT AND CLIMATE CHANGE

NATIONAL ENERGY EFFICIENCY ACTION PLAN (NEEAP)

52,233 GWH (8.0%) savings

CO₂ reduction :37,702 ktCO_{2eq}

NATIONAL ENERGY EFFICIENCY ACTION PLAN (NEEAP) 2016-2025

NEEAP GUIDING PRINCIPLES

Sustainable Development

Efficient Use of Energy

Increase Competitiveness and Welfare

Concerted Participation

NEEAP STRATEGIC THRUSTS

Strategic Thrust 1 :
Implementation of Energy Efficiency Plan

Strategic Thrust 2 :
Strengthen Institutional Framework, Capacity Development and Training for Implementation of EE Initiatives

Strategic Thrust 3 :
Establishment of Sustainable Funding Mechanisms To Implement EE Initiatives

Strategic Thrust 4 :
Promotion of Private Sector Investment in EE Initiatives

NEEAP KEY INITIATIVES

Equipment Program Initiative

1. Promotion of 5-Star Rated Appliances
2. Minimum Energy Performance Standards (MEPS)

Industrial Program Initiative

1. Energy Audits and Energy Management in Industries
2. Promotion of Co-generation

Buildings Program Initiative

1. Energy Audits and Energy Management in Buildings
2. Energy Efficient Building Design

NATIONAL ENERGY EFFICIENCY ACTION PLAN (NEEAP)

5 KEY INITIATIVES OF NEEAP



1. Initiatives Promotion of 5-Star Rated Appliances

2. Minimum Energy Performance Standards (MEPS)

3. Energy Audits and Energy Management in Buildings and Industries

4. Promotion of Cogeneration

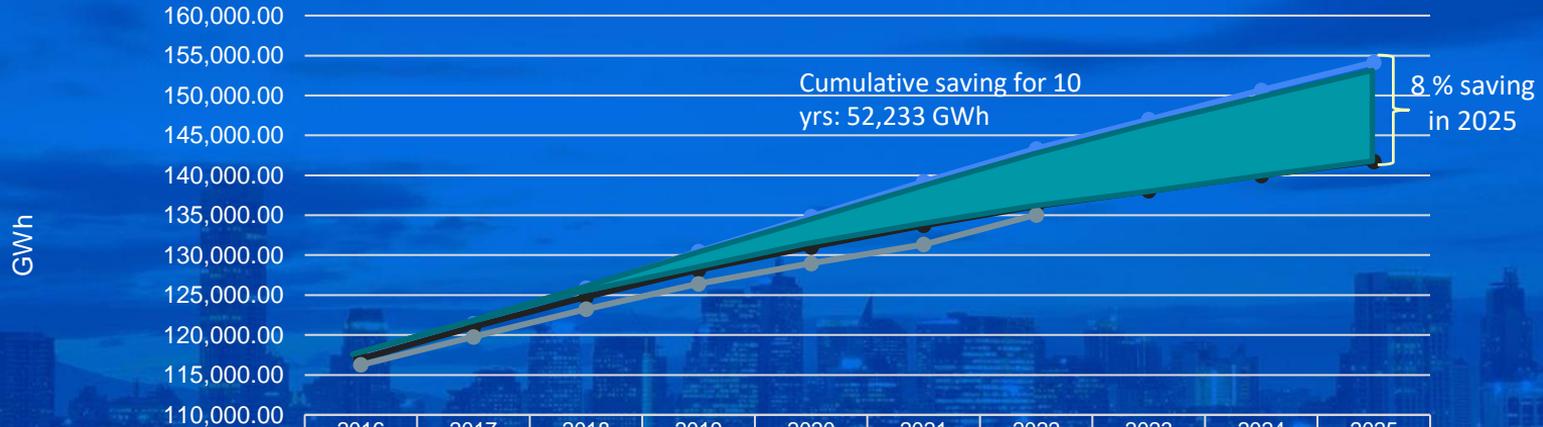
5. Energy Efficient Building Design

NATIONAL ENERGY EFFICIENCY ACTION PLAN (NEEAP)



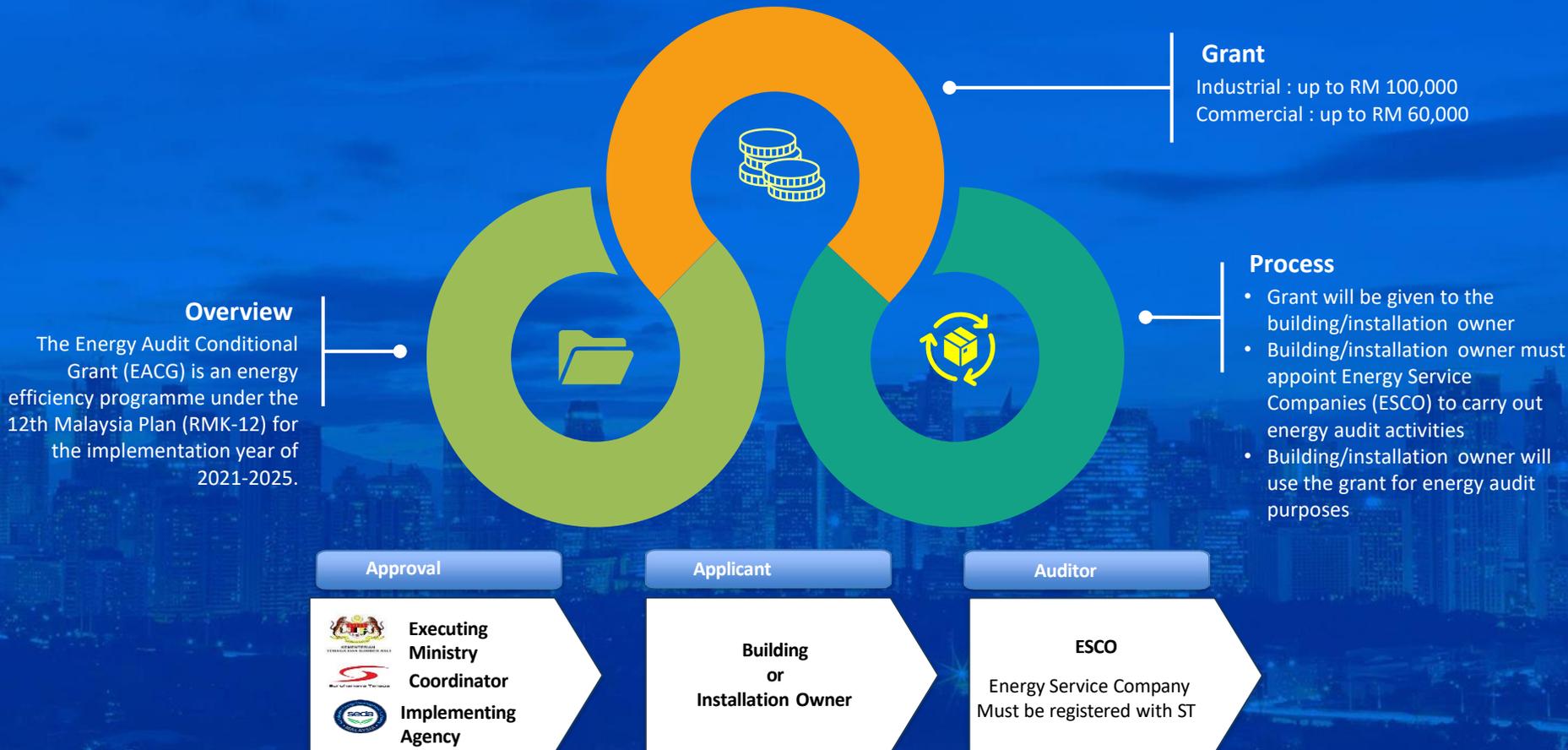
Current Annual Saving Achievement (2016 -2022)

NEEAP Plan, NEEAP Actual VS BAU



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
BAU (GWh)	117,110.00	121,431.00	125,885.00	130,474.00	134,830.00	139,206.00	143,326.00	146,991.50	150,657.00	154,142.00
NEEAP (GWh)	117,022.82	121,045.12	124,784.35	128,188.22	131,046.79	133,730.77	136,164.99	138,082.36	140,003.55	141,750.89
NEEAP Annual Saving (GWh)	87	386	1,101	2,286	3,783	5,475	7,161	8,909	10,653	12,391
Cumulative Savings (GWh)	87	473	1,574	3,859	7,643	13,118	20,279	29,188	39,842	52,233
Percentage NEEAP Saving from BAU	0.1%	0.3%	0.9%	1.8%	2.8%	3.9%	5.0%	6.1%	7.1%	8.0%
Current NEEAP Impact (GWh)	116,274	119,777	123,231	126,424	128,966	131,352	135,045			
Actual Annual Saving Monitored (GWh)	836	1,654	2,654	4,050	5,864	7,854	8,281			
Percentage Actual Annual Saving from BAU	0.71%	1.36%	2.11%	3.10%	4.35%	5.64%	5.78%			

ENERGY AUDIT CONDITIONAL GRANT (EACG) 2.0



ENERGY AUDIT CONDITIONAL GRANT (EACG) 2.0



BUILDING ENERGY INTENSITY (BEI) LABELLING IN GOVERNMENT BUILDING



To provide information on the level and performance of a building's energy consumption



To accelerate efforts making Government buildings energy efficient through Government Lead By Example



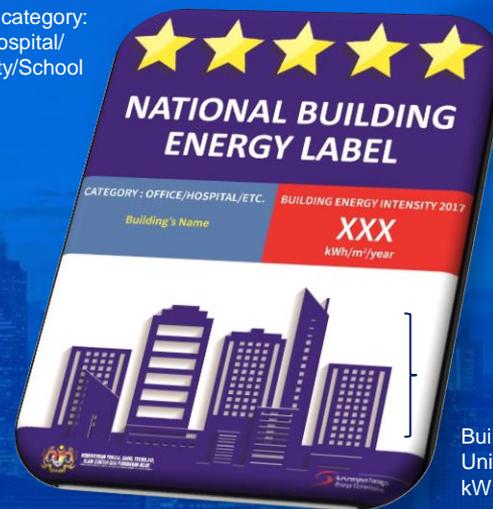
Create healthy competition among building owners to improve energy use

CO₂

Contribute national commitment to reduce GHG emission intensity of GDP by 45% by 2030

Building Energy Label

Building category:
Office/Hospital/
University/School
& others



Star rating:
1 star:
Not efficient
5 star:
Most efficient

Building energy performance
Unit:
kWh/m²/year

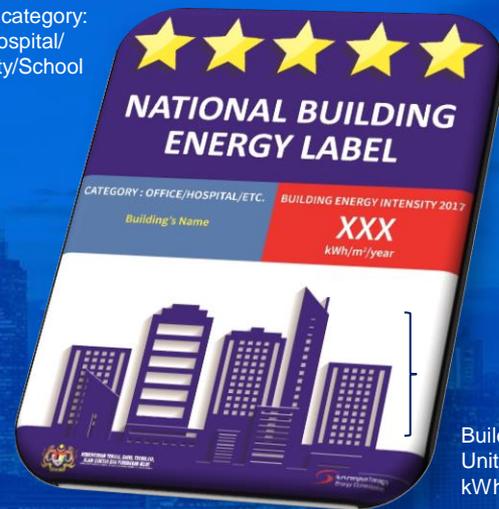
BUILDING ENERGY INTENSITY (BEI) LABELLING IN GOVERNMENT BUILDING

★ Star Rating

STAR RATING	BEI RANGE VALUE
5-Star	BEI ≤ 100
4-Star	100 < BEI ≤ 130
3-Star	130 < BEI ≤ 160
2-Star	160 < BEI ≤ 250
1-Star	BEI > 250

Building Energy Label

Building category:
Office/Hospital/
University/School
& others



Star rating:
1 star:
Not efficient
5 star:
Most efficient

Building energy performance
Unit:
kWh/m²/year

$$\text{BEI (kWh/m}^2\text{/year)} = \frac{\text{Total energy consumption per year (kWh/Year)}}{\text{NFA (m}^2\text{)}}$$

NATIONAL ENERGY EFFICIENCY ACTION PLAN 2.0

Government plan to enforce Energy Efficiency & Conservation Act (EECA) will determine the new mandatory requirement to industrial, commercial buildings and residential sectors.

Given that NEEAP 1.0 will end in 2025 and enforcement of EECA from year 2023, it is crucial to conduct a study to ensure the continuity of energy efficiency implementation plan and program in Malaysia.



Objectives

National EE&C Policy Framework

To produce a National Energy Efficiency & Conservation Policy Framework document.

EE Initiatives 2026-2035

To identify energy efficiency initiatives to be implemented in Malaysia for next 10 years from 2026 to 2035.

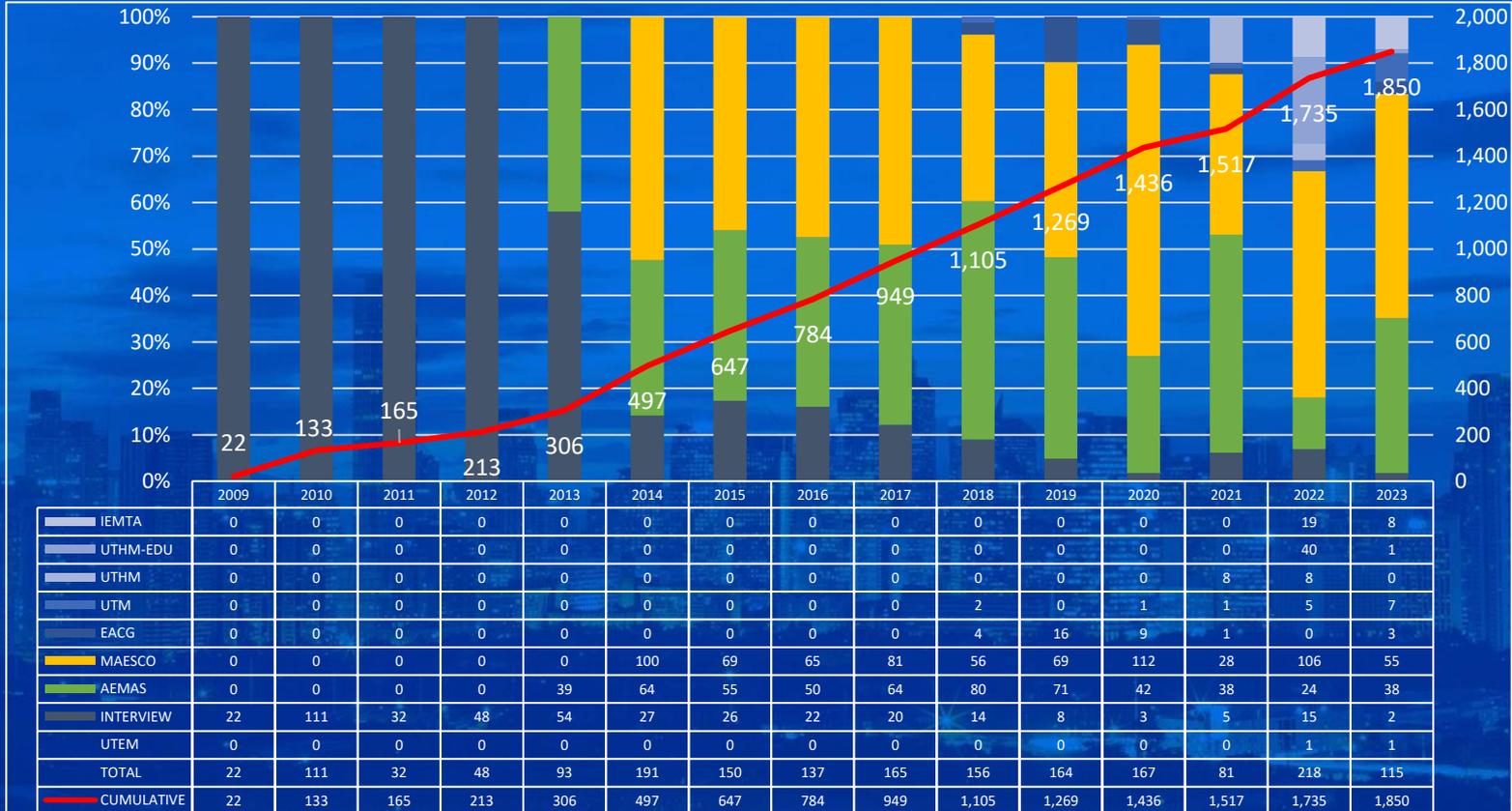
Impact of EECA

To review and quantify the impact from the enforcement of EECA in Malaysia.

SUMMARY NUMBER OF REEM



Summary Number of REEM By Year



Thank you

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