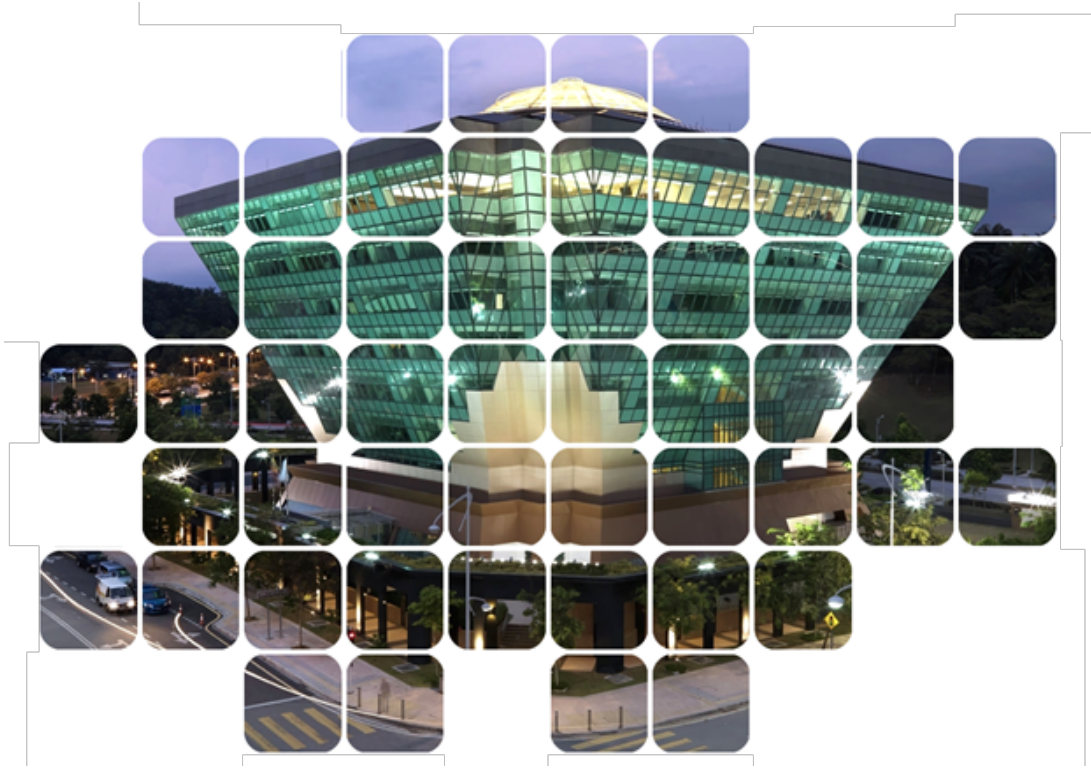
ENERGY EFFICIENCY INITIATIVES IN MALAYSIA

ZULKIFLEE UMAR
ENERGY COMMISSION

OVERVIEW OF ENERGY EFFICIENCY IN MALAYSIA



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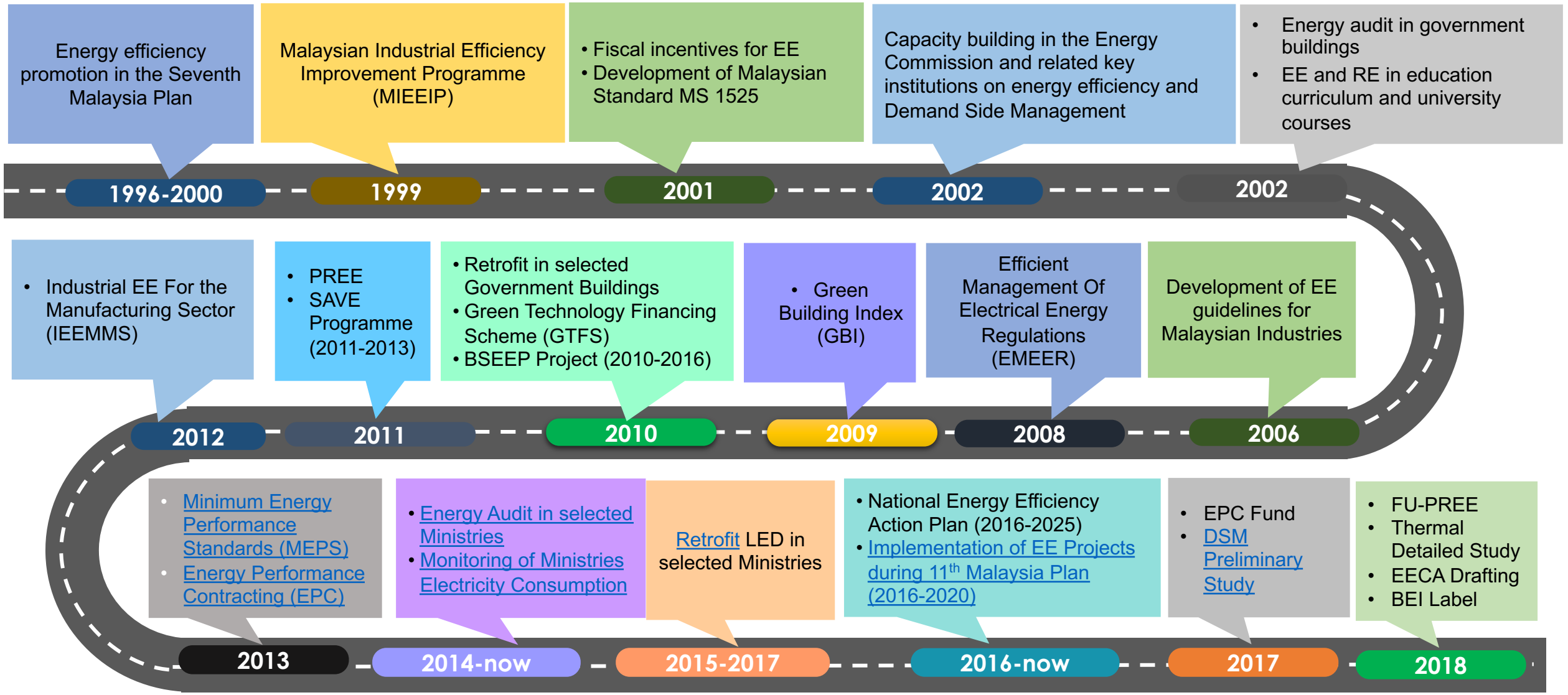
ENERGY EFFICIENCY INITIATIVES IN MALAYSIA



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BASIC APPROACHES ON ENERGY EFFICIENCY

Economic measures	• Implement efficient energy pricing, provide fiscal incentives
Persuasive measures	• Create awareness/interest and disseminate information
Prescriptive measures	• Prescribe and regulate act, regulations, technical standards and guidelines
Research, development and demonstration	• Develop, demonstrate and commercialise new technologies and measures

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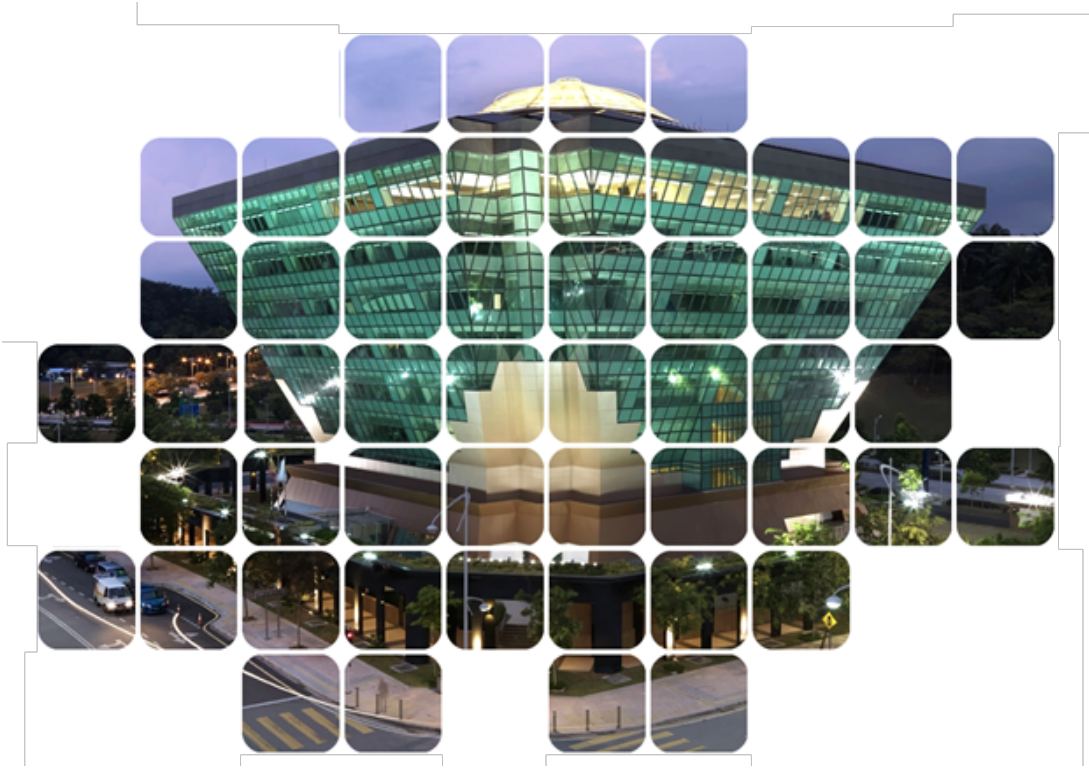
ENERGY EFFICIENCY LEGAL FRAMEWORK



ENERGY EFFICIENCY LEGAL FRAMEWORK

ACTS OF PARLIAMENT

Energy Commission Act 2001

- To promote efficiency, economy and safety in the generation, production, transmission, distribution supply and use of electricity.
- To promote the use of renewable energy and the conservation of non-renewable energy.

Electricity Supply Act 1990

- Part VA – Efficient use of electricity (Section 23A – Minister to determine standards, etc., Section 23B – Installation to meet requirements and Section 23C – Equipment to meet requirements.)

REGULATIONS – Power of the Minister to make regulations

Electricity Regulations 1994

- Amendment 2013 - Implementation and Enforcement of Minimum Energy Performance Standards (MEPS) for 5 Domestic Electrical Products; Air Conditioner, Refrigerator, Television, Domestic Fan and Lighting (Regulation 97, Regulation 101A, 109 A(1), 109 A(2))

Efficient Management of Electrical Energy Regulations 2008

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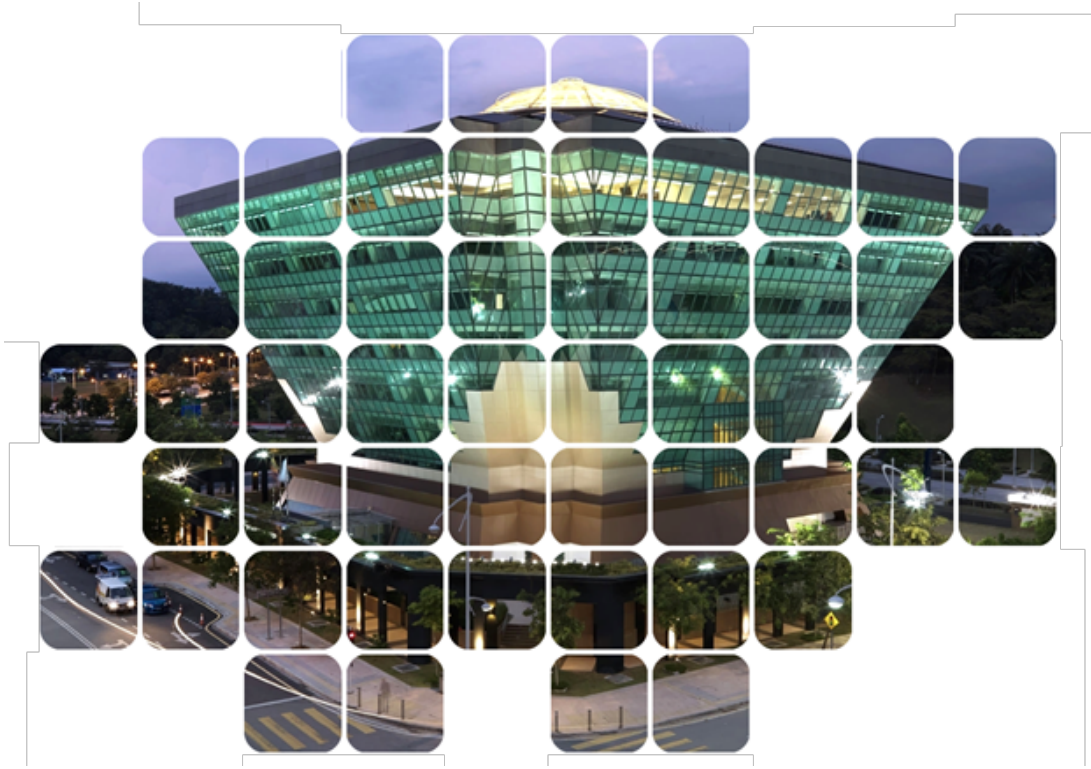
EFFICIENT MANAGEMENT OF ELECTRICAL ENERGY REGULATION 2008 (EMEER 2008)



EFFICIENT MANAGEMENT OF ELECTRICAL ENERGY REGULATION 2008 (EMEER 2008)

Applicable to:

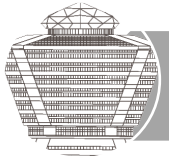
Consumer

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**

Duties and Responsibilities of Affected Installation



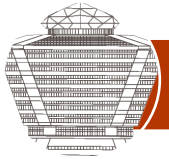
To appoint or designate a registered electrical energy manager ;

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

3 months from the date of notice

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

Every 6 Months

REGISTERED ELECTRICAL ENERGY MANAGERS (REEM)

Qualification

- ❑Malaysian citizen aged 23 years and above.
- ❑Professional Engineer with at least 6 months working experience in Electrical Energy Efficiency; **or**
- ❑Degree in Science/ Engineering / Architecture with at least 1 year working experience in Electrical Energy Efficiency; **or**
- ❑Hold a Certificate of Competency as an Electrical Services Engineer or as a Competent Electrical Engineer with at least 9 months working experience in Electrical Energy Efficiency; and
- ❑Demonstrates knowledge of the requirements of the Act and these Regulations that satisfies the Commission

Functions and Duties

- ❑To audit and analyze the total electrical energy consumption
- ❑To advise in developing and implementing measures to ensure efficient management of electrical energy at the installation
- ❑To monitor effective implementation of the measures
- ❑To supervise the keeping of records on efficient management electrical at the installation (verify the accuracy of the record)
- ❑To ensure timely submission of information and reports under the regulations

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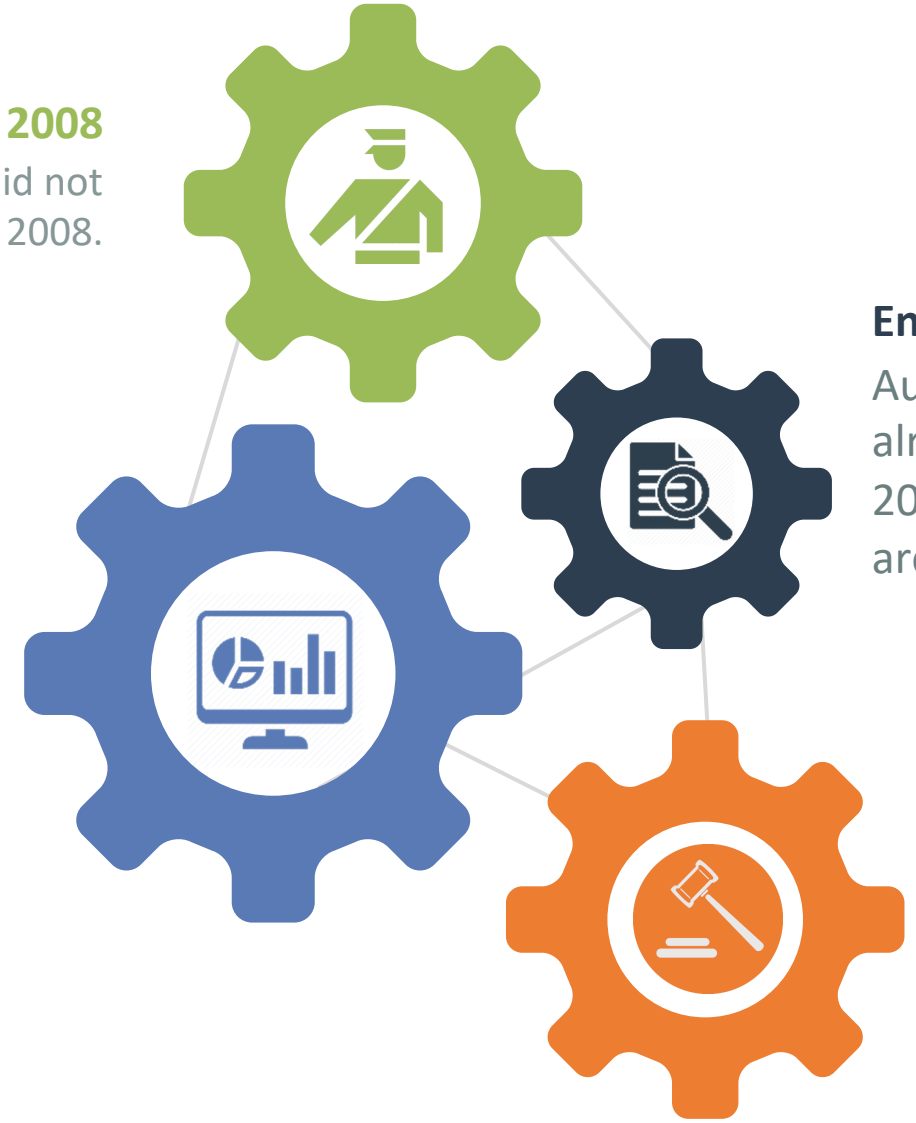
EMEER 2008 ACTIVITY

Enforcement of EMEER 2008

Enforcement to the installation who did not comply to the EMEER 2008.



Energy Management Audit

Audit to the installation that already comply to the EMEER 2008 to ensure project reported are correct.

Energy Management Information System (EMIS)

Online web based reporting portal for owner of facility under EMEER 2008 to submit their periodic report every 6 months

Continuous monitoring of EMEER 2008

EC will monitor closely the compliance aspect of the affected user and monitor the performance progress using the info submitted through the online system

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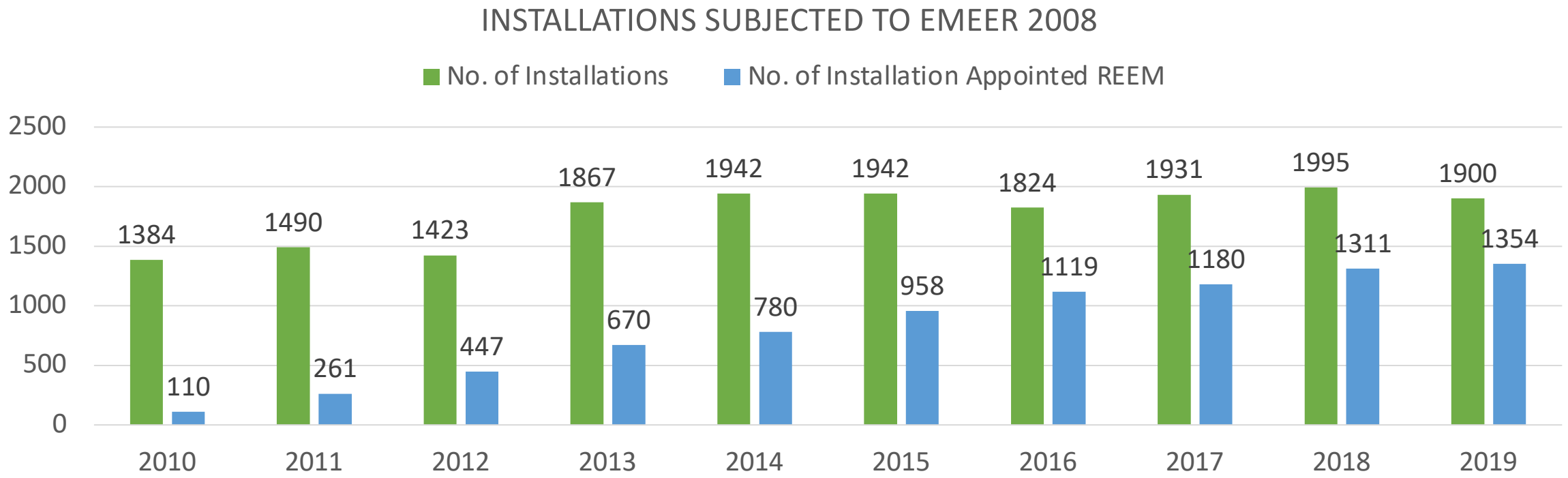
EMEER 2008 STATUS



Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
% Compliance	8%	18%	31%	36%	40%	49%	61%	61%	66%	71%

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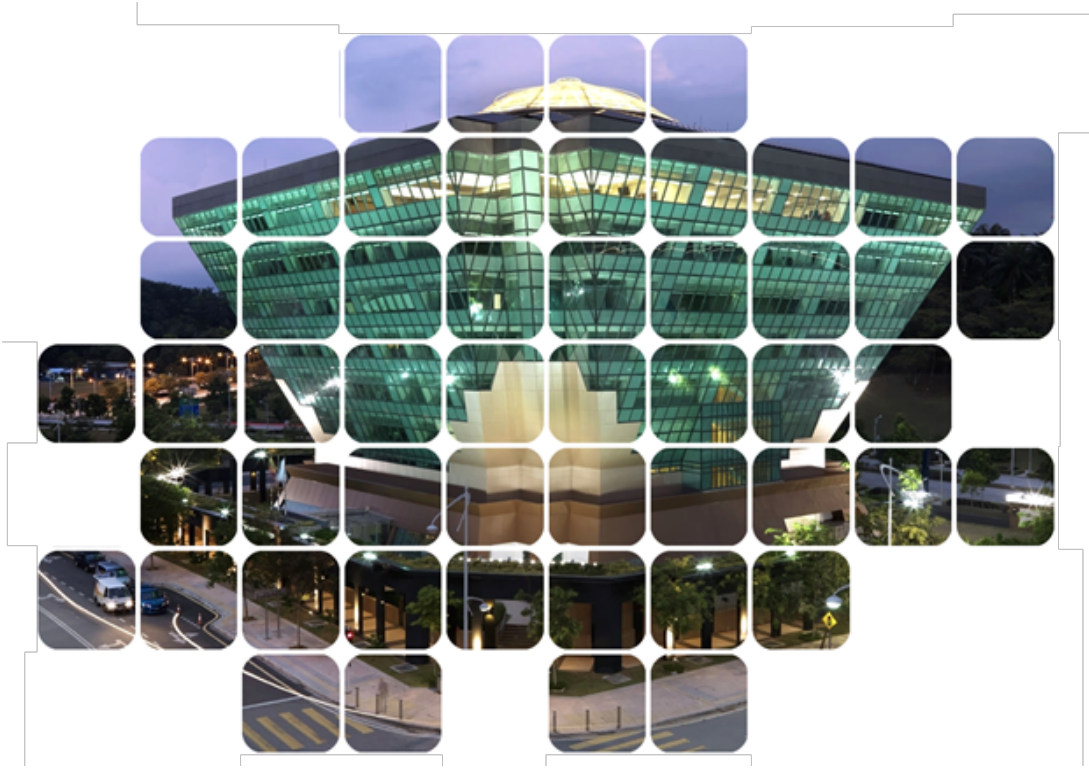
MINIMUM ENERGY PERFORMANCE STANDARD (MEPS)



MEPS DEVELOPMENT - APPLIANCES

Enforcement of MEPS

Implementation and Enforcement of MEPS is for 5 selected Domestic Electrical Products (Air Conditioner, Refrigerator, Television, Domestic Fan and Lighting).

Malaysian Standard (MS) for MEPS

MS for MEPS for 5 appliances is published online.

MS 2595:2014	• Minimum Energy Performance Standards for Refrigerator
MS 2597:2014	• Minimum Energy Performance Standards for Air-Conditioner
MS 2576:2014	• Minimum Energy Performance Standards for Television
MS 2574:2014	• Minimum Energy Performance Standards for Domestic Fan
MS 2598:2014	• Minimum Energy Performance Standards for Lamp

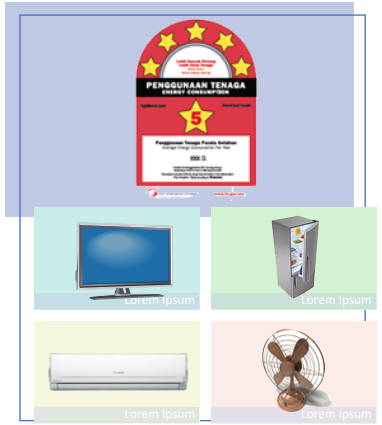
3rd May 2013 — **4th May 2014** — **20th Jan 2015**

Amendment of the Electricity Regulations 1994

Amendment to include MEPS in the regulation

Energy Rating Label

From May 2014 onwards, 4 domestic appliances (Air Conditioner, Refrigerator, Television, Domestic Fan) out of 5 must be affixed with a Energy Rating Label apart from the safety label



For lighting, the packaging for Light Emitting Diode (LED) lamps need to have the efficacy value together with the number of hours the LED has been tested

i) After completing first 1,000 hours test

Efficacy Value: 55 lm/W

This product has been tested up to 1000 hours

ii) After completing 6,000 hours test

Efficacy Value: 55 lm/W

This product has been tested up to 6000 hours

For other types of lamp, the packaging only need to have the efficacy value.

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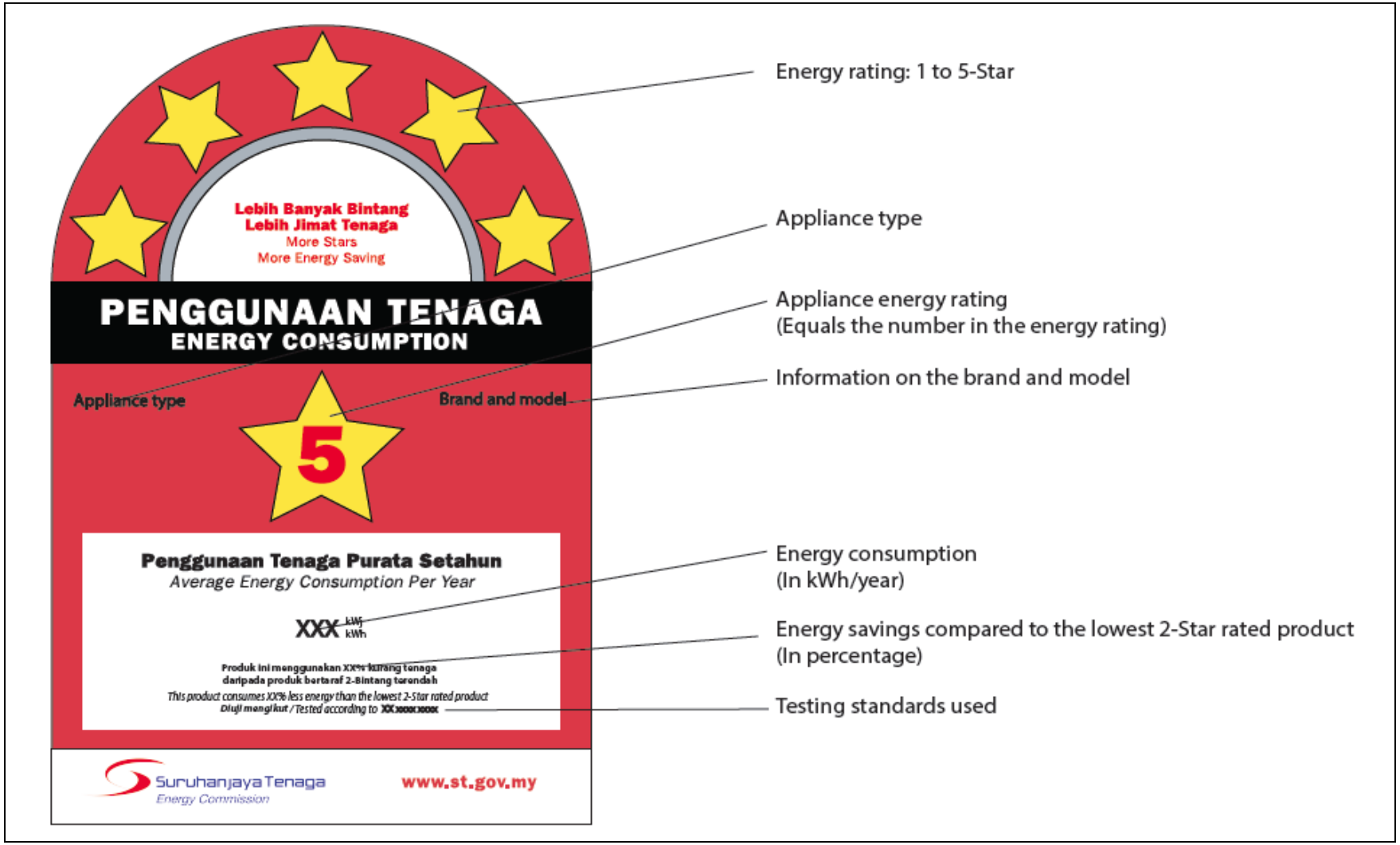
ENERGY RATING LABEL



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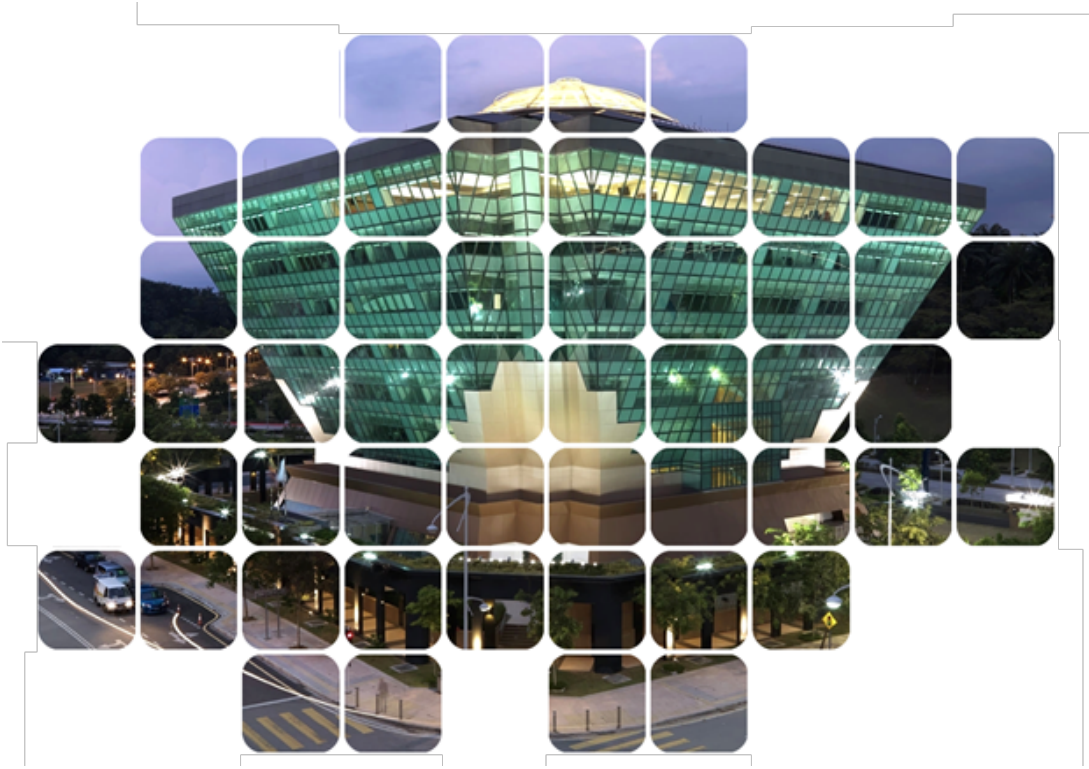
BUILDING ENERGY INTENSITY (BEI) LABEL IN GOVERNMENT BUILDINGS



BENEFITS OF BEI LABELLING

40% of energy produced consumed by buildings

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

To provide and disseminate information to building occupants on energy usage performance of the building compared to energy efficient building

To create a platform to peer review Government Building performance

To help Government achieve national commitment to reduce GHG emissions intensity of GDP by 45% by 2030

BUILDING ENERGY LABEL

BEI definition:

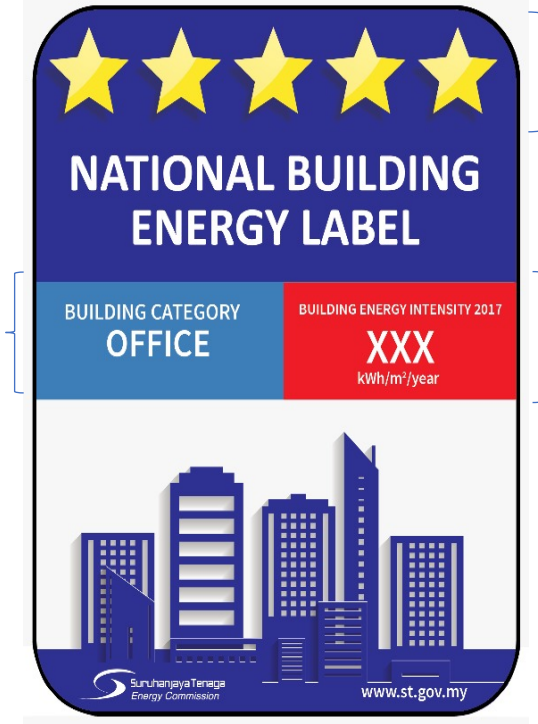
- **Ratio of annual energy consumption of a building to the Net Floor Area measured in kWh/ m²/year**
- BEI (kWh/m²/year) =

$$\frac{\boldsymbol{Annual\ Energy\ Consumption\ (kWh/Tahun)}}{\boldsymbol{NFA\ (m^2)}}$$

- BEI : Indicates the intensity of energy used for a 1 meter square of a building in a year
- BEI is an international standard used as an indicator of a building efficiency.

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

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PROPOSED STAR RATING AND BEI RANGE VALUE FOR GOVERNMENT OFFICE BUILDINGS

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

BEI LABELLING IMPLEMENTATION PHASE

2018

100 Government office buildings (NFA > 8,000 m^2 and or >1million kWh/year)

2019-2022

1,900 Government Buildings:

i. Office Buildings
ii. Hospitals
iii. Universities
iv. Polytechnics
v. Schools

2023 Onwards

3,000++ Government Buildings:

- Office Buildings
- Hospitals
- Universities
- Polytechnics
- Schools

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IMPACTS OF BEI LABELLING 2018-2023++

MAJOR IMPACTS

Each building is expected to improve the Star Rating to at least 1 Star above current rating within 3-5 years

ESTIMATED SAVING

Phase 1: 100 Office Buildings	Phase 2: 1,900 Government Buildings	Phase 3: 3,000++ Government Buildings
20.80 GWh	370.24 GWh	599++ GWh
RM 7.60 Million	RM 135 Million	RM 219++ Million
14.44 $ktCO_2$	256 $ktCO_2$	415++ $ktCO_2$

FIRST MOVE

U.S. GREEN BUILDING COUNCIL
LEED PLATINUM
USGBC

BCA GREEN MARK

green building index

MyCREST
MALAYSIAN CARBON REDUCTION & ENVIRONMENTAL SUSTAINABILITY TOOL

greenPASS
performance assessment system

National Building Energy Label will be the first move to assist Government buildings to be certified as Green Building

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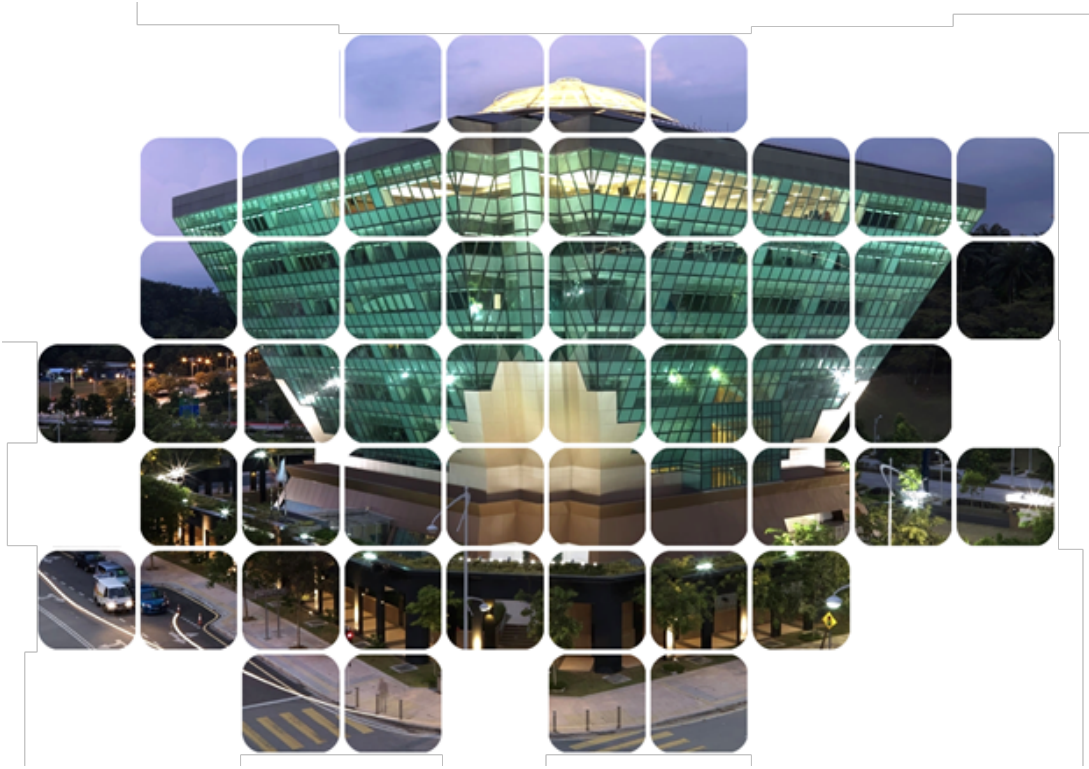
WAY FORWARD FOR ENERGY EFFICIENCY IN MALAYSIA



WAY FORWARD FOR ENERGY EFFICIENCY (EE) IN MALAYSIA

FUNDING MECHANISM

Establish effective and sustainable funding mechanism for EE projects

CAPACITY

Establish effective and sustainable funding mechanism for EE projects

ENFORCEMENT

Intensify enforcement of EE legislation

POLICY & LEGAL FRAMEWORK

Strengthen and streamline policy as well as legal and institutional framework – Enactment of new Energy Efficiency and Conservation Act (Electrical and Thermal)

AWARENESS

Foster EE culture among industry stakeholders and the public

Thank you

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Industrial Operation Department
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Malaysia

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