ENERGY EFFICIENCY
REGULATIONS AND
PROMOTIONAL
ACTIVITIES IN MALAYSIA

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Roles of The Energy Commission

**Minister of Energy, Green Technology, and Water**
- Sets Electricity Supply Policy
- Prescribes Electricity Regulations
- Approves Electricity Licences and Tariffs

**Minister of Petroleum**
- Sets Piped Gas Supply Policy
- Prescribes Piped Gas Regulations
- Approves Piped Gas Licences and Tariffs

**Energy Commission**
- Advises the minister on matters relating to the energy sector
- Develops legal frameworks
- Implements policy
- Issues licences and certifications
- Regulates the electricity and piped gas industries

**Industry Players**

**Regulator**

**Regulatees**
Electricity constitutes 20.5% of the country’s final energy consumption.

Source: National Energy Balance 2013
FINAL ENERGY INTENSITY IN ASEAN

Mtoe/Billion USD 2005

Source: National Energy Balance 2013
To ensure adequacy, security and cost-effectiveness of energy supply
To promote efficient utilization of energy
To minimize negative environmental impacts in the energy supply chain
To prolong lifespan of Malaysia’s oil reserves for future security & stability of oil supply
To pursue balanced utilization of oil, gas, hydro and coal
Renewable Energy included as the “fifth fuel” in energy supply mix
Basic Approaches To Promote EE

- **Economic measures**
  - Implement efficient energy pricing, provide fiscal incentives

- **Persuasive measures**
  - Create awareness/interest and disseminate information

- **Prescriptive measures**
  - Prescribe and regulate technical standards and guidelines

- **Research, development and demonstration**
  - Develop, demonstrate and commercialise new technologies and measures

UNDP-GEF Malaysian Industrial Efficiency Improvement Programme (MIEEP) (1999)

Fiscal incentives for EE (2001)

Development of Malaysian Standard MS 1525 (2001)

DANIDA Capacity building on EE and DSM for key institutions (2002)

Energy audit on government buildings (2002)

EE and RE in education curriculum and university courses (2002)

Energy efficient building demonstration projects (2004)

Development of EE guidelines for Malaysian industries (2006)
EE Programmes in Malaysia over the Years

- Green Building Index (GBI) (2009)
- EE rating and labelling (2009)
- Green Technology Financing Scheme (2010)
- EE equipment rebate scheme (2011)
- UNDP-GEF Building Sector Energy Efficiency Project (BSEEP) (2011)
- Minimum energy performance standards (MEPS) regulations (2013)
- UNIDO-GEF industrial energy efficiency project (2013)
- Incentive-based tariff regulation (2014)
- 5% energy reduction target for government buildings (2014)
EE In the Electricity Supply Legislation

- Energy Commission Act 2001
- Electricity Supply Act 1990
  - Licensee Supply Regulations 1990
  - Electricity Regulations 1994
  - Electricity Supply (Compounding of Offences) 2001
- Efficient Management Of Electrical Energy Regulations 2008
- Electricity (Amendment) Regulations 2013
  - Minimum Energy Performance Standards (MEPS)
Efficient Management of Electrical Energy Regulations (EMEER) 2008

- Gazetted on 15th December 2008
- Applied to big energy users (equal or exceeding 3 Million kWh over any period not exceeding Six (6) consecutives months)
Notification by Energy Commission

To appoint a Registered Electrical Energy Manager and to submit written confirmation of the appointment

To submit Electrical Energy Management Objectives and Policy.

To submit Electrical Energy Management accounts and documents
Registered Electrical Energy Manager (REEM)

- The registration is needed for the purpose of the Regulations.

- “No person shall engage in, be employed or hold himself out as a REEM for the purposes of these Regulations unless the person has been registered by the Commission”
Functions and Duties of REEM

- Audit and analyse
- Advise in developing and implementing measures
- Monitor the implementation of the measures
- Supervise the keeping of records and verify its accuracy; and
- Ensure the timely submission of information and reports.
Installation Subjected to EMEER 2008

Registered Electrical Energy Manager

* Note: As of August 2015
Energy Consumption for Industry Sector (2014)

(*Based on the Number of Installation that Submitted a Complete Report for Year 2014)

<table>
<thead>
<tr>
<th>Sector</th>
<th>kWh</th>
<th>Millions</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEEL MANUFACTURING</td>
<td>1,519</td>
<td>13 Installations</td>
</tr>
<tr>
<td>CEMENT</td>
<td>1,874</td>
<td>11 Installations</td>
</tr>
<tr>
<td>RUBBER</td>
<td>124</td>
<td>8 Installations</td>
</tr>
<tr>
<td>WOOD</td>
<td>202</td>
<td>5 Installations</td>
</tr>
<tr>
<td>CERAMIC</td>
<td>156</td>
<td>7 Installations</td>
</tr>
<tr>
<td>PULP &amp; PAPER</td>
<td>652</td>
<td>6 Installations</td>
</tr>
<tr>
<td>FOOD</td>
<td>282</td>
<td>16 Installations</td>
</tr>
<tr>
<td>OIL MILL</td>
<td>330</td>
<td>20 Installations</td>
</tr>
<tr>
<td>PETROCHEMICAL/OIL &amp; GAS</td>
<td>720</td>
<td>13 Installations</td>
</tr>
<tr>
<td>SEMICONDUCTOR</td>
<td>214</td>
<td>5 Installations</td>
</tr>
<tr>
<td>AUTOMOTIVE</td>
<td>385</td>
<td>7 Installations</td>
</tr>
</tbody>
</table>
Energy Consumption for Commercial Sector (2014)

(*Based on the Number of Installation that Submitted a Complete Report for Year 2014)

- **HOTEL**: 3 Installations, 34 kWh
- **SHOPPING COMPLEX**: 44 Installations, 789 kWh
- **OFFICE**: 8 Installations, 71 kWh
- **HOSPITAL**: 3 Installations, 96 kWh
- **UNIVERSITY**: 10 Installations, 252 kWh

[Suruhanjaya Tenaga Energy Commission]
Energy Saving Measures (ESM) Implemented in 2014

Percentage of Energy Conservation Activity Implemented in 2014

- **LIGHTING**: 275 (29%)
- **MOTOR**: 43 (5%)
- **AIRCOND/CHILLER/AHU**: 220 (23%)
- **INVERTER/VSD/VFD**: 62 (6%)
- **COMPRESSOR**: 85 (9%)
- **PUMP**: 16 (2%)
- **PROCESS**: 70 (7%)
- **AWARENESS**: 65 (7%)
- **OTHERS**: 117 (12%)

Total: 900

*NOTE: AS OF JUNE 2014*
Estimated Energy Saving for ESM Implemented 2014

Energy (kWh) Saving per Activity

- LIGHTING: 15,426,524.75
- MOTOR: 4,549,489.14
- AIRCOND/CHILLER/AHU: 41,670,893.76
- INVERTER/VSD/VFD: 32,382,411.37
- COMPRESSOR: 16,549,863.24
- PUMP: 1,947,610.80
- PROCESS: 18,647,827.99
- OTHERS: 12,014,080.95

Estimated Energy Saving for ESM

Implemented 2014
Example of ESM Implemented

**LIGHTING**
- Replace T8 fluorescent tubes with T5 fluorescent lights / LED lights
- Timer control and setting for lighting

**MOTOR**
- Change to high efficiency motor
- Controlling 'on' and 'off' timing for specific motor

**INVERTER / VSD / VFD**
- Install VSD for motors
- Install inverter for pumps

**COMPRESSOR**
- Leakage improvement
- Changing to high efficient compressor

**AIRCOND/CHILLER / AHU**
- Reset air conditioner temperature to 24 deg C
- Air conditioning replacement to more efficient type

**PUMP**
- Maintenance pump system
- Changing to high efficient pump

**AWARENESS PROGRAM**
- Conducted energy saving awareness briefing to all staff
- Energy saving awareness labelling for light switches

**OTHERS**
- Using transparent roofing to utilize sunlight in production area
- Install economizer for boiler

**PROCESS**
- Stopping plant equipment based on operation requirement
- Control process flow

Example of ESM Implemented by Suruhanjaya Tenaga Energy Commission
Minimum Energy Performance Standards (MEPS)

Implementation and enforcement to 5 Domestic Electrical Products (Air Conditioner, Refrigerator Television, Domestic Fan and Lamps).

The amendments of the Electricity Supply Regulations gazetted on the 3rd Mei 2013.

The above 5 appliances must adhere to the standards and criteria of MEPS and must be affixed with appropriate label.

Minimum MEPS value = 2 Star
Improving the energy efficiency electrical equipment through Product Energy Efficiency Rating & Labeling.
## Enforcement of 5 MS Standards for MEPS

<table>
<thead>
<tr>
<th>NUMBER</th>
<th>TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS 2595:2014</td>
<td>MEPS for Refrigerator</td>
</tr>
<tr>
<td>MS 2597:2014</td>
<td>MEPS for Air Conditioners</td>
</tr>
<tr>
<td>MS 2576:2014</td>
<td>MEPS for Television</td>
</tr>
<tr>
<td>MS 2574:2014</td>
<td>MEPS for Domestic Fan</td>
</tr>
<tr>
<td>MS 2598:2014</td>
<td>MEPS for Lamps</td>
</tr>
</tbody>
</table>
## New appliances and equipment to be regulated under MEPS

<table>
<thead>
<tr>
<th>Appliances/Equipment</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric Motor</td>
<td>2015</td>
</tr>
<tr>
<td>Rice Cooker</td>
<td>2015</td>
</tr>
<tr>
<td>Electric Kettle</td>
<td>2016</td>
</tr>
<tr>
<td>Microwave</td>
<td>2016</td>
</tr>
<tr>
<td>Dishwasher</td>
<td>2017</td>
</tr>
<tr>
<td>Clothes Dryer</td>
<td>2017</td>
</tr>
<tr>
<td>Washing Machine (with SPAN)</td>
<td>2019</td>
</tr>
<tr>
<td>Chiller (with industries)</td>
<td>2020</td>
</tr>
<tr>
<td>Building (with other agencies)</td>
<td>2015-2020</td>
</tr>
</tbody>
</table>
Monitoring of 25 Ministries: 5% reduction (2nd Quarter 2015)

**SUMMARY OF ELECTRICITY CONSUMPTION (KWH & RM) FOR 25 MINISTRIES IN 2013, 2014 & 2015**

<table>
<thead>
<tr>
<th>Year</th>
<th>kWh</th>
<th>RM</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013 (Baseline year)</td>
<td>264,317,434</td>
<td>100,261,374</td>
</tr>
<tr>
<td>2014</td>
<td>249,559,216</td>
<td>113,020,775</td>
</tr>
<tr>
<td>2015 (Annualised)</td>
<td>248,065,614</td>
<td>111,277,869</td>
</tr>
</tbody>
</table>

**Percentage of saving for Jan-Jun 2014 compared to Jan-Jun 2013:**
- 6.3%  
- -12.1%

**Percentage of saving for Jan-Jun 2015 compared to Jan-Jun 2014:**
- 0.6%  
- 1.7%

**Percentage of saving for Jan-Jun 2015 compared to Jan-Jun 2013:**
- 6.9%  
- -10.1%

**Reduction of CO2 Emission for Jan-Jun 2015 compared to Jan-Jun 2013 (Ton CO2):** 6,826
<table>
<thead>
<tr>
<th>Project</th>
<th>Progress (%)</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kementerian Sumber Manusia</td>
<td>100</td>
<td>• Testing &amp; Commissioning (T&amp;C) completed. JKR will issue notice of completion. Savings 40% on lighting sector and 20% on BCS (Auto Mode)</td>
</tr>
<tr>
<td>Kementerian Kesihatan Malaysia</td>
<td>100</td>
<td>• Testing &amp; Commissioning (T&amp;C) completed. JKR will issue notice of completion. Savings 50% on lighting sector and 20% on BCS (Auto Mode)</td>
</tr>
<tr>
<td>Kementerian Kewangan</td>
<td>80</td>
<td>• Installation is in the final stage.</td>
</tr>
<tr>
<td>Kementerian Luar Negeri</td>
<td>90</td>
<td>• Installation completed. To conduct T&amp;C.</td>
</tr>
<tr>
<td>Kementerian Sains, Teknologi dan Inovasi</td>
<td>90</td>
<td>• Installation completed. To conduct T&amp;C.</td>
</tr>
<tr>
<td>KPDNKK</td>
<td>40</td>
<td>• Installation in progress.</td>
</tr>
<tr>
<td>KeTTHA</td>
<td>40</td>
<td>• Installation in progress</td>
</tr>
<tr>
<td>Kementerian Pendidikan</td>
<td>30</td>
<td>• Simulation completed. To begin installation</td>
</tr>
<tr>
<td>Kementerian Pertanian dan Industri Asas Tani</td>
<td>10</td>
<td>• Simulation in progress. To submit report.</td>
</tr>
</tbody>
</table>
EE Fiscal Incentives

- Sales Tax Exemption for 5 Star Rated Products
  - Local Manufacturer

- Duty Import Exemption for energy efficient products which are not available in the local market
  - Importer

- Investment Tax Allowance or Pioneer Status for companies embarking on energy conservation or energy efficiency projects
  - Industry player and ESCO
EE Guidelines And Standards

Electrical Energy Equipment:
- Transformers
- Motors
- Chillers
- Cooling Towers
- Fans and Blowers
- Pumps
- Air Compressors
- Lighting

Thermal Equipment:
- Boilers and Furnaces
- Thermal Oil Heaters
- Absorption Chillers and Heat Recovery Equipment
- Cogeneration System
Gradual move towards market pricing of gas and electricity is expected to have positive impact on EE.
Way Forward For Energy Efficiency In Malaysia

- Introduction of National EE Action Plan with SMART electricity consumption savings target of 6.0% compared to business-as-usual at the end of 10 years
- Establish effective and sustainable funding mechanism for EE projects
- Minimize costs and price distortions in energy supply
- Strengthen capacity of industry players in EE
- Intensify enforcement of EE legislation
- Strengthen and streamline policy as well as legal and institutional framework
- Foster EE culture among industry stakeholders and the public
Thank You