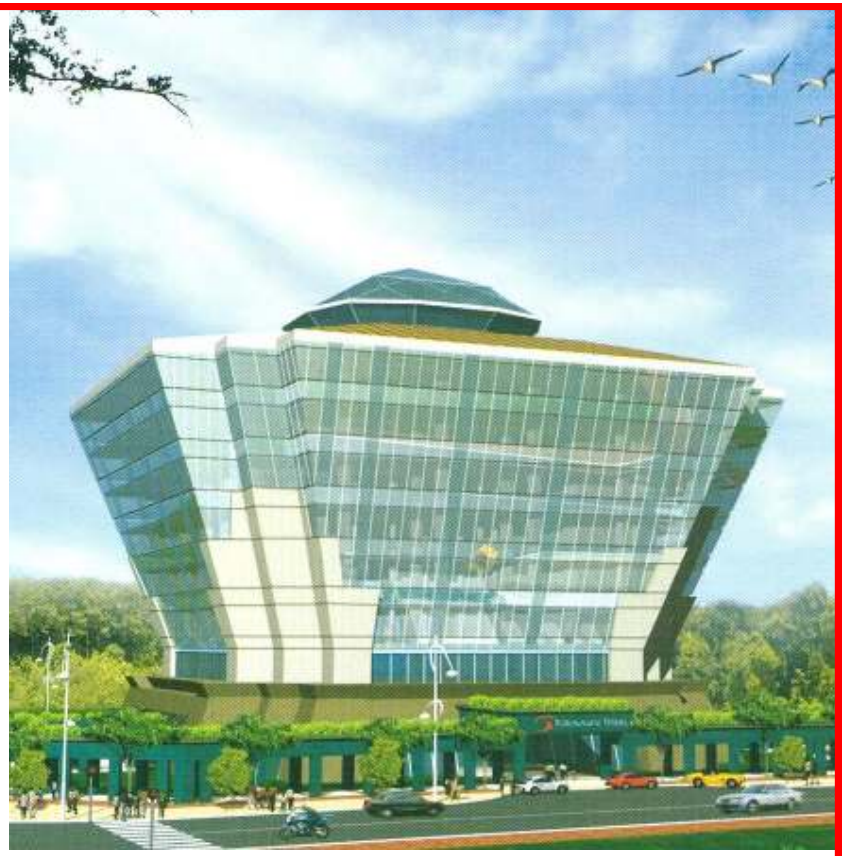
Suruhanjaya Tenaga
Energy Commission

Zulkiflee Umar

Demand Side Management
Energy Commission



DEMAND SIDE MANAGEMENT

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Energy Commission

PRESENTATION OUTLINE

1. Introduction
2. Acts & Regulations
3. Duties, Responsibilities & Initiatives to promote and regulate Energy Efficiency.

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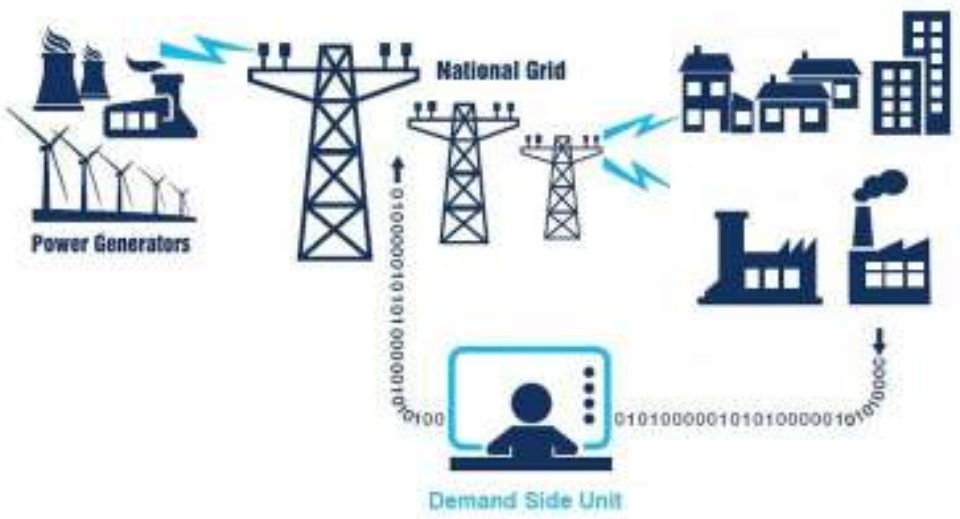
INTRODUCTION

- Demand Side Management Unit is one of the unit in Energy Management & Industry Development Department.
- The Unit was establish to promote and regulate energy efficiency (electrical) in Malaysia.



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Energy Efficiency

Energy Efficiency means using electricity wisely or less energy in order to accomplish the same tasks whether at home or at the workplace

"That's the efficiency expert."

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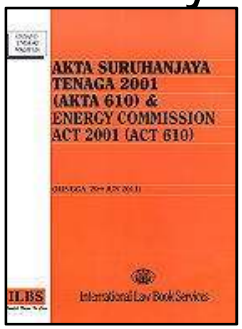
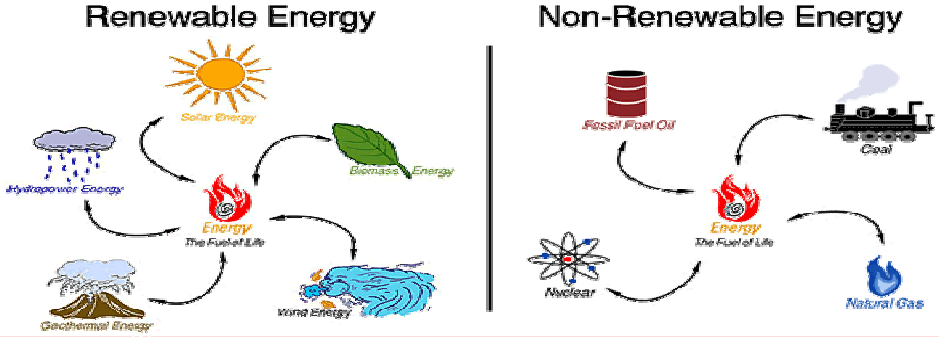
ENERGY COMMISSION ACT 2001

- 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



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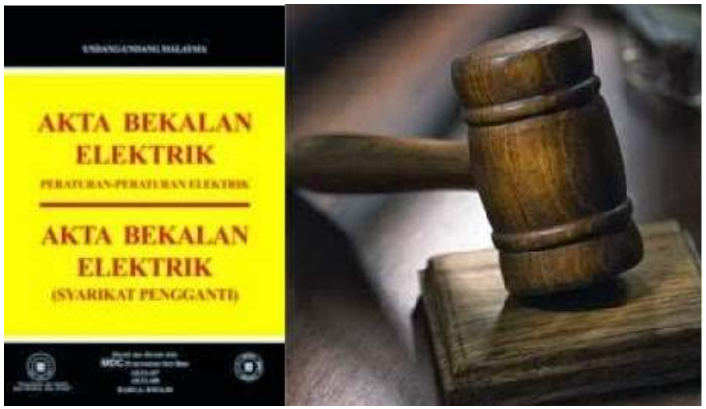
ELECTRICITY SUPPLY ACT 1990

- To promote the efficient use of electricity
- To determine the standards, specifications, practices and measures for the efficient use of electricity.
- Installation and equipment to meet requirements in respect of the efficient use of electricity.



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ELECTRICITY SUPPLY ACT 1990

- ✓ Electricity Supply Act 1990
  - Part VA – Efficient use of electricity
    - Section 23A – Minister to determine standards, etc.

      The Minister may, from time to time, prescribe the standards specifications, practices and measures to be adopted and any other matters in respect of the efficient use of electricity.

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ELECTRICITY SUPPLY ACT 1990

- ✓ Electricity Supply Act 1990
  - Part VA – Efficient use of electricity
    - Section 23B – Installation to meet requirements.

      No person shall use or operate any installation unless the installation meets such requirements as may be prescribed in respect of efficient use of electricity.

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ELECTRICITY SUPPLY ACT 1990

- Part VA – Efficient use of electricity
  - Section 23C – Equipment to meet requirements.

    No person shall manufacture, import, sell or offer for sale or lease any equipment unless the equipment meets such requirements as may be prescribed in respect of efficient use of electricity.

Legal And Regulatory Framework

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**

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DUTIES AND RESPONSIBILITIES

1. • Efficient Management of Electrical Energy Regulations **(EMEER) 2008**

2. • Minimum Energy Performance Standards **(MEPS)**

3. • Energy Performance Contracting **(EPC)**

4. • Incentive for Energy Efficiency Project **(ITA)**

5. • Reporting of Electricity Consumption in Government Buildings

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OUTLINES

1. **Efficient Management of Electrical Energy Regulations (EMEER) 2008**

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2. Minimum Energy Performance Standards (MEPS)

3. Energy Performance Contracting (EPC)

4. Incentive for Energy Efficiency Project

5. Reporting of Electricity Consumption in Government Buildings

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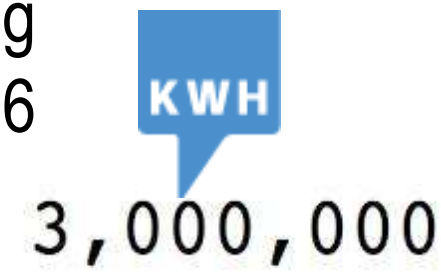
1. EFFICIENT MANAGEMENT OF ELECTRICAL ENERGY REGULATIONS (EMEER) 2008

- Gazetted on 15th December 2008
- Improving energy management practices among large consumers through the implementation and enforcement of the **EFFICIENT MANAGEMENT OF ELECTRICAL ENERGY REGULATIONS (EMEER) 2008.**
- Applied to big energy users (equal or exceeding 3 Million kWh over any period not exceeding 6 consecutives months)



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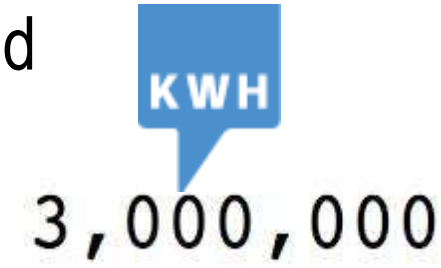
EFFICIENT MANAGEMENT OF ELECTRICAL ENERGY REGULATIONS (EMEER) 2008

- Process and analyze data submitted by licensee such as TNB.
- Registration of electrical energy manager.
  - Process application
  - Arrange for interview
  - Process fee
  - Issuance of certificate
- Process submission of data consumption and generation by installations.
- Promotion and enforcement.



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EFFICIENT MANAGEMENT OF ELECTRICAL ENERGY REGULATIONS (EMEER) 2008

	2010	2011	2012	2013	2014
No. of Installations	1384	1490	1423	1682	1960

- Currently, 829 installations have appointed REEM.

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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**

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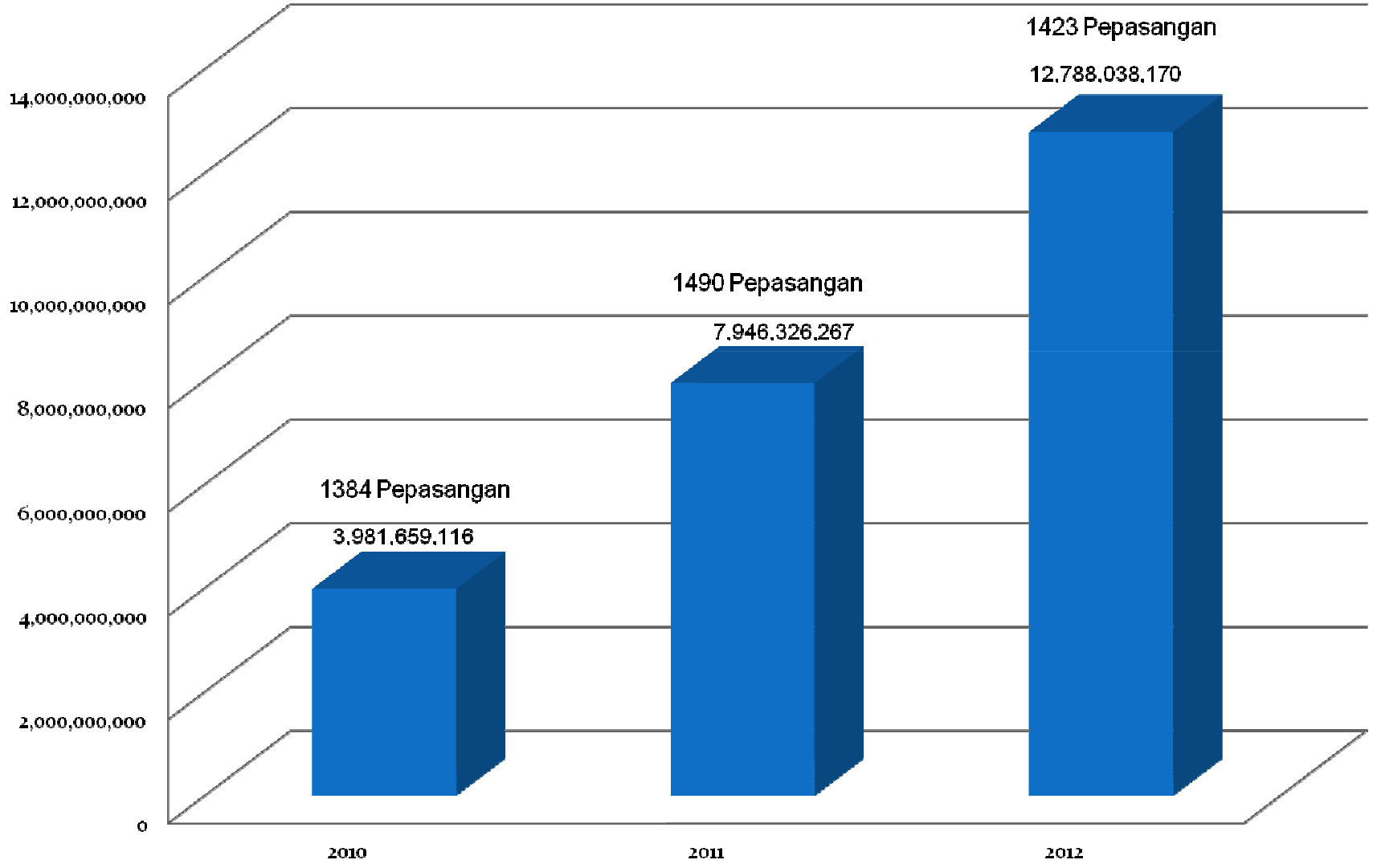
Energy Commission

TOTAL CONSUMPTION ELECTRICITY OF INSTALLATIONS SUBJECTED TO EMEER 2008



REGISTERED ELECTRICAL ENERGY MANAGER (REEM)

- Need for registration of electrical energy manager for the purposes 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.

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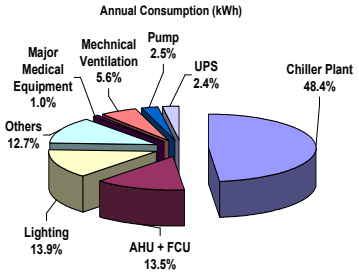
Energy Commission

FUNCTIONS AND DUTIES OF REEM



- To audit and analyse the total electrical energy consumption or generation
- 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 of electrical energy at the installation and verify its accuracy; and
- To ensure the timely submission of information and reports under the regulations.

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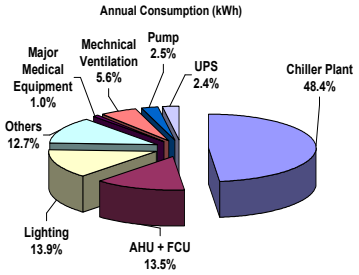
Energy Commission

FUNCTIONS AND DUTIES OF REEM



- To date ST has registered 470 Electrical Energy Managers.
- Recognized Energy Manager Program by Asean Energy Management Scheme (AEMAS) and Malaysian Association of Energy Service Companies (MAESCO)

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Energy Commission

OUTLINES

1. Efficient Management of Electrical Energy Regulations (EMEER) 2008

2. **Energy Performance Contracting**

3. Minimum Energy Performance Standards (MEPS)

4. Incentive for Energy Efficiency Project

5. Reporting of Electricity Consumption in Government Buildings

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Energy Commission

Policies and Guidelines

3. ENERGY PERFORMANCE CONTRACTING (EPC)

- The Cabinet in January 2013 has approved the Energy Performance Contracting (EPC) to be implemented in government buildings.
- EPC is developed to overcome the capital costs/financing barriers in implementing cost-effective energy efficiency measures.
- Provides customers with a comprehensive set of energy efficiency, renewable energy and distributed generation measures and often is accompanied with guarantees that the savings produced by a project will be sufficient to finance the full cost of the project.

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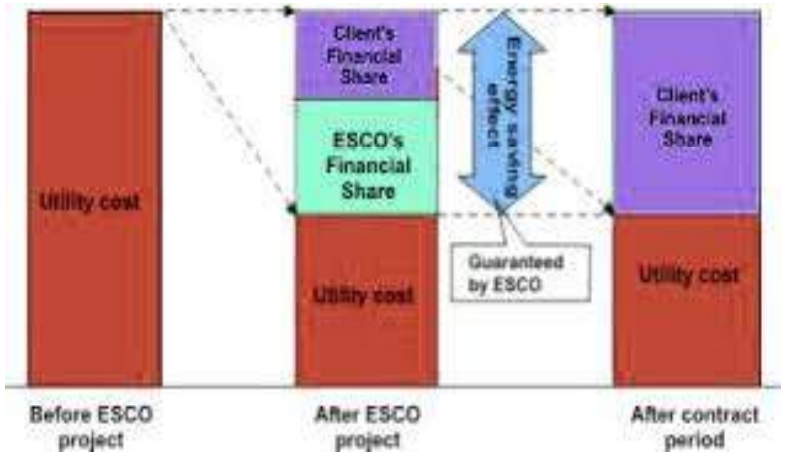
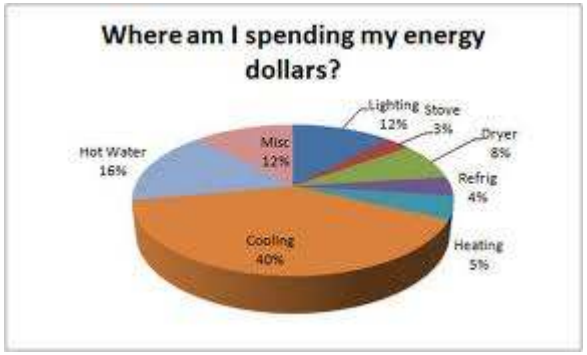
Energy Commission





- How will Energy Performance Contracting (EPC) in government sector be implemented?
  - To engage the service of ESCO in the energy efficiency improvement project of a facility;
  - To perform energy audit at a facility in order to evaluate the level of savings that can be accomplished;
  - ESCO will offer to implement and finance the project;
  - Guarantee the savings over an agreed terms;

- Payment to ESCO is based upon the guaranteed savings achieve;
- The actual amount to be paid will be based upon the agreed sharing value between the ESCO and the owner of the government facility.
- After the agreement ended, the ownership of all the equipment and system installed at the facility will be transferred to facility's owner (Government).
- ESCO to be registered by ST.

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Energy Commission

CRITERIAS FOR REGISTRATION ESCO

For purposes of registration of ESCOs with the Energy Commission, the list of requirements and criteria to be fulfilled by applicants are as follows:

i. the applicant has registered his business with either the Registrar of Business or the Registrar of Companies,

ii. the applicant has employed, on a full time basis, a Registered Electrical Energy Manager as prescribed under the Efficient Management of Electrical Energy Regulations 2008,

iii. the applicant has access to suitable monitoring and testing equipment and instruments required (i.e. electrical power and energy data logger, thermal energy data logger, flow data logger) for energy efficiency management works , and

iv. the applicant has satisfactorily furnished all the information as stipulated in the Application Form.

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Energy Commission

CRITERIAS FOR REGISTRATION ESCO

To date, 46 ESCOs have been registered.

Suruhanjaya Tenaga

APPLICATION FORM

Attachment A

Suruhanjaya Tenaga

SURUHANJAYA TENAGA
No.12, Jalan Tun Hussein
Presint 2, 62100 ,Putrajaya

Tel: 03-88708664
Fax: 03-88888648
Website: www.st.gov.my

ST(DSM/ESCO/2012)

PERMOHONAN PENDAFTARAN
KONTRAKTOR PERKHIDMATAN TENAGA (ESCO)

Untuk Kegunaan Pejabat
No. fail :

PANDUAN KEPADA PEMOHON

1) Borang ini hendaklah diisi dan dikemukakan bersama surat permohonan kepada **Pengarah Jabatan Pengurusan Tenaga dan Pembangunan Industri (JPTPI), Suruhanjaya Tenaga** di alamat seperti di atas.

2) Sila kemukakan dokumen sokongan yang berkaitan seperti berikut;

BIL	PERKARA	TANDAKAN (√)
	MAKLUMAT PERNIAGAAN/SYARIKAT	
1	Pendaftaran Perniagaan/Syarikat	
	i. Borang D (Perakuan Pendaftaran)	
	ii. Borang maklumat perniagaan	
	ATAU (Jika Sendirian Berhad)	
	i. Borang 9 (Perakuan Pemerbadanan Syarikat Sendirian)	
	ii. Borang 24 (Return of Allotments of Share)	
	iii. Borang 49 (Particulars in Registers of Directors, Managers & Secretaries)	
	iv. MAA (Memorandum & Articles of Association of Company)	
	v. Salinan perjanjian sewa atau salinan hakmilik/perjanjian jual beli premis perniagaan (Perjanjian hendaklah ditandatangani oleh pemohon atau salah seorang pemegang saham atau rakan kongsi	
	vi. Profil syarikat pemohon yang mengandungi maklumat mengenai organisasi, kepakaran teknikal syarikat, rekod kerja syarikat dan pendaftaran dengan agensi lain yang berkaitan.	

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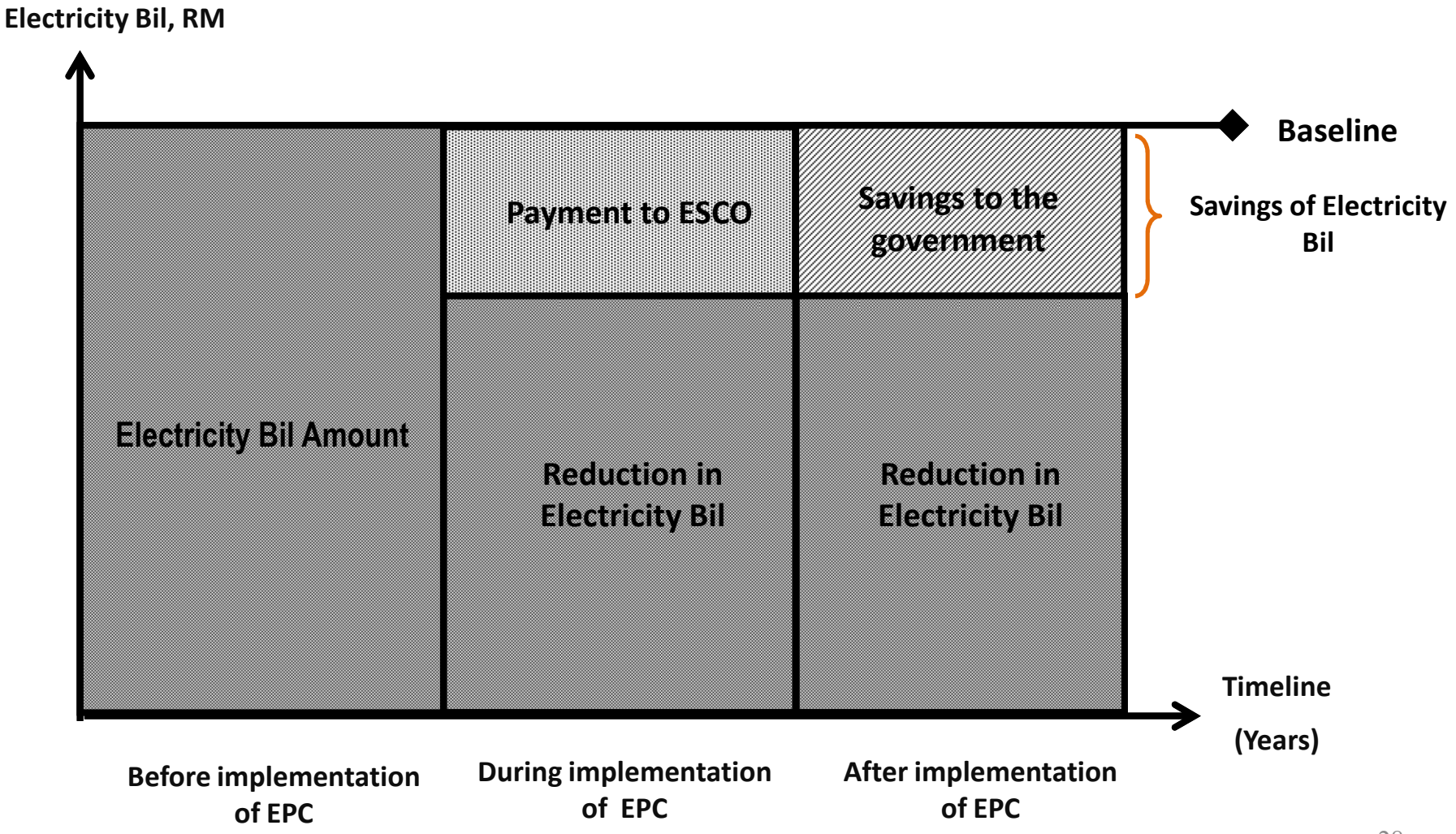
EPC Implementation Concept



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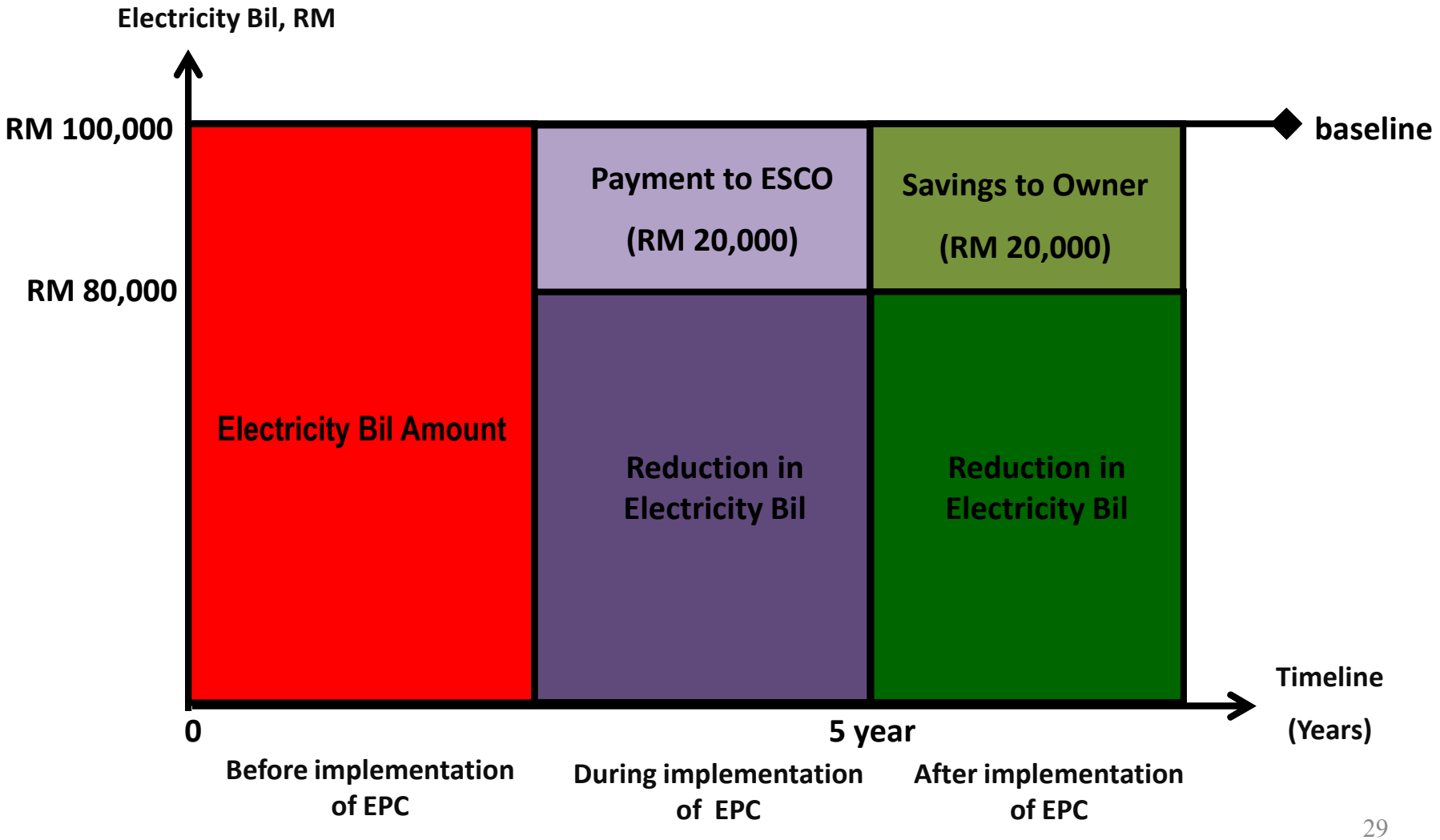
Example:



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Summary:

NO UPFRONT COST to the Owner

ESCO will finance and implement the Energy Saving Measures.

Saving achieved without compromising user's comfort

ESCO install & maintain the E.E equipment involved

ESCO payment based on actual savings achieved in electricity bill

All equipments installed become the property of the Owner after the contract period ended

Suruhanjaya Tenaga
Energy Commission

OUTLINES

1. Efficient Management of Electrical Energy Regulations (EMEER) 2008

2. Energy Performance Contracting (EPC)

3. **Minimum Energy Performance Standards (MEPS)**

4. Incentive for Energy Efficiency Project

5. Reporting of Electricity Consumption in Government Buildings

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Energy Commission

2. MINIMUM ENERGY PERFORMANCE STANDARDS (MEPS)

Implementation and Enforcement of Minimum Energy Performance Standards (MEPS) for 5 Domestic Electrical Products (Air Conditioner, Refrigerator, Television, Domestic Fan and Lamps).

The amendments of the Electricity Supply Regulations has been completed and has been gazette on the 3rd Mei 2013.

An implementation plan to all stakeholders and the public is in place. A continuous awareness and education program will be conducted before 3rd May 2014.

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Energy Efficiency LABEL

Improving the energy efficiency electrical equipment through Product Energy Efficiency Rating & Labeling.

- Energy rating 1 to 5-Star
- Appliance energy rating (equals the number of stars)
- Model information
- Energy consumption (in kWh/year)
- Energy saving compared to an average 3-Star model (in percentage)

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Energy Commission

"FOURTH SCHEDULE

(Subregulation 101A (1))

ELECTRICI TY SUPPLY ACT 1990

ENERGY PERFORMANCE TESTING STANDARDS, MINIMUM ENERGY PERFORMANCE STANDARDS AND EFFICIENCY RATINGS FOR THE PURPOSE OF EFFICIENT USE OF ELECTRICITY

Equipment	*Type of Equipment*	*Energy Performance Testing Standards*	*Minimum Energy Perf ormance Standards (MEPS)*	*Efficiency Ratings*
Refrigerator	*(a)* one -door *(b)* two -doors	MS IEC 62552:2011 (Household refrigerating appliances - Characteristic and test methods)	MEPS's value = 2 Star	

Star Rating	Star Index Value
5	+25% = Star Index
4	+10% = Star Inde <+25%
3	-10% = Star Index <+10%
2	-25% = Star Index < -10%
1	-35% = Star Index < -25%

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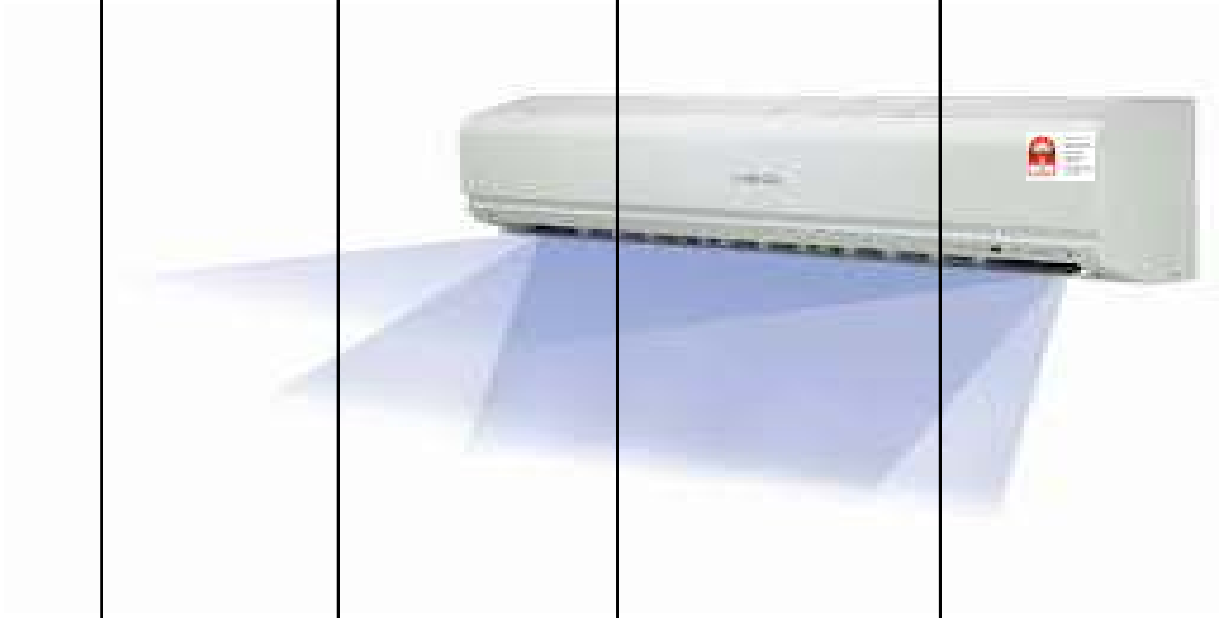
<table>
<tr><th>Equipment</th><th>Type of Equipment</th><th>Energy Performance Testing Standards</th><th>Minimum Energy Perf ormance Standards (MEPS)</th><th>Efficiency Ratings</th></tr>
<tr><td>Air conditioner</td><td>Single split wall mounted air conditioner capacity up to 25, 000 Btu/h</td><td>MS ISO 5151:2004

(Non -ducted air conditioners and heat pumps : Test ing and rating for performance)</td><td>MEPS's value = 2 Star</td><td>(a) Cooling capacity < 4.5kW:
<table><tr><th>Star Rating</th><th>Star Index Value</th></tr><tr><td>5</td><td>≥11.94</td></tr><tr><td>4</td><td>11.16 -11.93</td></tr><tr><td>3</td><td>10.37 - 11.15</td></tr><tr><td>2</td><td>9.56 - 10.36</td></tr><tr><td>1</td><td>9.00 - 9.55</td></tr></table>
(b) 4.5kW < cooling Capacity < 7.1kW:
<table><tr><th>Star Rating</th><th>Star Index Value</th></tr><tr><td>5</td><td>≥10.71</td></tr><tr><td>4</td><td>9.83 - 10.70</td></tr><tr><td>3</td><td>8.94 - 9.82</td></tr><tr><td>2</td><td>8.03 - 8.93</td></tr><tr><td>1</td><td>7.50 - 8.02</td></tr></table></td></tr>
</table>



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Equipment	*Type of Equipment*	*Energy Performance Testing Standards*	*Minimum Energy Perf ormance Standards (MEPS)*	*Efficiency Ratings*
Television	The type of television are of the following list and of size up to or equal to 70 inches: *(a)* plasma *(b)* liquid crystal display (LCD) *(c)* light emitting diode (LED) *(d)* cathode ra y tube (CRT)	*(a)* IEC 62087 Edition 2.0 2008 -10 for power measurement at On Mode *(b)* MS IEC 62301:2006 for power measurement at Standby Mode l	MEPS's value = 2 Star	Star Rating / Star Index Value 5 / +20%? Star Index 4 / +10%? Star Index <+20% 3 / -10%? Star Ind ex <+10% 2 / -20%? Star Index < -10% 1 / -30%? Star Index < -20%

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<table>
<tr><th>Equipment</th><th>Type of Equipment</th><th>Energy Performance Testing Standards</th><th>Minimum Energy Perf ormance Standards (MEPS)</th><th>Efficiency Ratings</th></tr>
<tr>
<td>Domestic fan
 
  </td>
<td>(a) wall
(b) desk
(c) pedestal
(d) ceiling</td>
<td>MS 1220:2001
(performance and construction of electric circulating fans and regulators) second revision
  </td>
<td>MEPS’s value = 2 Star
  </td>
<td>(a) Ceiling fan:
<table>
<tr><th>Star Rating</th><th>Star Index Value</th></tr>
<tr><td>5</td><td>≥ 3.00</td></tr>
<tr><td>4</td><td>2.74 – 2.99</td></tr>
<tr><td>3</td><td>2.66 – 2.73</td></tr>
<tr><td>2</td><td>2.58 – 2.65</td></tr>
<tr><td>1</td><td>2.50 – 2.57</td></tr>
</table>
(b) Pedestal, wall and desk fan:
<table>
<tr><th>Star Rating</th><th>Star Index Value</th></tr>
<tr><td>5</td><td>≥ 1.20</td></tr>
<tr><td>4</td><td>1.12 – 1.19</td></tr>
<tr><td>3</td><td>1.08 – 1.11</td></tr>
<tr><td>2</td><td>1.01 – 1.07</td></tr>
<tr><td>1</td><td>0.93 – 1.00</td></tr>
</table>
</td>
</tr>
</table>

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<table>
<tr><th>Equipment</th><th>Type of Equipment</th><th>Energy Performance Testing Standards</th><th>Minimum Energy Perf ormance Standards (MEPS)</th><th>Efficiency Ratings</th></tr>
<tr>
<td>Lighting</td>
<td>(a) fluorescent

(b) compact fluorescent lamp (CFL)

(c) light emitting diode (LED)

(d) incandescent</td>
<td>(a) MS IEC 60969:

(Self –ballasted lamps for general lighting services – Performance requirements) for fluorescent lamp

(b) LM 79 -08

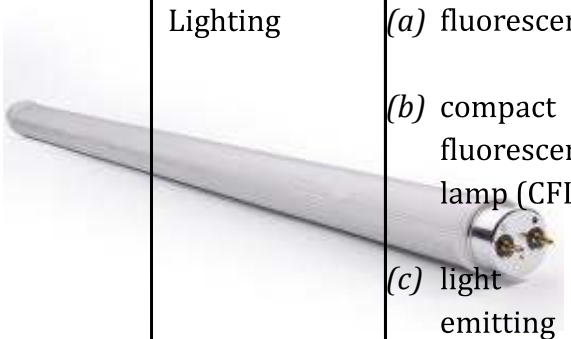
(IESNA Approved Method f or the electrical and photometric measurement of solid -state lighting products) for LED lights</td>
<td>(a) Tubular Fluorescent:

<table>
<tr><th>Type</th><th>(W)</th><th>MEPS (lm/W)</th></tr>
<tr><td rowspan="2">T8</td><td>18-30</td><td>70</td></tr>
<tr><td>≥31</td><td>85</td></tr>
<tr><td rowspan="2">T5</td><td>14</td><td>80</td></tr>
<tr><td>≥15</td><td>85</td></tr>
</table>

(b) Other lighting type:</td>
<td>NIL

  </td>
</tr>
</table>



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Equipment	*Type of Equipment*	*Energy Performance Testing Standards*	*Minimum Energy Perf ormance Standards (MEPS)*	*Efficiency Ratings*

(a) MS IEC 62612 (P)

(Self -ballasted LED -lamps for general lighting services - performance requirement)

Type	*MEPS (lm/ W)*
CFLi (Self ballasted)	
< 9 W	55
9- 15 W	60
16 -24 W	60
≥25 W	60
CFL (Non integrated lamps)	
<10 W	60
11 -26 W	65
≥ 27 W	85
LED Lamp	55
*Incandescent Lamp**	20

*The Minimum Energy Performance Standards (MEPS) value for incandescent lamp shall not apply for the following use:

(a) components in electrical appliances;

(b) medical and lab equipment;

(c) internal decoration, shows and exhibition;

(d) safety and signaling;

(e) conservation of animals and as repellant for insects;

(f) heating and testing;

(g) cleanliness and health;

(h) beauty treatment;

(i) lamps that cannot be directly replaced with other type of lamp; and

(j) incandescent lamp for other purposes deemed suitable by the Commission to be excluded

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MEPS (ISSUANCE OF COA)

Approval Mechanism:

- ✓ With the regulations in place, the 5 appliances will be issued with a Certificate of Approval (COA) by the Energy Commission Malaysia.
- ✓ In order to be issued with a COA, the 5 appliances must satisfy both the safety and performance requirements by submitting test reports together with the COA application.
- ✓ Foreign test reports are accepted as long as the test laboratory is recognized by Department of Standards Malaysia (a member of ILAC and APLAC)

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DEVELOPMENT

- Development of MEPS standards and criteria for new domestic electrical appliances and industry equipment.
    - Rice Cooker
    - Storage Water Heater
    - Vacuum Cleaner
- Development of MEPS Malaysian Standards for all 5 electrical appliances currently regulated.

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OUTLINES

1. Efficient Management of Electrical Energy Regulations (EMEER) 2008

2. Energy Performance Contracting (EPC)

3. Minimum Energy Performance Standards (MEPS)

4. **Incentive for Energy Efficiency Project**

5. Reporting of Electricity Consumption in Government Buildings

4. INCENTIVE FOR ENERGY EFFICIENCY PROJECT

- Since 2009, Government has offered incentives to all company who wish to embark on energy efficiency projects in their installation.
- To apply with MIDA, and Energy Commission will technical evaluation on the viability of the projects and proposed for approval.
- ***Investment Tax Allowance***, Pioneer Status, Sales Tax and Import Duty Exemption.
- Valid until December 2015.

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TYPE OF PROJECTS TO BE CONSIDERED

HVAC

- Efficient chiller
- VSD
- Thermal Energy Storage

Equipment

- Compressor
- High Efficient Motor

Process

- Heat Recovery
- Cogeneration

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OUTLINES

1. • Efficient Management of Electrical Energy Regulations (EMEER) 2008

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3. • Energy Performance Contracting (EPC)

4. • Incentive for Energy Efficiency Project

5. • Reporting of Electricity Consumption in Government Buildings

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5. REPORTING OF ELECTRICITY CONSUMPTION IN GOVERNMENT BUILDINGS

- Energy Commission Malaysia to monitor the implementation the 24 Degree policy in government buildings.
- Electrical energy consumption in all government buildings.
- Periodical reporting to KeTTHA.

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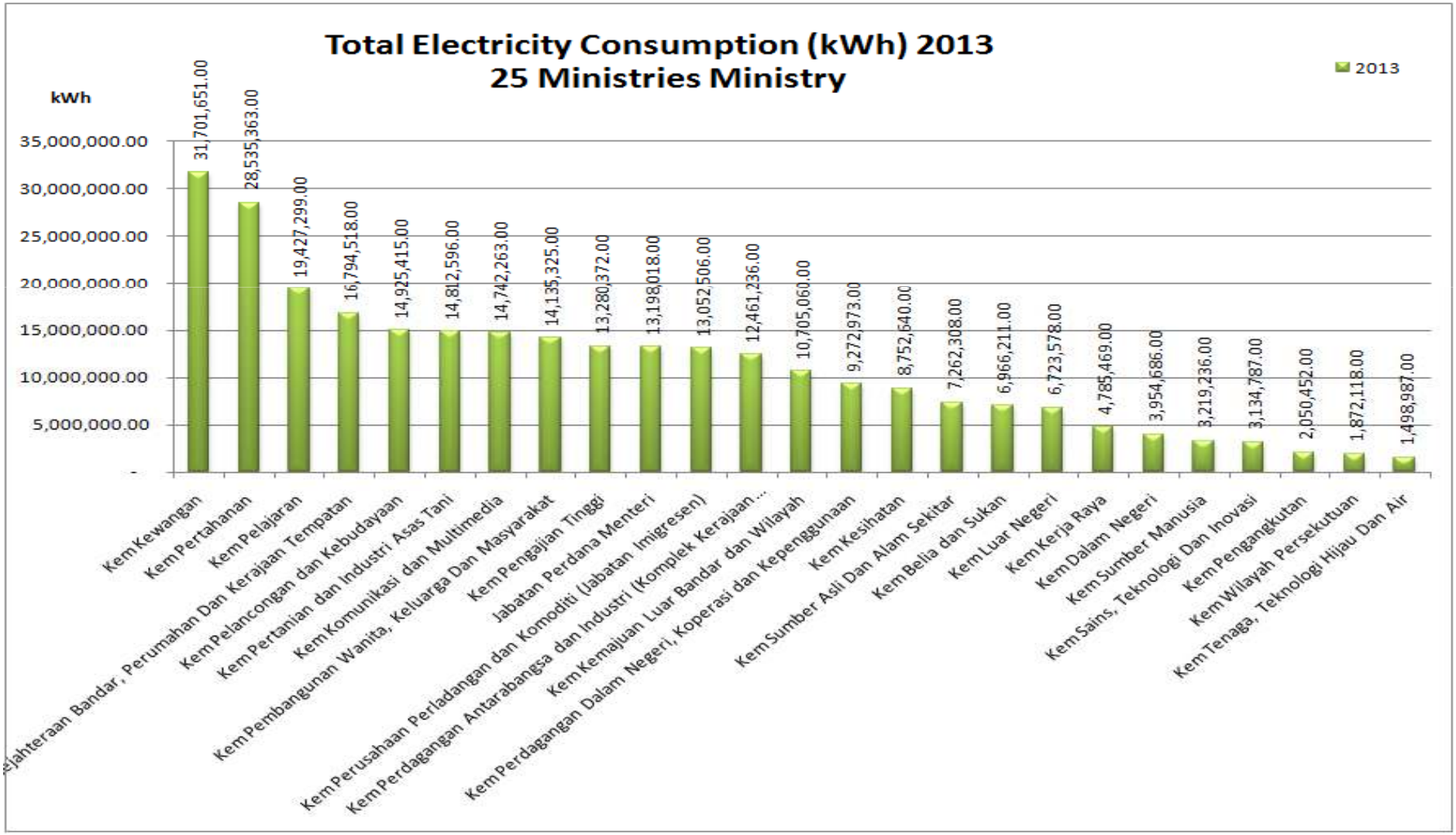
ELECTRICITY CONSUMPTION IN 25 GOVERNMENT MINISTRIES



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IMPLEMENTATION OF FIVE (5) EPC PROJECTS IN GOVERNMENT BUILDINGS

ST has been requested to promote and implement five (5) EPC projects in government buildings in 2014.

Two projects has been initiated:

- Politeknik Merlimau
- Politeknik Shah Alam

3 more projects has been identified to be implemented.

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IMPLEMENTATION OF ENERGY AUDIT AND RETROFIT IN SELECTED GOVERNMENT BUILDINGS

ST has been requested by KeTTHA to implement the energy audit and retrofit projects in 5 government buildings in 2014.

The projects will be implemented by appointing SEDA and MGTC to be the Project Management Company while ST to be the Project Manager.

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IMPLEMENTATION OF EPC PILOT PROJECT WITH BSEEP IN HOSPITAL PUTRAJAYA

ST and BSEEP/JKR will be conducting an EPC pilot project in Hospital Putrajaya.

The success of the project will enable implementation of EPC in other government buildings.

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IMPLEMENTATION OF ENERGY EFFICIENCY PROGRAMME

To conduct energy efficiency:

- Enforcement work;(EMEER 2008 and MEPS)
- Seminars;
- Dialogues;
- Workshops and;
- Capacity buildings.

Secretariat to the ST's Energy Efficiency Committee.

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DEMONSTRATION PROJECTS (ENERGY EFFICIENT BUILDINGS)

ST Energy Efficient Diamond Building in Putrajaya Presint 2

Most energy-efficient building at the Asean Energy Awards (AEA) 2012 held on September 12, in Phnom Penh, Cambodia.

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DEMONSTRATION PROJECTS (ENERGY EFFICIENT BUILDINGS)

Kementerian Tenaga, Teknologi Hijau dan Air (KeTTHA) Low Energy Output (LEO) Putrajaya

"Energy Efficient Building Best Practices Competition 2006" atthe ASEAN level under the "New and Existing Building" category.

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DEMONSTRATION PROJECTS (ENERGY EFFICIENT BUILDINGS)

Malaysian Green Technology Corporation Green Energy Office (GEO) in Bangi, Selangor

Malaysia's first completed green-rated office building.

- Malaysia's first Green Building Index (GBI) Certified Building.

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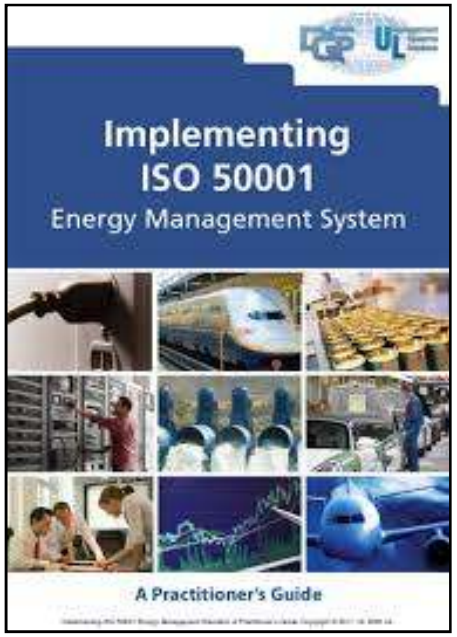
PUBLICATIONS

i. Energy Audit Guidelines for Electrical Energy Managers
ii. ESCO Registration Guidelines
iii. Low-cost and No-cost measures for buildings
iv. Your Guide to Energy Efficiency at Home

MALAYSIAN STANDARDS

Adopting MS ISO 50001:2011 (Energy Management Systems) which specifies requirements for establishing, implementing, maintaining and improving an energy management system, whose purpose is to enable an organization to follow a systematic approach in achieving continual improvement of energy performance, including energy efficiency, energy use and consumption.



MALAYSIAN STANDARDS

MS 1525 Code Of Practice On Energy Efficiency And Use Of Renewable Energy For Non-residential Buildings which provides guidance on the effective use of energy, including the application of renewable energy in new and existing non-residential buildings.

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Thank you

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