



**DEPARTMENT OF ELECTRICITY AND GAS SUPPLY  
MALAYSIA**

# **Title**

## **“Study on Energy Efficiency Standards on Fluorescent Ballasts in the Local Market”**

**Presented By :**

**Tn. Hj. Abd. Aziz bin Hj. Abd. Rahman**

**Energy Efficiency Division**

**Department Of Electricity And Gas Supply**

**Malaysia**



# Objective

- To study the energy efficiency of fluorescent ballasts in the local market.
- To propose energy efficiency standard for fluorescent ballasts.



# Overview

- **JBE has drafted ‘The Energy Efficiency Regulations’ on use of energy efficient products & appliances and efficient use of energy in installations.**
- **No Malaysian Standard on energy efficiency for ballast yet, although some countries already have ( only have safety and performance standard for ballast that is MS 141 : 1993 PART 1 AND PART 2 ).**
- **Asean countries are in the process of setting a common standard.**



## Energy Labeling, Standards and Building Codes

Table 2-38 Industrial and Commercial Equipment Covered by Efficiency Standards Around the World

Product	U.S	Canada	Japan	China	Korea	Malaysia
Fluorescent Lamp Ballasts	Y	Y			Y	
Fluorescent Lamps	Y	Y	Y		Y	
Incandescent Lamps	Y	Y			Y	
Electric Motors	Y	Y		Y		
Commercial AC/Heat Pumps	Y	Y				
Commercial Water Heaters	Y	Y				
Industrial/Commercial Furnaces/Boilers	Y	Y		Y		
Commercial Water Chillers		Y				



# Cost-Saving Analysis

- Fuel cost

Annual consumption : 45,000 GWH ( 1996 FIGURES )

Industrial 45,000 X 53.5% = 24,075 GWH X 25% (Lighting)  
= 6019 GWH

Commercial 45,000 X 27.5% = 12,375 GWH X 30% (Lighting)  
= 3713 GWH

Domestic 45,000 X 18.2% = 8,190 GWH X 20% (Lighting)  
= 1638 GWH

Total = 11370 GWH

If 10% saving on lighting = 1137 GWH

Fuel Cost (saving) @ 7 sen/KWH = RM1137 X 10 X 0.07 X 10  
= RM 80 mil.(annually)



# Cost-Saving Analysis

## • Infrastructure Cost

M.D.	= 8300 MW ( 1996 FIGURES )
Lighting (says 25%)	= 2100 MW
If 10% saving on lighting	= 210 MW

### Infrastructure cost :

Generation	= RM3.5 mil./MW
Transmission and Distribution	= RM2.5 mil./MW
Total	= RM6.0 mil./MW

Overall saving	= RM6.0 X 210MW
	= RM1,260 mil. (initially)

And with 10% annual growth, RM126 mil./year saving.



# Methodology

- To collect catalogues and technical data from manufacturers and distributors.
- To analyze the data collected and the ‘watt loss’ of each type of ballast rated at 36/40W and 18/20W based on test reports of SIRIM.
- To group ‘brands’ of ballasts according to the ‘watt loss’.
- To propose a minimum criteria based on the data collected on ‘watt loss’.
- To discuss with manufacturers and distributors the applicability of the proposed minimum criteria.



# Collection Of Data

- Letters were sent to 26 local manufacturers and distributors for data and catalogue.
- 13 manufacturers and distributors responded.
- 2 manufacturers submitted SIRIM test results, complying with MS 141 : 1993 ( Pt. 1 & Pt. 2 ). The watt loss is measured using performance standards MS 141: 1993 Part 2 with accuracy of + / - 10%





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**List of Manufacturers/Brands**

No.	Manufacturers	Brands
* 1	Philips(M) Sdn. Bhd.	Philips
* 2	Sirijaya Industries Sdn. Bhd.	SJ Lite Day Lite
* 3	Vantage Industries Sdn. Bhd.	Vitalite Superlite
* 4	Kohsun (M) Sdn. Bhd.	K.S. Lite
* 5	Chee Keong (M) Sdn. Bhd.	Goodlite
* 6	Hisda Jaya Corp. Sdn. Bhd.	Mashita GL
* 7	K.C. Hong Industries Sdn. Bhd.	Luxram
* 8	Luen Heng Industries Sdn. Bhd.	LHL Sylvalux Unico Sinnarlite
* 9	Multi Champs Sdn. Bhd.	Zeva Solex Sova
* 10	Success Electronics Supplier (M) Sdn. Bhd.	Nikkon
* 11	Sistem Highlite Fitting Sdn. Bhd.	Highlite

No.	Manufacturers	Brands
* 12	Leader Electrical Appliances Mfg. Sdn. Bhd.	Multilite LEB
* 13	Ample Technique Sdn. Bhd.	WILCO Mashita MEEM ATEC Technologic Beauty Light Clipsal KS Lite Thorn
14	MEEM Controls Sdn. Bhd.	Hlight GL
15	CME Electrical Ind. Sdn. Bhd.	CME
16	Chan Peng Light Fitting Sdn Bhd.	Fluorelite
17	Davex Engineering (M) Sdn. Bhd.	Davis
18	Mighty Synergy Ind. Sdn. Bhd.	MSI
19	Usaha B. S. Lite Sdn. Bhd.	B. S. Lite
20	Advance Industries Sdn. Bhd.	Brite Lite
21	Fujilux Electrical Sdn. Bhd.	Fujilux
22	SE Everlast Sdn. Bhd.	Everlast

\* responded



# Results Of Analysis

## From the response

- For 18/20W fluorescent ballasts ( chart 1 )
  - 45% : watt loss between 6.1 – 8.0W.
  - 25% : watt loss between 10.1 – 12W.
  - 12% : watt loss between 4.1 – 6.0W.
  - 18% : watt loss between 8.1 – 10.0W.
  - 0% : watt loss below 4W.
  - 0% : watt loss above 12W.
- For 36/40W fluorescent ballasts ( chart 2 )
  - 45% : watt loss between 6.1 – 8.0W.
  - 24% : watt loss between 10.0 – 12.0W.
  - 15.5% : watt loss between 4.1 – 6.0W.
  - 15.5% : watt loss between 8.1 – 10.0W.
  - 0% : watt loss below 4W.
  - 0% : watt loss above 12W.



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**Ballast 18/20 W**

Losses (W)	No. of Brands	Percentage %
0 - 2	0	0
2.1 - 4.0	0	0
4.1 - 6.0	6	12
6.1 - 8.0	23	45
8.1 - 10.0	9	18
10.1 - 12.0	13	25
Above 12.1	0	0

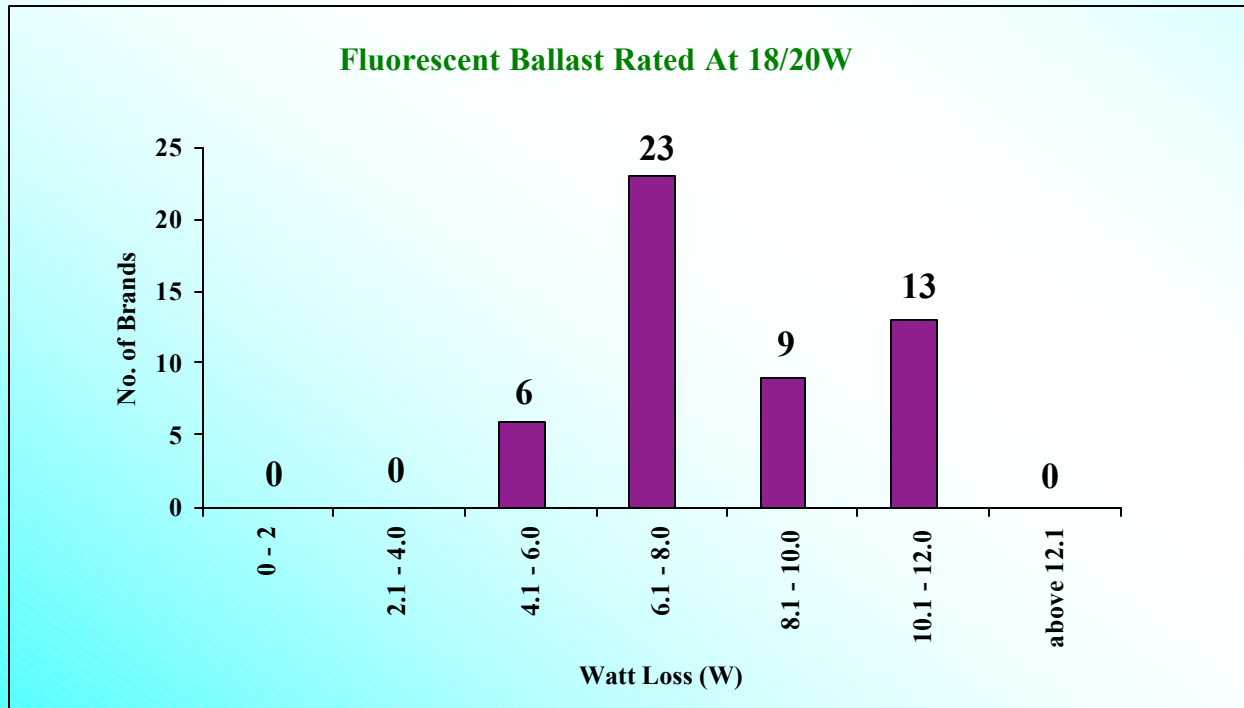


Chart 1



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**Ballast 36/40 W**

Losses (W)	No. of Brands	Percentage %
0 – 2	0	0
2.1 – 4.0	0	0
4.1 – 6.0	9	15.5
6.1 – 8.0	26	45
8.1 – 10.0	9	15.5
10.1 – 12.0	14	24
Above 12.1	0	0

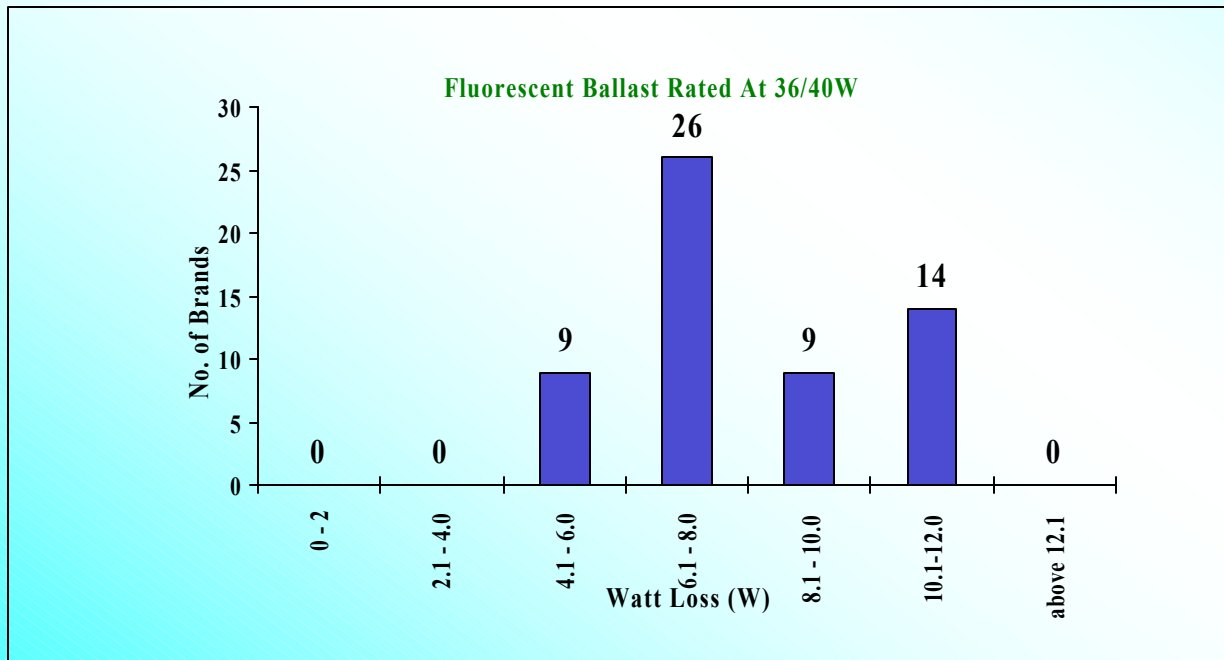


Chart 2



# Results Of Analysis

<b>Manufacturers</b>	<b>Ballast Watt Loss</b>
<b>25%</b>	<b><math>10W &lt; WL &lt; 12W</math></b>
<b>40%</b>	<b><math>8W &lt; WL &lt; 12W</math></b>
<b>85%</b>	<b><math>6W &lt; WL &lt; 12W</math></b>
<b>15%</b>	<b>Below 6W</b>
<b>0%</b>	<b>Below 4W</b>



# **JBE's Proposal in 1996**

- **Effective 1.1.1999, ballasts with watt loss above 10W will not be approved by JBE.**  
(\*25% manufacturers affected)
- **Effective 1.1.2000, ballasts with watt loss above 8W will not be approved by JBE.**  
(\*40% manufacturers affected)
- ? **Effective 1.1.2001, ballasts with watt loss above 6W will not be approved by JBE.**  
(\*85% manufacturers affected)

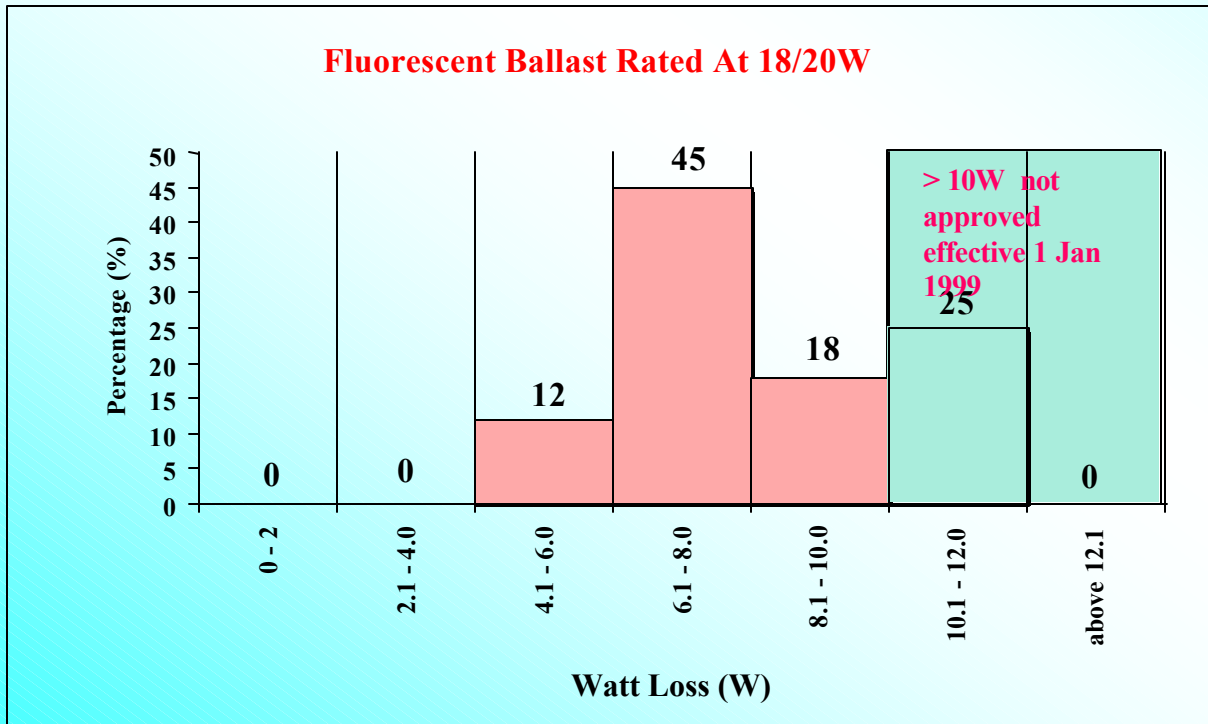
All proposal based on current safety law.



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**Ballast 18/20 W**

Losses (W)	Percentage %
0 – 2	0
2.1 – 4.0	0
4.1 – 6.0	12
6.1 – 8.0	45
8.1 – 10.0	18
10.1 – 12.0	25
Above 12.1	0

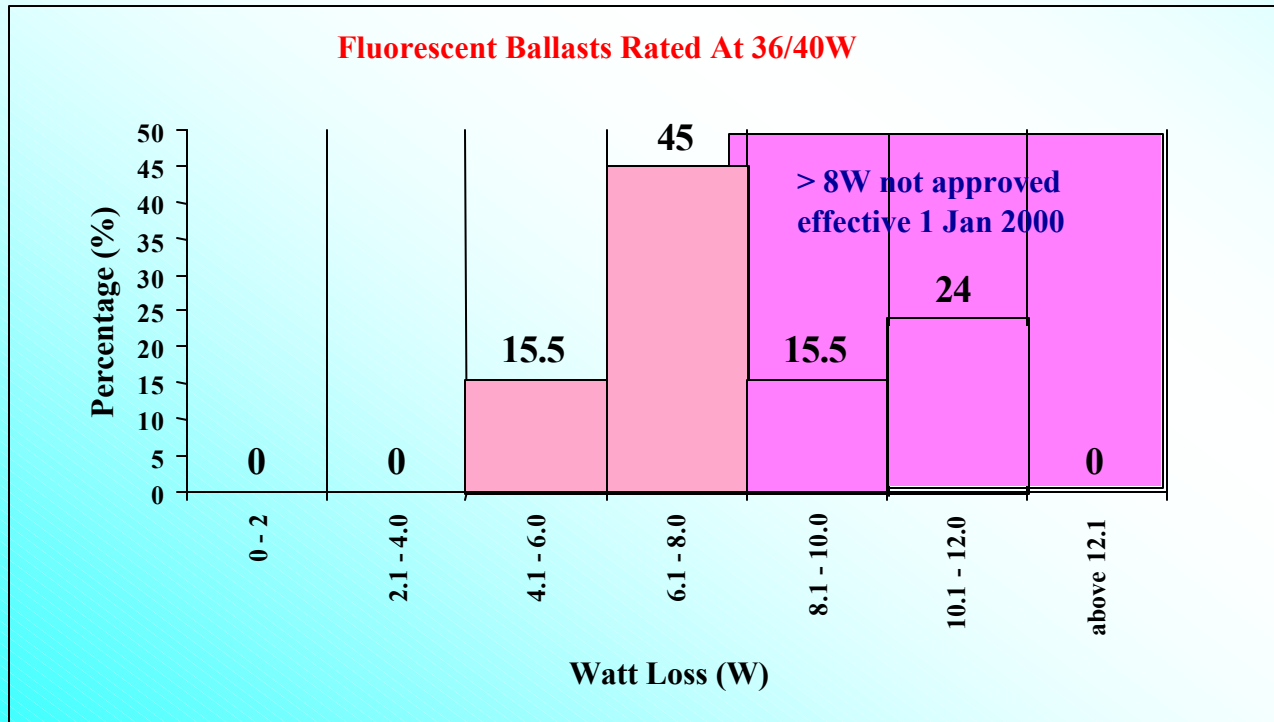




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**Ballasts 36/40 W**

Losses (W)	Percentage %
0 - 2	0
2.1 - 4.0	0
4.1 - 6.0	15.5
6.1 - 8.0	45
8.1 - 10.0	15.5
10.1 - 12.0	24
Above 12.1	0







# Ballast Classification

(effective 1.1.2001)

Watt Loss	Classification
5 - 6 W	Standard Loss
4 - 5W	Low Loss
Below 4W	Extra Low Loss Super Low Loss Ultra Low Loss



# Ballast Efficiency Labeling

Watt Loss	Energy Efficiency Rating Label	Classification
5.0 – 6.0W	*	Standard Loss
4.0 – 5.0W	**	Low Loss
3.0 – 4.0W	***	Extra Low Loss
2.0 – 3.0W	****	Super Low Loss
<2.0W	*****	Ultra Low Loss



## **Ballast Efficiency Labeling**

**The energy efficiency labeling can be implemented only after the law of energy efficiency is enforced.**

**At present, the proposed energy efficiency law is under reviewed.**



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Thank You