

# PROSPECTS OF MINIMUM ENERGY PERFORMANCE STANDARD (MEPS) IN THE PHILIPPINES

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## INTRODUCTION

The Philippine energy sector's objective is to ensure competitive, affordable, and reasonably priced energy supply through socially and environmentally capable energy infrastructures.

One of the policies and strategies, among others, to attain the above objective is to lower expenditure in energy consumption through 1) promotion of energy conservation programs and energy efficient technologies to reduce energy requirements, defer expansion capacity and decrease energy expense for consumers and 2) reduce system losses of power generators, and distribution utilities by adopting appropriate standards and technologies, and enhancing management reforms.

Since energy is being utilized in all sectors of the economy, it is imperative that energy efficiency improvements have to be pursued otherwise, energy waste will continue to be an economic and environmental threat to the country.

The programs which the Department of Energy aggressively promotes on energy efficiency and conservation include Power Conservation and Demand Management Program (Power Patrol), the Fuel Conservation and Efficiency in Road Transport (Road Transport Patrol), the Demand-Side Management Program (DSM), the Government Enercon Program, the Best Practices on Energy Efficiency in Buildings, the Don Emilio Abello Award (DEAA) for Energy Efficiency, the Technology Transfer for Energy Management (TTEM) Program, and energy standards and labeling program for appliances and lighting products.

For energy standards and labeling program the annual savings for year 1999 and 2000 and projected savings for year 2001 to 2004 in million barrels of fuel oil equivalent (MMBFOE) are as follows:

Energy Labeling and Standard	1999	2000	2001	2002	2003	2004
a) Room Air-conditioners	0.351	0.444	0.551	0.673	0.814	0.977
b) Refrigerators and Freezers	0.000	0.069	0.141	0.216	0.296	0.379
c) Fluorescent Lamp and Ballast	0.000	0.000	0.000	0.024	0.049	0.076
d) Industrial Fans and Blowers	0.000	0.000	0.000	0.000	0.064	0.130

In the Philippines, the concept of Minimum Energy Performance Standard (MEPS) started in 1980 with the passing of an omnibus energy conservation law entitled Batas Pambansa Bilang 73 which aimed to institutionalize energy conservation practices in all sectors of the economy. The said law provided, among others, the establishment of energy efficiency standards for oil-powered or electrically-driven machinery and equipment and energy labeling, submission of energy consumption reports and conservation programs by companies.

The Philippine energy standards and labeling program is being implemented jointly by Department of Energy-Energy Utilization Management Bureau and the Department of Trade and Industry - Bureau of Product Standards in partnership with concerned industry associations.

## **PRESENT STATUS OF MEPS IMPLEMENTATION**

At present, the program covers three products, namely, room air conditioners, refrigerators and compact fluorescent lamps. In the case of refrigerators and compact fluorescent lamps, only energy labeling is required. The setting of minimum energy performance standard for these products has been suggested but not yet included in the Philippines energy plan.

Other products being considered for inclusion in the program are fluorescent lamp ballast, electric motors and industrial fans and blowers.

### **1. ENERGY EFFICIENCY STANDARDS AND LABELING OF ROOM AIRCONDITIONERS (AIRCON PROGRAM)**

*Brief Description:* The Aircon Program requires all manufacturers, assemblers and importers to comply with a set of minimum energy efficiency standards and to attach an energy label on each RAC unit released to the market. The energy label would display information on the product's cooling capacity, power consumption and energy efficiency ratio (EER).

In order to protect buyers as well as manufacturers from false claims, samples of all brand and models of RACs are tested periodically in a government-recognized laboratory for validation of the claimed ratings as indicated on the label and to determine compliance with the minimum energy efficiency standards.

*Benefits:* The minimum energy efficiency standards aim to weed out inefficient units in the market. On the other hand, the energy labels gives the buyers the ability to choose what could give them the best value for their money. It allows the buyers to compare different brands and model based on energy efficiency and energy consumption. The cooling capacity rating on the energy label serves as a guide to the buyer in selecting the correct size of RAC for his particular room.

People who buy energy efficient room air conditioners stand to benefit in terms of reduced energy consumption which translates to peso savings. The country benefits in terms of foreign exchange savings from reduced fuel importation and deferred construction of power plants. The program also contributes to climate change mitigation through reduced emissions from power generating plants.

*Program Implementators:* The program is being implemented jointly by the Department of Energy – Energy Utilization Management Bureau (DOE-EUMB) and Department of Trade and Industry - Bureau of Product Standards (DTI-BPS) in partnership with the Association of Home Appliance Manufacturers (AHAM).

#### *Specific Roles:*

DOE-EUMB administers the testing of samples of RAC products through its Fuel and Appliance Testing Laboratory (FATL), submits the test results to BPS, administers the validation of the energy labels, and collaborate with DTI in monitoring compliance of appliance stores to the attachment of energy labels. The two field offices of DOE assist in monitoring compliance of stores located in Visayas and Mindanao.

DTI-BPS enforce the standards. BPS requires manufacturers, assemblers and importers to submit application for factory and/or product assessment and upon compliance to certain requirements, issues authorization to use the product quality marks. The DTI regional and provincial offices, strategically located in various parts of the country, undertake sampling of RAC products from the warehouse,

inspect appliance stores for compliance to the energy label requirements, and imposed penalties for non-compliance.

AHAM coordinates with DTI and DOE in the promotion of the labeling program to the general public and helps in resolving both technical and non-technical problems arising from program implementation. The AHAM President ensures that its members are updated on the status of the labeling program.

*Status:* The program has been on-going since 1993. The Fuel Appliance and Testing Laboratory serves as the official testing laboratory for energy performance testing of samples of room air conditioners. In case FATL is not available, testing of samples is done in BPS recognized testing laboratories of the local manufacturers such as Concepcion Industries and Matsushita Electric Philippines Corp. (MEPCO). As of end March 2001, there are 240 various brand and models of certified window-type air conditioners. Mandatory energy labeling of split type of air conditioners starts July 01, 2001 and market monitoring starts July 1, 2002.

The energy efficiency standards for room air conditioners as per PNS 396-1:1998 for year 1995 to 2002 are as follows:

Classification of RAC's in terms of cooling capacity In kilojoules per hour, kJ/hr	Minimum Energy Efficiency Ratio							
	1995	1996	1997	1998	1999	2000	2001	2002
1) RAC's with cooling capacity below 12,000 kJ/h	8.3	8.3	8.3	8.7	8.7	8.7	9.1	9.1
2) RAC's with cooling capacity above 12,000 kJ/h	7.4	7.8	7.8	7.8	8.2	8.2	8.2	8.6

DTI regional and provincial offices in coordination with the DOE field offices are inspecting appliance stores to check compliance to the energy label requirement. For the year 2000, DTI-DOE consolidated report indicated that 93% of appliance stores visited complied to the energy label requirement.

As of end March 2001, a total of 240 various brands and models of certified room air conditioners are out in the market. Of this 176 models are local, the rest (64 models) are imported.

*Success indicators:* Substantial compliance to the minimum level of energy standards and marked improvement in the average energy efficiency of RAC products being sold in the market. In 2000, the average energy efficiency ratio of RAC products sold was 10.1 for below 12,000 kJ/h and 9.6 for above 12,000 kJ/h.

*Success factors:* The following contributed to the success of program implementation:  
The major stakeholders (manufactures, importers, consumers and government) have been involved from the start of program development up to implementation.  
Teamwork and transparency within and among the implementing agencies.  
Continuous training and external exposure of program staff from DOE and DTI.  
Availability of acceptable testing laboratories.

*Issues and concerns:* The manufacturers and importers call for strengthening of the capability of the government in product testing and certification . They want faster and more efficient service from the government. Further, local manufacturers need more government R & D facilities for parts and components to be more competitive.

Upgrading of the government testing laboratories and accreditation are very essential to enable the Philippines to cope up with global developments such as trade liberalization and mutual recognition arrangements.

## 2. ENERGY LABELING OF REFRIGERATORS AND FREEZERS

*Brief Description.* This program requires all manufacturers, assemblers, and importers of refrigerators to attach an energy label on all refrigerator products with capacity ranging from 142 liters (5 cubic feet) to 267 liters (8 cubic feet) prior to release in the market. The energy label shows information on the unit's energy efficiency rating, total storage volume, and energy consumption in kilowatt hours per day of operation.

Similar to the Aircon Program, samples of refrigerators are tested periodically in a laboratory for validation of the claimed energy ratings.

*Benefits.* The energy label guides the buyers in selecting the size of refrigerator for their particular needs. More important, it allows the buyer to compare different brands and models based on energy efficiency and energy consumption. The benefits are practically the same for both the Aircon and refrigerator program.

*Program Implementors.* Same as in the Aircon Program

*Status.* The program was launched in December 1999. Manufacturers, assemblers and importers were given until end of July 2000 to comply with the required product testing, factory assessment and some documentation's. Mandatory attachment of energy labels started in August 2000. This means that manufacturers and importers can no longer release any refrigerator product without an energy label.

As of end of February 2001, a total of 79 various brands and models of refrigerators have been certified by BPS and now have an energy label. Of this 68 models are local, the rest (11 models) are imported.

## 3. ENERGY LABELING OF COMPACT FLUORESCENT LAMPS (CFLS)

*Brief Description.*

A CFL is an arc discharge lamp similar to commonly used linear or circular tube fluorescent lamp, only that they are constructed with smaller tube diameter and bent a number of times for compactness.

There are two types of CFLs generally available in the market, namely, the "self-ballasted or integral type". The self-ballasted type CFLs are single units containing both the ballast and the lamp including the screw cap that can be fitted into a standard incandescent holder. The modular type on the other hand have the lamp and ballast separate. The lamp tube has pins that fit into an adaptor which normally contains the ballast.

The Philippine National Standard for Self Ballasted Lamps (PNS 603 Part 2:1991) requires testing CFLs to verify claims for performance which include rated voltage, rated wattage, lumen maintenance, and average lamp life.

Samples of the self-ballasted lamps are taken from the importers warehouse and submitted to government testing laboratories to determine if they comply with the standard specifications.

Samples are tested at FATL for lumen maintenance (light output deterioration) and wattage rating. The FATL test results are used to validate the claimed lamp ratings, or in case there are none, to serve as basis for the lamp ratings. Safety tests on the other hand, are done at the BPS Testing Center.

After complying with the standard safety and performance requirements, BPS issues the import commodity clearance allowing the stamping of the appropriate product quality mark on the packing material. This paves the way for the distribution and sale of the certified CFL in the market.

Self-ballasted lamps that do not have the appropriate product quality mark are not allowed to be sold in the market.

*Status:* As of January 2001, a total of 48 various brands and wattages of self-ballasted lamps have been certified by BPS.

Laboratory tests showed that some CFLs, particularly those that are being sold without the appropriate product mark, fail even before reaching 2,000 hours of burning life. Based on claims, CFLs are supposed to last from 6,000 to 8,000 hours. Moreover, in some cases, there was a significant deterioration in the light output.

In view of this, a BPS Technical Committee on Lamps is presently working on the revision of the existing Philippine National Standard for Self Ballasted Lamps to include additional performance and labeling requirements.

#### 4. ENERGY LABELING OF FLUORESCENT LAMP BALLAST

*Background:* A ballast is a device designed to operate a fluorescent lamp by providing a starting voltage and current, and limiting the current from reaching a level high enough to destroy the lamp during normal operation. There has been a misconception among consumers that the energy consumption of a fluorescent lighting fixture, which is a combination of a lamp and a ballast, is due only to the consumption of the lamp. As a result, ballast quality is seldom considered in purchasing decisions. The ballast actually consumes about 25 to 30 percent (up to 50 in some cases) of the energy consumption of the lighting fixture.

Based on a study conducted by FATL in 1987, the power consumed by the ballast for a 20-watt lamp ranges from 10 to 12 watts, while for a 40-watt lamp, it ranges from 10 to 20 watts.

With recent advances in lighting technology and use of more efficient materials, ballast energy consumption could be reduced by up to 50%. This so-called low loss ballast which are currently being introduced into the market consume only about 6 watts for a 40 watt lamp. Considering the tremendous energy savings that could be generated from the use of more energy efficient ballast, DOE together with BPS, has initiated the development of an energy labeling program for ballast.

*Brief Description:* The proposed program would require manufacturers to attach an energy label which would show the amount of ballast loss (power consumption).

The classification of ballast power loss as per PNS 12-3:1999 are as follows:

##### Preheat Ballast Power Loss

Ballast Rating	Class A	Class B	Class C	Class D
1 x 18/20W	Up to 7W	Above 7W	Above 8W	Above 10W
1 x 36/40W		up to 8W	up to 10W	up to 12W

##### Rapid Start Ballast Power Loss

Ballast Rating	Class A	Class B	Class C	Class D
1 x 18/20W	Up to 12W	Above 12W	Above 13W	Above 15W
1 x 36/40W		up to 13W	up to 15W	up to 18W
2 x 36/40W	Up to 17W	Above 17W up to 18W	Above 18W up to 20W	Above 20W up to 30W

*Status:* In the year 2000, the Bureau of Product Standards passed the Philippine National Standard prescribing the energy labeling requirements for electromagnetic ballast. In the same year, the ballast

manufacturers and importers have agreed to a voluntary labeling program until January 2002, after which the program becomes mandatory.

The said standard is described as follows:

Philippine National Standard (PNS 12-3:1999) Lamps and related equipment - Electromagnetic ballast – Energy standards and Labelling requirements

Scope: This standard specifies the power loss and labeling requirements of electromagnetic fluorescent lamp ballast with or without pre-heated cathodes and operated with or without a starter or starting device.

Annex 1 contains the summary of the product energy standards, labelling and performance testing program.

## **PRODUCT CERTIFICATION AND ENFORCEMENT**

The BPS operates two schemes for product certification namely: the Philippine Standard (PS) Quality and/or Safety Certification Mark Scheme and the Import Commodity Clearance Scheme (ICC).

The License to use the Philippine Standard (PS) Quality and/or Safety Certification Mark is awarded to a local or foreign manufacturer that consistently complies with the applicable quality management system standard (ISO 9000 series) and specific Philippine National Standard (PNS) for its product.

The flowchart for PS Certification Mark Scheme is contained in Annex 2.

The Import Commodity Clearance (ICC) on the other hand, is given to an importer whose import shipment meets product quality and/or safety requirements of the specific standard.

The flowchart for ICC Scheme is contained in Annex 3.

## **CONCLUSION**

The Philippines faces good prospects on MEPS implementation. Part of the DOE's proposed legislative agenda in "An Act to Institutionalized Energy Conservation and Enhance Efficient Use of Energy (Energy Conservation Act)".

The Act proposes measures to enhance the implementation and coordination of the government's programs for energy conservation and efficient use of energy. It seeks to renew and strengthen efforts in energy conservation to further sustain the benefits derived therefrom and to provide continuity to programs the country has developed in the field of energy management.

Moreover, currently implemented in the Philippines on a voluntary basis is the Efficient Lighting Initiative (ELI) administered by the International Finance Corporation (IFC) and funded by the Global Environmental Facility (GEF). The program seeks a massive market transformation towards energy efficient lighting.

**PRODUCT ENERGY STANDARDS, LABELING AND PERFORMANCE TESTING PROGRAM**

Product Description	MEPS Year Started	Energy Label Year Started	Performance Testing		REFERENCES
			Year Started	Characteristics	
<b>On-Going Programs</b>					
1. Room Airconditioners					
1.1 window-type < 12,000 kilojoules/hr =>12,000 kilojoules/hr	M - 1993 M - 1994 M - 2002	M - 1993 M - 1994 M - 2002	M - 1993 M - 1994 M - 2002	Cooling capacity Power input Energy efficiency ratio [see annex 1-A]	PNS 396-1:1998 Standard for energy efficiency Ratio and labeling of room air conditioners. PNS 240:1998/ISO 5151:1994 Amd. 01:1998 Non-ducted air conditioners and heat pumps - Testing and rating for performance
1.2 split system					
2. Refrigerator & freezers	Uc	M - 2000	M - 2000	Storage temperature @ 18°C and 43 °C Ambient Temperature, power input, energy efficiency factor, and storage volume	PNS 1475/ISO 7371:1995 Household refrigerating appliances - Refrigerators with or without low temperature compartment - Characteristics and test methods. PNS 1474/ISO 5155 Household refrigerating appliances - Freezer food storage cabinets and food freezers - Characteristics and test methods. PNS 1476/ISO 8187 Household refrigerating appliances - Refrigerator-freezers - characteristics and test method. PNS 1474/ISO 8561 Household frost-free refrigerating appliances - Refrigerators, refrigerators-freezers, frozen food storage cabinets and Food freezers cooled by internal forced air circulation - characteristics and test methods. PNS 396-2:1997 Amd. 1:2000 Household Appliances - Energy Efficiency factor (EEF) and labeling requirements.
2.1 142 to 227 liters (5 to 8 cubic feet)		Uc	Uc		
2.2 other capacities					
3. Fluorescent Lamp Ballast	M - 2002	V - 2001 M- 2002	M - 1985	Ballast's loss, power factor, and other electrical characteristics [see annex 1-B]	PNS 12-3:1999 Lamps and related equipment - Electromagnetic ballast - energy standards and labeling requirements. PNS 02:1994/IEC 81:1987 - Tubular fluorescent lamps for General lighting service PNS 12-2:1996/Amd. 01 & 02:1997/IEC 921:1988 - Ballast For tubular fluorescent lamp - performance requirements. PNS 1261:1998/IEC 901:1996 - Single-capped fluorescent lamp - performance specifications. PNS 12-1:1996/Amd. 01 & 02:1997
3.1 Electromagnetic					
3.2 Electronic Ballast		Uc	M - 1994	Power input, power factor, and other electrical characteristics	PNS135-2:1993/IEC 60929 A.C. supplied electronic ballast for Tubular Fluorescent lamps - performance requirements. PNS 135-1:1993/IEC 60928 A.C. supplied electronic ballast for Tubular fluorescent lamps - general and safety requirements

## PRODUCT ENERGY STANDARDS, LABELLING AND PERFORMANCE TESTING PROGRAM

Product Description	MEPS Year Started	Energy Label Year Started	Performance Testing		REFERENCES
			Year Started	Characteristics	
4. Compact Fluorescent Lamps 4.1 Integral (self-ballasted) and modular type	Uc	Uc	M - 1999	Lumen maintenance, failures up to 2,000 hours, power input, lamp current and power factor	PNS 603-2:1993 Lamps - Self ballasted lamps for general lighting services Part 2: Performance PNS 1261:1995/IEC 901:1996 Single-capped fluorescent lamp - Performance specifications.
Future programs 5. Safety of household and similar electrical appliances particular requirements for fans	Uc		M - 1993	Speed, power input, temperature rise, and other tests on safety	PNS IEC 60335-2-80:2000 - Safety of household and similar electrical appliances Part 2: Particular requirement for fans.
6. Industrial Fans and Blowers			Uc Target 2003	Speed, power input, temperature rise, and other electrical tests	PNS 1481:1998/ ISO 5801:1997 Industrial Fans - Performance testing using standardized airways.

- Notes:**
1. MEPS - minimum energy performance standard; minimum energy efficiency ratio (EER) for room air conditioners. Products cannot be sold legally unless they meet the specified level of energy performance
  2. Performance testing - verification of claimed energy ratings and others through laboratory testing and using national or international standards.
  3. M - Mandatory
  4. V - Voluntary
  5. Uc - under consideration
  6. PNS - Philippine National Standard
  7. ISO - International Organization for Standardization
  8. DTI - Bureau of Product Standards has designated the DOE-EUMBs Fuels and Appliance Testing Laboratory as the government laboratory for energy performance testing of selected products.

**Annex 1-A Energy Efficiency Standard**

Room air conditioners shall conform to the following energy efficiency standards for the year indicated:

<i>Classification of RAC's</i> In terms of cooling capacity In kilojoules per hour, kJ/hr	Minimum Energy Efficiency Ratio							
	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>
1) RAC's with cooling capacity below 12,000 kJ/h	8.3	8.3	8.3	8.7	8.7	8.7	9.1	9.1
2) RAC's with cooling capacity above 12,000 kJ/h      7.4	7.8	7.8	7.8	8.2	8.2	8.2	8.6	

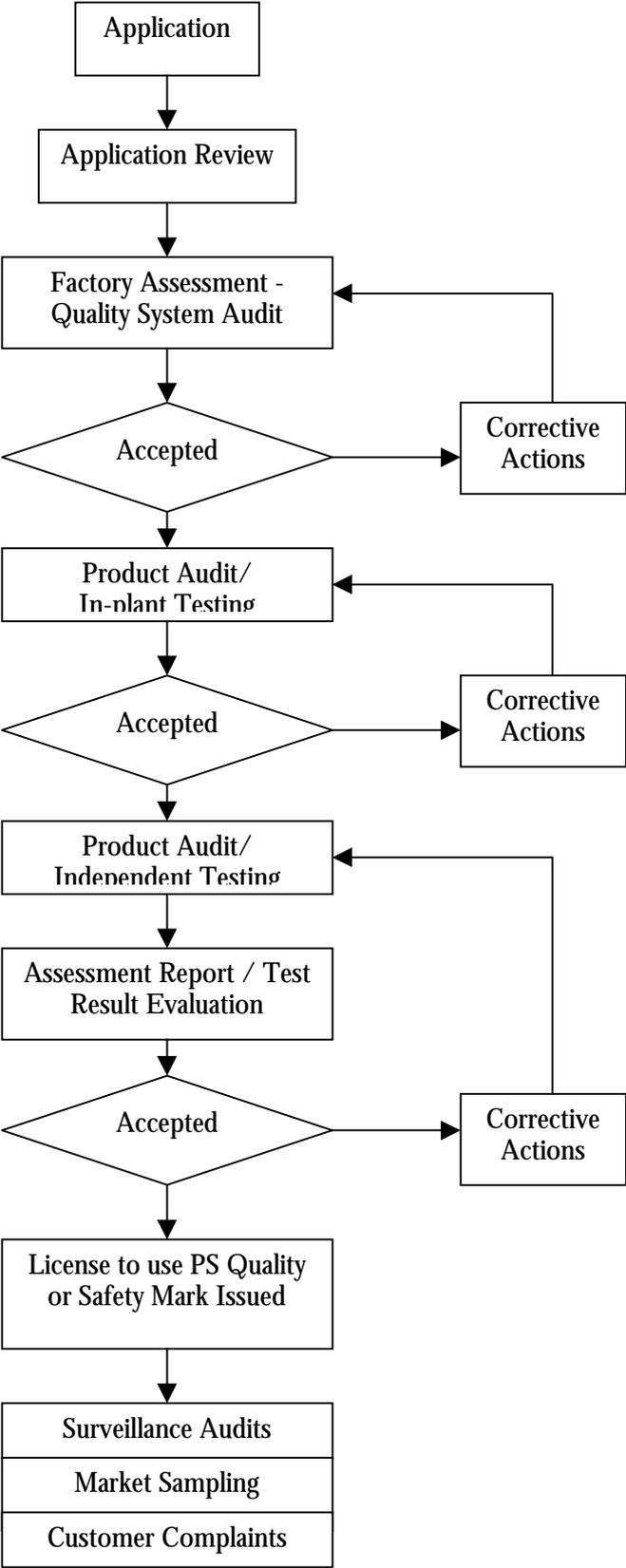
**Annex 1-B Classification of Power Loss***Table 1 - Preheat Ballast Power Loss*

Ballast Rating	Class A	Class B	Class C	Class D
1 x 18/20W	Up to 7W	Above 7W	Above 8W	Above 10W
1 x 36//40W		up to 8W	up to 10W	up to 12W

*Table 2 - Rapid Start Ballast Power Loss*

Ballast Rating	Class A	Class B	Class C	Class D
1 x 18/20W	Up to 12W	Above 12W	Above 13W	Above 15W
1 x 36//40W		up to 13W	up to 15W	up to 18W
2 x 36/40W	Up to 17W	Above 17W up to 18W	Above 18W up to 20W	Above 20W up to 30W

# FLOWCHART FOR PS QUALITY OR SAFETY CERTIFICATION MARK SCHEME



### FLOWCHART FOR IMPORT COMMODITY CLEARANCE SCHEME

