經濟部能源局
Bureau of Energy

51th Meeting of the APEC Expert Group on Energy Efficiency & Conservation (EGEE&C), Washington D.C.

ECONOMY UPDATES for Chinese Taipei

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Energy Efficiency Management

Efficiency Standards and Benchmarks

- At present, Chinese Taipei has announced **MEPS** requirements for **22** product categories; and 51 product categories are authorized for participation in the voluntary energy efficiency labeling program; 14 categories of products are included in the mandatory Energy Efficiency Rating Labeling system in order to provide guidance to consumers for the purchase of products with high energy efficiency.

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Mandatory Energy Efficiency Management Programs

Policy	MEPS	Energy Efficiency Grade Labeling
Promoting Date	December, 1999	July, 2010
Purpose	Manufacturers and importers are obliged to apply in advance for compliance certification	Provide consumers with useful information when they choose among various models
Item	22 product categories	14 product categories
Product Category	1. Air Conditioners (change EER to CSPF) 2. Refrigerators 3. Dehumidifiers 4. Fluorescence Lamps 5. Ballast for Fluorescent Lamps 6. Compact florescent lamps 7. Fluorescent Lamps with embedded ballasts 8. Incandescent bulbs 9. Electric Hot Water Pots 10.Electric Storage Tank Water Heaters 11.Warm-Hot Water Dispensers 12.Chilled-Warm-Hot Water Dispensers **13.Warm-Hot Drinking Water Dispensers** **14.Chilled-Warm-Hot Drinking Water Dispensers** 15.Vehicles 16.Motorcycles 17.Fishing vessel engines 18.Low-voltage single-phase induction motors 19.Low-voltage three-phase squirrel-cage induction motors 20.LED Lamps 21.Air-condition systems 22.Boilers	1. Air Conditioners (2010.7.1) 2. Refrigerator/Freezer (2010.7.1) 3. Automobiles (2010.7.1) 4. Motorcycles (2010.7.1) 5. Dehumidifiers (2011.3.1) 6. Self-ballasted fluorescent lamps (2011.7.1) 7. Instantaneous Gas Water Heaters (2012.12.6) 8. Gas Stoves(2012.12.06) 9. Electric hot water pots (2015.01.01) 10.Electric Storage Tank Water Heaters (2015.10.01) 11.Warm-Hot Water Dispensers (2016.12.01) 12.Chilled-Warm-Hot Water Dispensers (2016.12.01) **13.Warm-Hot Drinking Water Dispensers (2018.01.01)** **14.Chilled-Warm-Hot Drinking Water Dispensers (2018.01.01)**

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Voluntary Energy Efficiency Management Program

Policy	Energy Conservation Label		
Promoting Date	December, 2001		
Purpose	Encourage consumers to buy high-efficiency products and to enhance market penetration of high-efficiency products		
Item	51 product categories		
Product Category	1. Air Conditioners 2. Refrigerators 3. Dehumidifiers 4. Circulation Fans 5. Washing Machines 6. Clothes Dryers 7. Fluorescence Lamps 8. Hand Dryers 9. Hair Dryers 10.Warm-Hot Water Dispensers 11.Chilled-Warm-Hot Water Dispensers 12.Chilled-Warm-Hot Drinking Water Dispensers 13.Warm-Hot Drinking Water Dispensers 14.Vehicles 15.Motorcycles 16.Fluorescent Lamps with embedded ballasts 17.Gas burning cooking appliances	18. Instantaneous Gas Burning Water Heaters 19. Electric Cookers 20. Electric Storage Tank Water Heaters 21. Electric Hot Water Pots 22. Exit Lights and Emergency Direction Lights 23. Televisions 24. Displays 25. DVD Recorder and Player 26. Indoor Light Fixtures 27. Integrated Stereos 28. Compact Fluorescent Lamps 29. Copy machines 30. Printers 31. Air Cleaners 32. Luminaires for road and street lighting 33. Ventilating Fans for Bath Room Use 34. Ventilating Fans for Window Type	35.Notebook Computers 36.Desktop Computers 37.Air Source Heat Pump Water Heater 38.Range Hoods 39.Microwave Ovens 40.Axial flow Fans 41.Centrifugal fan 42.Ballast for Fluorescent Lamps 43.Electric Ovens 44.Electric Storage Tank Boiling Water Heaters 45.LED planar lamp 46.LED Lamps 47.VFI UPS 48.High bay Luminaire 49.Downlights and Recessed luminaires **50.Office and Business Area Luminaire** **51.Indoor parking lot smart lighting fixtures**

Mandatory Energy Efficiency Management Programs

MEPS &
Energy Efficiency Grade Labeling System

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MEPS for Drinking Water Machine

➢ History:

Warm-Hot & Chilled-Warm-Hot Drinking Water Dispenser standard has taken effect in **Jan. 01 2018**.

➢ Test method:

CNS 3910 Drinking Water Dispenser for piping water supply under 60L/h with electric heater for hot water and refrigeration/TE system for chilled water

➢ Energy Efficiency Standard: (MEPS)

	Warm-Hot Type Normalized Standing Loss per 24h $E_{st,24}$ (kWh)	Chilled-Warm-Hot Type Standing Loss per 24h E_{24} (kWh)
MEPS	$0.053 \times V_1 + 0.750$	$0.09 \times V_{eq} + 0.45$

Notes:

$V_{eq} = V_1 \times K_1 + (V_2 \times K_2)/3$

V_1 is the nameplate values of hot-water tank(unit：liter); K_1= (Th–Tamb) / (100 –Tamb)

V_2 is the nameplate values of iced-water tank(unit：liter); K_2= (Tamb –Tc) / (Tamb)

Testing and calculation of normalized standing loss per 24h ($E_{st,24}$) & standing loss (E_{24}) shall comply with CNS 3910 in Chinese Taipei.

Drinking Water Dispensers

(has taken effect in **Jan. 01 2018)**

◆ Energy efficiency grade labeling requirements for Warm-Hot Type

Energy Efficiency Rating	Normalized Standing Loss per 24h, Est,24 (kWh)
Class 1	$E_{st,24} \leqq 0.032V+0.450$
Class 2	$0.032V+0.450 < E_{st,24} \leqq 0.037V+0.525$
Class 3	$0.037V+0.525 < E_{st,24} \leqq 0.042V+0.600$
Class 4	$0.042V+0.600 < E_{st,24} \leqq 0.048V+0.675$
Class 5	$0.048V+0.675 < E_{st,24} \leqq 0.053\times V+0.750$

◆ Energy efficiency grade labeling requirements for Chilled-Warm-Hot Type

Energy Efficiency Rating	24-hr Energy Consumption E_{24} (kWh)
Class 1	$E_{24} \leqq 0.054\times V_{eq} +0.270$
Class 2	$0.054\times V_{eq} +0.270 < E_{24} \leqq 0.063\times V_{eq} +0.315$
Class 3	$0.063\times V_{eq} +0.315 < E_{24} \leqq 0.072\times V_{eq} +0.360$
Class 4	$0.072\times V_{eq} +0.360 < E_{24} \leqq 0.081\times V_{eq} +0.405$
Class 5	$0.081\times V_{eq} +0.405 < E_{24} \leqq 0.09\times V_{eq}+0.45$

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Electric Refrigerators and Freezers

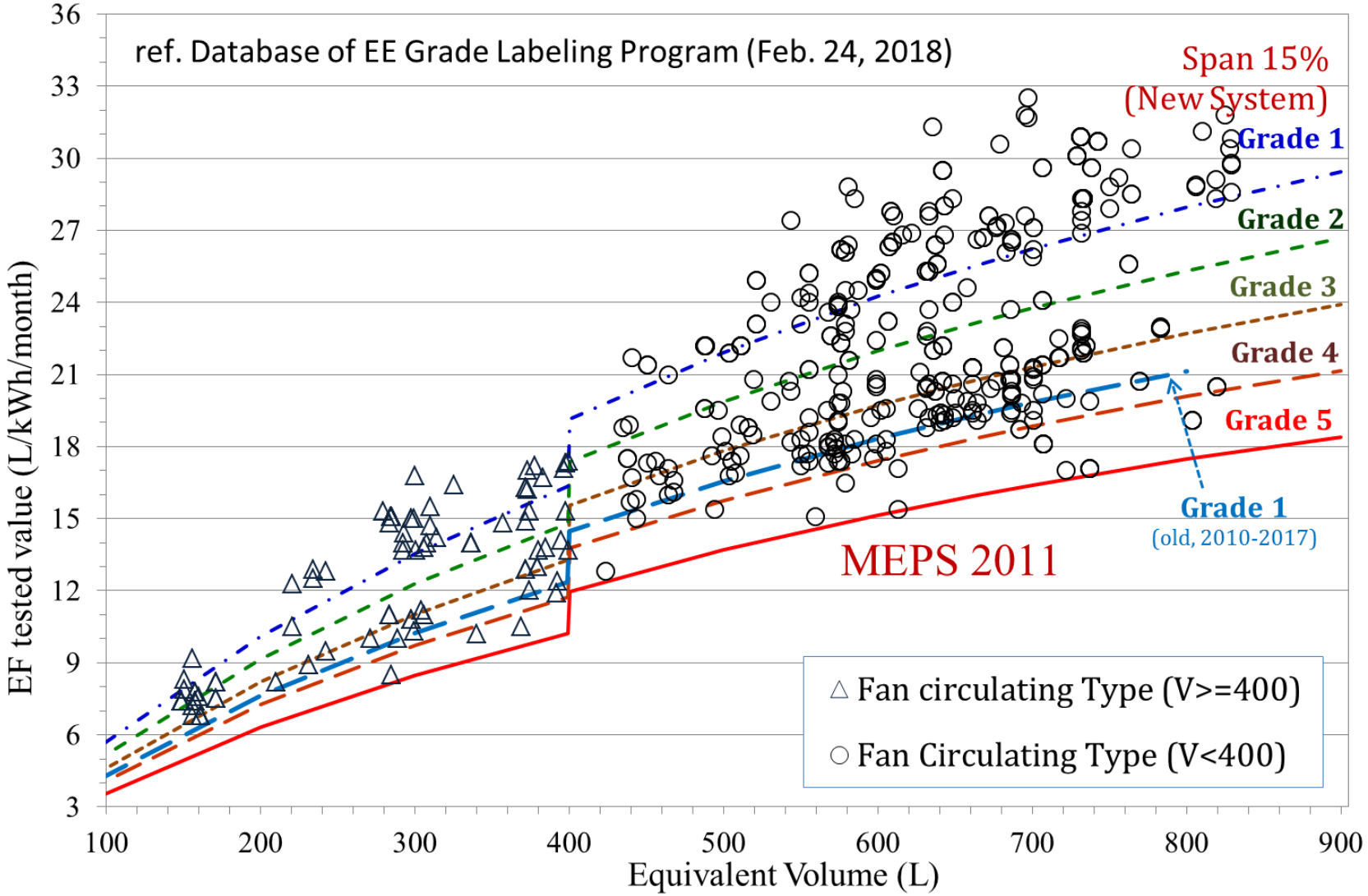
- Revised energy efficiency grade labeling regulation has taken effect in **Jan. 01 2018,** but MEPS keeps as the same as carried out in 2011.
- Test and calculate actual energy factor (E.F.) values of refrigerator according to CNS 2062. (*EF=V_{eq} / energy consumption for 30 days*)
- MEPS

Product class	MEPS for EF(L/kWh/month)
Fan-circulation type refrigerator-freezers for V<400L (automatic defrost)	EF=V/(0.037V+24.3)
Fan-circulation type refrigerator-freezers for V≥400L (automatic defrost)	EF=V/(0.031V+21.0)
Direct cooled refrigerator-freezers for V<400L (manual defrost)	EF=V/(0.033V+19.7)
Direct cooled refrigerator-freezers for V≥400L (manual defrost)	EF=V/(0.029V+17.0)
Refrigerators	EF=V/(0.033V+15.8)

- Energy efficiency grade labeling regulation

Product class	Grade 5	Grade 4	Grade 3	Grade 2	Grade 1
Fan-Type & Direct - Cooled Type	MEPS ≤ EF< MEPS×115%	MEPS×115% ≤ EF< MEPS×130%	MEPS×130% ≤ EF< MEPS×145%	MEPS×145% ≤ EF< MEPS×160%	EF ≥ MEPS×160%
Refrigerator only	MEPS ≤ EF< MEPS×118%	MEPS×118% ≤ EF< MEPS×136%	MEPS×136% ≤ EF< MEPS×154%	MEPS×154% ≤ EF< MEPS×172%	EF ≥ MEPS×172%

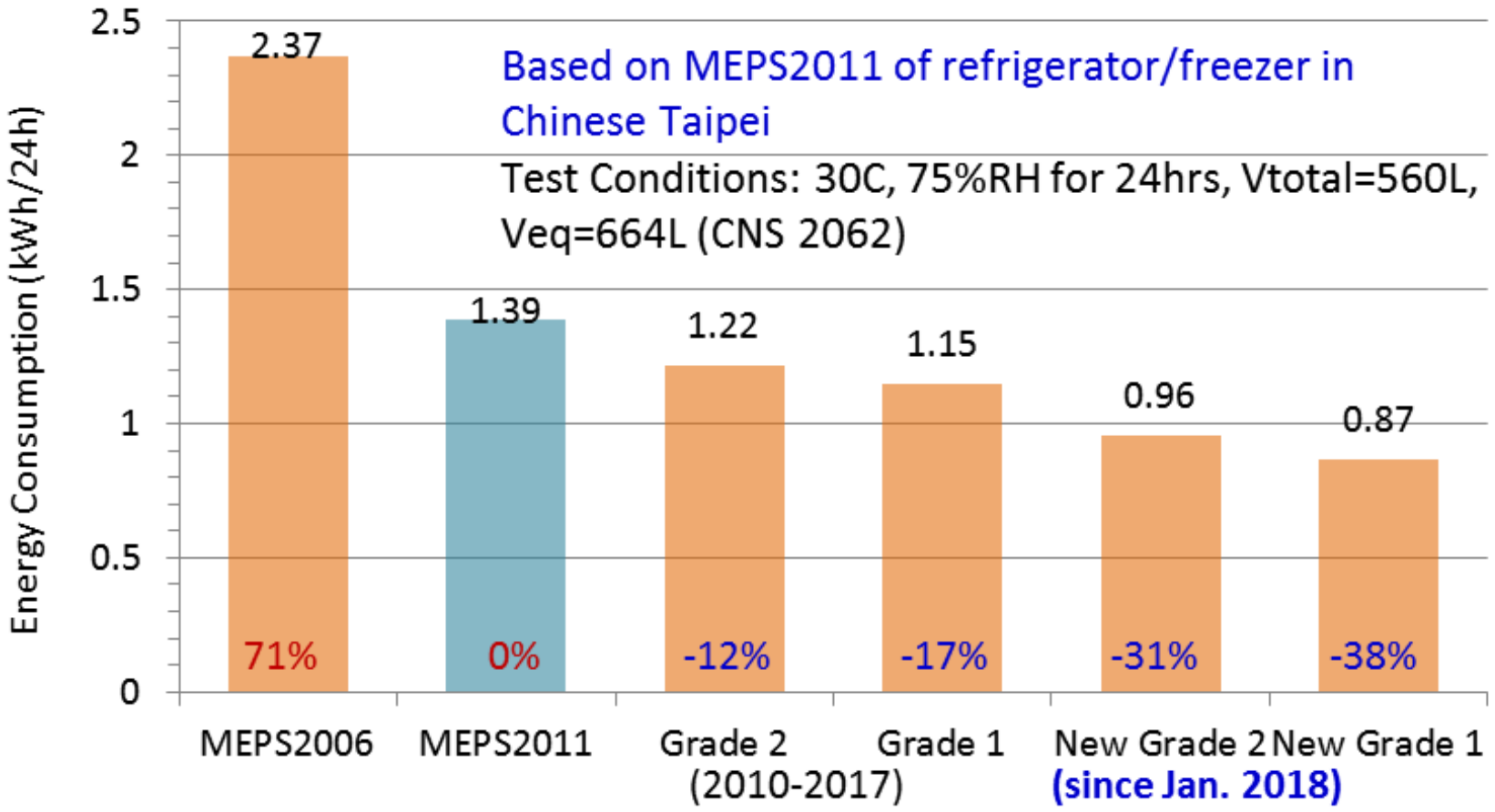
Electric Refrigerators and Freezers



EF data distribution with equivalent volume in Feb. 24, 2018

Electric Refrigerators and Freezers

- Energy Consumption Comparison for MEPS & the energy efficiency grade labeling standard



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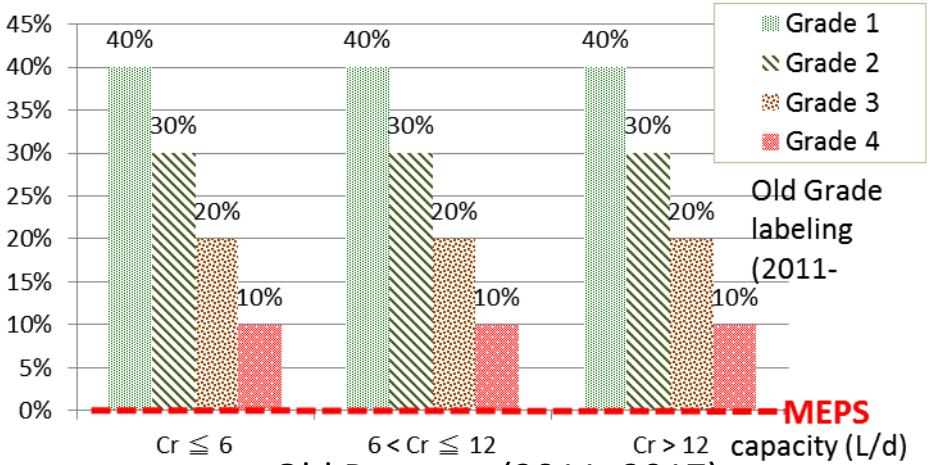
Dehumidifier

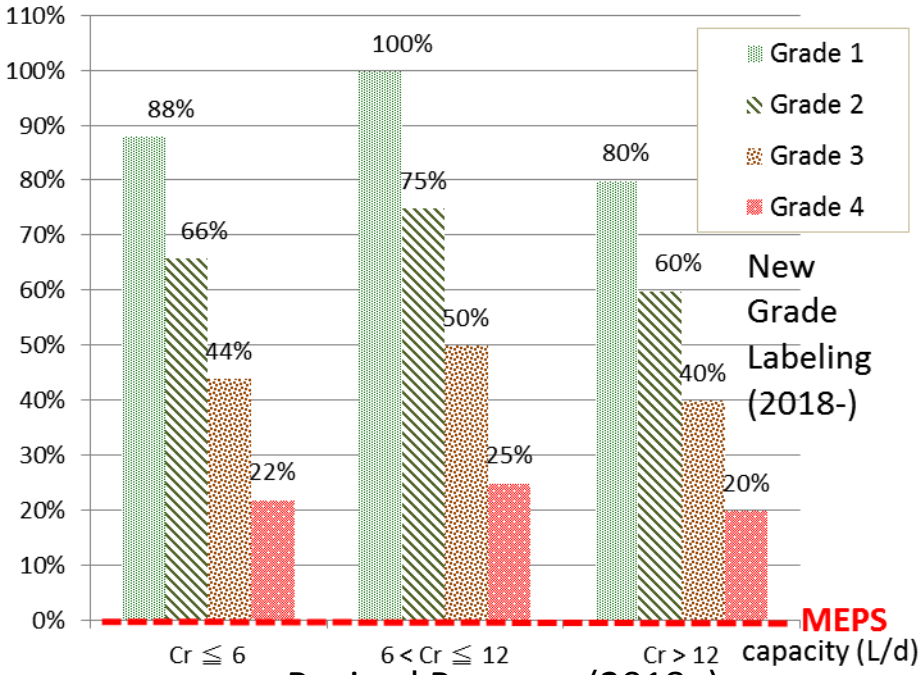
- Revised energy efficiency grade labeling regulation has taken effect in **Jan. 01 2018,** but MEPS keeps as the same as carried out in 2011.
- Test and calculate actual energy factor (E.F.) values of dehumidifier according to CNS 12492 (*EF= Capacity / energy consumption*)
- MEPS

Rated Capacity Cr (L/day)	MEPS for EF (L/kWh)
Cr ≦ 6	1.10
6 < Cr ≤ 12	1.20
Cr > 12	1.40

- Energy efficiency grade labeling regulation



Old Program (2011~2017)



Revised Program (2018~)

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Voluntary Energy Labeling Program

High bay Luminaire

➢ Scope of Application:

1) Ordinary downward-projecting type of suspended or ceiling-mounted lamps that have been verified by this Office, and the rated total light flux should be over 4,000 lumen (lm).
2) Comply with CNS 14335 and CNS 14115

➢ History:

Announced on Sep. 10,2016. Valid until Feb. 01, 2017

➢ Requirement:

- The tested energy efficiency value shall be over 95% of the indicated value and shall meet the following requirements:

  Tested Energy Efficiency Value (lm/W) = Tested Total Light Flux (lm) / Total Input Power (W)

  (1) Where the total light flux of the lamp is below 20,000lm, then it shall be over 110.0 (lm/W)

  (2) Where the total light flux of the lamp is more than 20,000lm, then it shall be over 80.0 (lm/W)

- Other generality requirements

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Downlights and Recessed luminaires

➢ Scope of Application:

1) Conform to CNS 14335, 14115 and 15592 or other standards approved
2) Downlights: ceiling mounted or downward hanging light with barrel or column looks

➢ History:

Announced on Mar. 23, 2017. Valid until May 01, 2018

➢ Requirement:

- The tested energy efficiency value shall be over 95% of the indicated value and shall meet the following requirements:

  Tested Energy Efficiency Value (lm/W) = Tested Total Light Flux (lm) / Total Input Power (W)

  (1) Actual luminaire efficiency value: 95% or more than the rating and greater than 110.0 (lm/w).

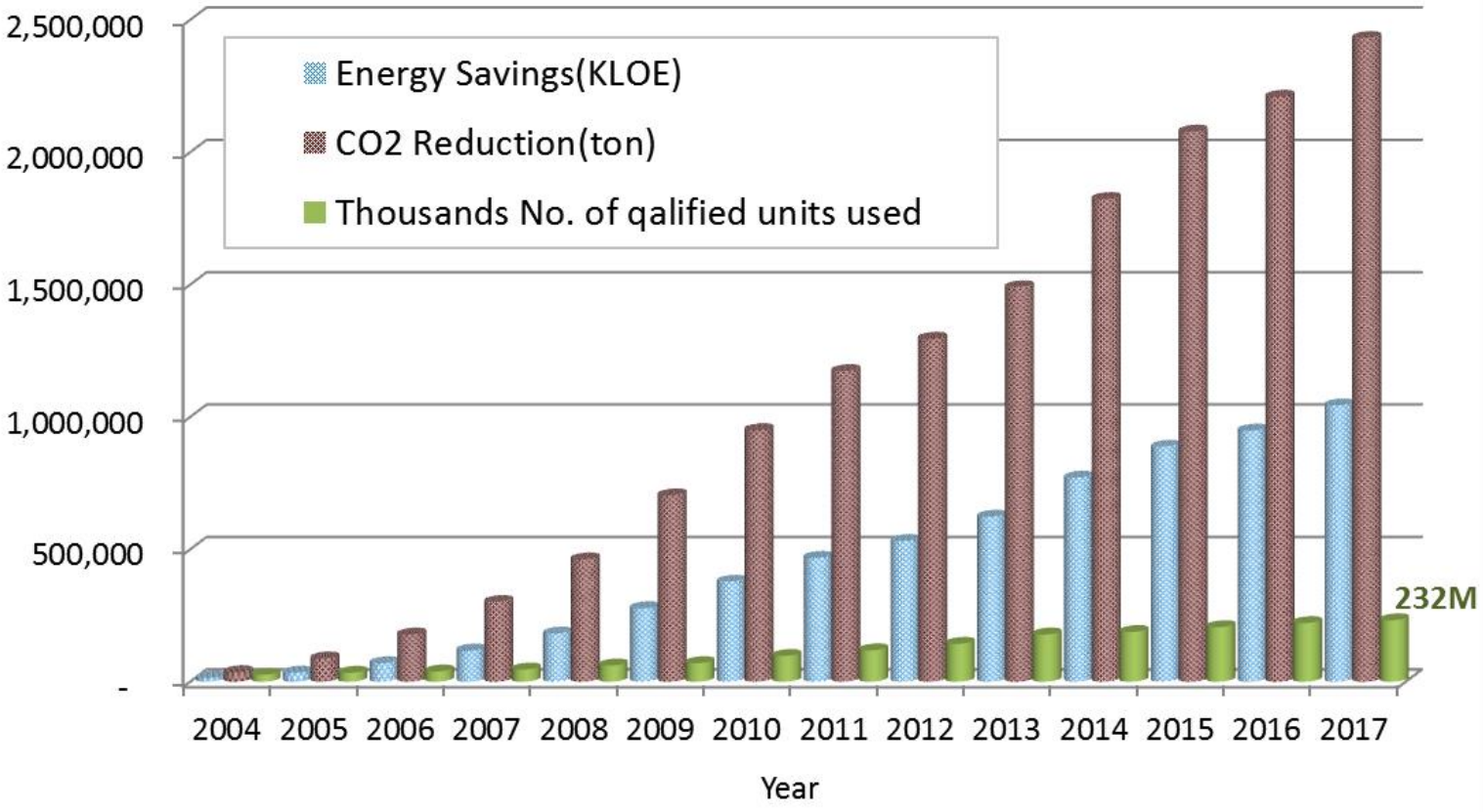
  (2) Other generality requirements

◆Product categories for Energy Efficiency Promoting in 2017

Year	Product categories	Energy Efficiency Promotion (%)
2016	Non-Ducted Air Conditioners	14%~47%
	Motorcycles	9.3%
2017	Electric Storage Tank Water Heaters	13%
	Dehumidifiers	33-46%
	Refrigerators	27-35%
	Warm-Hot Water Dispensers	15.3%
	Luminaires for road and street lighting	LED 78.8%; gas-discharge type 11.7%
	Fluorescence Lamps	5%

OUTCOMES OF THE ENERGY LABELING PROGRAM

As of January 31, 2018, there were 287 manufacturers with 6,114 products effectively certified with the Energy Label. The number of labels employed has broken the 235 million mark. The results of the Energy Labeling program over the past few years are shown below.



Thank you for your attention