



## MEDIA RELEASE

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### **ENHANCING ENERGY EFFICIENCY REQUIREMENTS OF HOME APPLIANCES**

*Revised energy labels and minimum performance standards to help consumers achieve better energy efficiency for more energy savings and lower carbon footprint.*

**Singapore, 2 March 2023** – To help consumers make better-informed decisions when purchasing home appliances, the National Environment Agency (NEA) will enhance the Mandatory Energy Labelling Scheme (MELS) and the Minimum Energy Performance Standards (MEPS) over the next two years.

2 These initiatives are part of NEA's continual efforts to improve the energy efficiency of home appliances, and help consumers save on energy bills and contribute to climate change mitigation. These efforts are complemented by the Climate Friendly Households Programme, which provides 1 to 3 room HDB households with vouchers to purchase more efficient appliances.

#### **Enhancements to Energy Labels and Standards**

3 NEA will:

- a. Enhance the energy label and standards for lamps
- b. Introduce the energy label and standards for portable air-conditioners
- c. Raise standards for air-conditioners, refrigerators, and introduce standards to televisions

#### Enhance Energy Label and Standards for Lamps

4 Energy labels for lamps were introduced in 2015 with a 3-tick rating scale. Since then, the energy efficiency of lamps in the market has improved, with energy-efficient LED lamps being widely available. NEA will raise energy standards to remove less efficient lamps and introduce a refreshed energy label with a 4-tick rating scale to help consumers better differentiate the energy efficiency of lamps in the market. The requirements will also be extended to T5 (i.e. fluorescent tube) lamps, which are commonly used in households and commercial buildings.

#### Introduce Energy Label and Standards for Portable Air-conditioners

5 Portable air-conditioners are generally less efficient than split-type air-conditioners. They are typically used where the installation of split-type air-conditioners is not possible, or

where supplementary or concentrated cooling is required. NEA will introduce energy standards and an energy label with a 2-tick rating scale for portable air-conditioners.

### Raise Standards for Air-Conditioners and Refrigerators, and Introduce Standards to Televisions

6 The energy efficiency of home air-conditioners, refrigerators, and televisions has improved over the years. To keep up with technology improvements, NEA will raise energy standards for regulated split-type air-conditioners and refrigerators and introduce standards for televisions.

7 Refer to the **Annex** for details on the enhancements.

### **Background**

#### Energy Label and Standards

8 The energy label and energy performance standards are key initiatives to reduce energy consumption and emissions of households by advancing energy efficient appliances.

9 The energy label helps consumers make informed decisions when buying energy intensive appliances. Manufacturers and suppliers are required to affix energy labels to appliances that are regulated under the Energy Conservation Act (ECA). The energy label carries information on the energy consumption and energy costs of each appliance. The number of ticks on the label also highlight the relative energy efficiency of an appliance, with more ticks indicating higher efficiency. The tick rating system also enables consumers to identify more efficient models quickly.

10 Energy standards raise the average energy efficiency of household appliances by instituting minimum energy efficiency levels that appliances in the market must meet. This protects consumers from being locked into the high energy costs of operating energy inefficient appliances.

- End -

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**About the National Environment Agency**

The National Environment Agency (NEA) is the leading public organisation responsible for ensuring a clean and sustainable environment for Singapore. Its key roles are to improve and sustain a clean environment, promote sustainability and resource efficiency, maintain high public health standards, provide timely and reliable meteorological information, and encourage a vibrant hawker culture. NEA works closely with its partners and the community to develop and spearhead environmental and public health initiatives and programmes. It is committed to motivating every individual to care for the environment as a way of life, in order to build a liveable and sustainable Singapore for present and future generations.

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**Overview of the Enhancements to MELS and MEPS**

Infographic

# Enhancements to Mandatory Energy Labelling Scheme and Minimum Energy Performance Standards

To help consumers make better-informed decisions when purchasing home appliances, the National Environment Agency (NEA) will enhance the Mandatory Energy Labelling Scheme (MELS) and the Minimum Energy Performance Standards (MEPS) over the next two years.

## Effective from April 2024

### New label for lamps



*Revised rating system for consumers to distinguish the most efficient models*

### New products covered under MELS and MEPS



T5 tubes



Portable air conditioners

### New MEPS levels



MEPS at 1-tick



Televisions (other than 8K models) – MEPS at 4-tick

## Effective from April 2025

### New MEPS levels



Multi-split air conditioners – MEPS at 5-tick



Refrigerators – MEPS at 3-tick



Single-split air conditioners – MEPS at 4-tick



8K televisions – MEPS at 3-tick

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February 2023



**Summary of MELS and MEPS enhancement**

Household Appliance	MELS and MEPS enhancement	Effective Date*
Split type air-conditioners	<ul style="list-style-type: none"> <li>• Raise MEPS to 4-tick for single-split air-conditioners</li> <li>• Raise MEPS to 5-tick for multi-split air-conditioners</li> </ul>	April 2025
Refrigerators	<ul style="list-style-type: none"> <li>• Raise MEPS to 3-tick level</li> </ul>	April 2025
Lamps <sup>1</sup>	<ul style="list-style-type: none"> <li>• Regulate T5 LFL/LED under Energy Conservation (Regulated Goods &amp; Registered Suppliers) Regulations (EC(RG&amp;RS)R)</li> <li>• Raise MEPS to 100lm/W for bulbs</li> <li>• Set MEPS at 100lm/W for LEDni, T8/T5 LED, CFLni</li> <li>• Set MEPS at 75lm/W for T8/T5 LFL</li> <li>• Introduce a 4-tick rating for all lamps with an updated Energy Label design</li> </ul>	April 2024
Television	<ul style="list-style-type: none"> <li>• Raise MEPS to 4-tick for non-8K TVs,</li> <li>• Raise MEPS to 3-tick for 8K TVs,</li> <li>• Set passive standby power limit at 0.5W for all TV types</li> </ul>	April 2024 for non-8K TVs; April 2025 for 8K TVs
Portable Air-conditioners	<ul style="list-style-type: none"> <li>• Regulate Portable air-conditioners under EC(RG&amp;RS)R</li> <li>• Introduce a 2-tick rating for portable air-conditioners at:               <ul style="list-style-type: none"> <li>○ 1-tick at <math>3.0 \leq COP_{100\%} &lt; 3.25</math></li> <li>○ 2-tick at <math>COP_{100\%} \geq 3.25</math></li> </ul> </li> </ul>	April 2024

- *To allow importers, manufacturers, suppliers and retailers time to clear their existing stock, products that are supplied to the market before the effective date will be exempted from the MELS and MEPS requirements for 1 year.*
- *COP<sub>100%</sub> is defined as the ratio of total cooling capacity to effective power input at full load cooling capacity.*

<p>[1] Definition of Lamp Types:            CFLi : Compact Fluorescent Lamp (CFL) with integrated ballast            CFLni : CFL (non-integrated ballast)            LEDi : LED direct replacement bulb for CFLi            LEDni : LED direct replacement bulb for CFLni            LFL : Linear Fluorescent Lamp</p>
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## Details of MELS and MEPS enhancement

Table 1: Current and Revised MEPS for Split-type Air-conditioners

Type	Cooling capacity	Current MEPS	Revised MEPS
Single-Split (inverter)	Up to 17.6kW	$COP_{weighted} \geq 4.04$	$COP_{weighted} \geq 4.86$
Single-Split (non-inverter)		$COP_{100\%} \geq 4.04$	$COP_{100\%} \geq 4.86$
Multi-Split (inverter)		$COP_{weighted} \geq 4.04$	$COP_{weighted} \geq 5.50$
Multi-Split (non-inverter)		$COP_{100\%} \geq 4.04$	$COP_{100\%} \geq 5.50$








- $Weighted\ COP = 0.4 \times COP_{100\%} + 0.6 \times COP_{50\%}$

Table 2: Current and Revised MEPS for Refrigerators

Type of Refrigerators	Adjusted Volume (L)	Current MEPS	Revised MEPS
Without freezer	Up to 900L	$AEC \leq [(368 + 0.892 \times V_{adj\ tot}) \times 0.461]$	$AEC \leq [(368 + 0.892 \times V_{adj\ tot}) \times 0.332]$
With freezer		$AEC \leq [(465 + 1.378 \times V_{adj\ tot}) \times 0.427]$	$AEC \leq [(465 + 1.378 \times V_{adj\ tot}) \times 0.312]$
With freezer and through-the-door ice dispenser		$AEC \leq [(585 + 1.378 \times V_{adj\ tot}) \times 0.409]$	$AEC \leq [(585 + 1.378 \times V_{adj\ tot}) \times 0.298]$

- $V_{adj\ tot}$  is defined as the sum of the adjusted volumes of the refrigerator compartments.
- 'Through-the-door ice dispenser' means an automatic ice maker coupled with a device that delivers ice on demand externally through a door.
- Annual Energy Consumption (AEC)

Table 3a: Revised Energy Label & Tick-Rating System for Lamps

Tick Ratings	Current Tick-Rating System			Revised Tick-Rating System	
	Energy Label	Incandescent, CFLi, LEDi Bulbs	CFLni, LEDni, T8 LFL/LED	Energy Label	All regulated lamp types
		Power consumption (P) in Watt	Rated Lamp Efficacy, $\eta$ (lm/W) = $\phi/P$		Rated Lamp Efficacy, $\eta$ (lm/W) = $\phi/P$
4-Tick					$\eta \geq 160$
3-Tick		$P \leq 0.17 \times (0.88\sqrt{\phi} + 0.049\phi)$	$\eta \geq 135$		$135 \leq \eta < 160$
2-Tick		$0.17 \times (0.88\sqrt{\phi} + 0.049\phi) < P \leq 0.24\sqrt{\phi} + 0.0103\phi$	$110 \leq \eta < 135$		$110 \leq \eta < 135$
1-Tick		$0.24\sqrt{\phi} + 0.0103\phi < P \leq 0.8 \times (0.88\sqrt{\phi} + 0.049\phi)$	$\eta < 110$		$\eta < 110$

- where  $\eta = \phi/P$
- where  $P$  is the **rated** lamp power
- $\phi$  is the **rated** light output in lumen
- For covered CFLi,  $P = P_{covered\ CFLi} \times 0.95$

Table 3b: Current and Revised MEPS for Lamps

Type of Lamps	Current MEPS	Revised MEPS	Others
Incandescent, CFLi, LEDi	$P_{max} = 0.24\sqrt{\phi} + 0.0103\phi$	$\eta_{min.} = 100 \text{ lm/W}$	IEC 62612:2018 test standard for LED Lamps
CFLni, LEDni, T8/T5 LED (500-1500mm)	N.A		
T8/T5 LFL (500-1500mm)	N.A	$\eta_{min.} = 75 \text{ lm/W}$	IEC 60969:2016 test standard for CFLi

- where  $\eta = \phi/P$
- where  $P$  is the **rated** lamp power
- $\phi$  is the **rated** light output in lumen
- For covered CFLi,  $P = P_{covered\ CFLi} \times 0.95$

Table 4: MEPS for TVs

Type	MEPS	Others
TV with resolution less than 33,177,600 pixels [non-8K TV]	$0.30 \times (20 + 4.3224 \times A) \geq P > 0.16 \times (20 + 4.3224 \times A)$	Passive standby power limits of 0.50W
TV with resolution of 33,177,600 pixels [8K TV]	$0.42 \times (20 + 4.3224 \times A) \geq P > 0.30 \times (20 + 4.3224 \times A)$	IEC 62087-3:2015 test standard

- "A" refers to screen area as expressed in square decimeters

Table 5: Introduction of MELS and MEPS for portable air-conditioner

Tick		1-Tick	2-Tick
Energy efficiency rating/ MEPS	MEPS	Low	Fair
Single-phase portable air conditioners having a single exhaust duct (12kW or lower)	$COP_{100\%} \geq 3.0$	$3.0 \leq COP_{100\%} < 3.25$	$COP_{100\%} \geq 3.25$