Report Compiled by the Working Group on Classification Standards for Air Conditioners and Electric Water Heaters (Outline)

> ○ In order to improve the energy efficiency of home-use air conditioners, the working group deliberated on the standard points that manufacturers and importers (which includes manufacturers and other entities) should make decisions based on (energy efficiency standard) and compiled them in a report.

1. Background to compilation of the report

A standard designating FY2010 or FY2012 as target years for home-use air conditioners was established in 2006, and all businesses have achieved that standard already. After it was created, however, a new measurement method was decided upon in JIS C 9612:2013. As heating and cooling accounts for quite a large percentage of household energy consumption (approx. 30%), we must further improve energy efficiency by revising the energy efficiency standard used as a target given the new measurement method that is consistent with how home-use air conditioners are actually used.

2. Target home-use air conditioners

Just as in the current standard, the target home-use air conditioners are non-ducted wall-hung type models, those outside of that category (cassette-type, through-the-wall, and standing type models), and multi-type models. However, the current exemptions (such as window-types) will still be excluded from the target because they account for a small percentage of power consumption and usage in the market.

3. Standard points that manufacturers should make decisions based on

(1) Energy efficiency and the measurement method

In the current standard, home-use air conditioners' energy efficiency (APF) is measured based on Room Air Conditioners (JIS C 9612:2005). This JIS was revised in 2013 to update the measurement conditions and other sections, so the subsequent energy efficiency standard will follow the measurement method stipulated in Room Air Conditioners (JIS C 9612:2013) using the following formula:

$$APF = \frac{\text{Cooling Seasonal Total Load (kWh)} + \text{Heating Seasonal Total Load (kWh)}}{\text{Cooling Seasonal Energy Consumption (kWh)} + \text{Heating Seasonal Energy Consumption (kWh)}}$$

(2) Target fiscal year

The target fiscal years for home-use air conditioners are as follows:

    (i) Non-ducted wall-hung types: FY2027

(ii) Models besides non-ducted wall-hung types, and multi-types: FY2029

(3) Categories and target standard values

Home-use air conditioner categories and target standard values are shown below. Additionally, the two following points regarding set categories were edited.

・ Dimension categories (defined dimensions/no dimensions) have been removed

・ Specification categories (non-cold regions/cold regions) have been added

Target reference values go to one decimal place, just as in the current energy efficiency standard. When calculating target reference values using the aforementioned formula, they are rounded off to one decimal place.

Table: Home-use air conditioner categories and target standard values

Category name	Unit form	Cooling capacity	Specifications	Target standard value or formula
I	Non-ducted wall-hung types	Below 2.8 kW	Non-cold regions	E = 6.6
II			Cold regions	E = 6.2
III		Above 2.8 kW and below 28.0 kW	Non-cold regions	E = 6.84 - 0.210(A-2.8) However, E = 6.6 is the upper limit and E = 5.3 is the lower limit.
IV			Cold regions	E = 6.44 - 0.210(A-2.8) However, E = 6.2 is the upper limit and E = 4.9 is the lower limit.
V	Models besides non-ducted wall-hung types	3.2 kW or less	–	E = 5.4
VI		Above 3.2 kW and below 4.0 kW	–	E = 5.0
VII		Above 4.0 kW and below 28.0 kW	–	E = 4.5
VIII	Multi-types	Below 4.0 kW	–	E = 5.6
IX		Above 4.0 kW and	–	E = 5.6

		below 7.1 kW		
X		Above 7.1 kW and below 28.0 kW	–	E = 5.5

Note 1: "Cooling capacity" refers to the rated values for cooling capacity stipulated in Room Air Conditioners (JIS C 9612:2013).

Note 2: "Cold regions" refers to regional categories 1 through 4 stipulated in Appended Table 10 of Matters Related to the Calculation Method in the Ministerial Ordinance Stipulating Building Energy Efficiency Standards. Also, models with specifications for cold regions must meet the following three criteria:

1) Be designed and manufactured to prevent failure due to snowfall or low temperatures

2) Demonstrate heating capacity above the rated values for heating in extremely low temperatures (-7°C) specified in JIS B 8615-1:2013

3) Meet the performance requirements specified in JIS B 8615-1:2013 6.3.5 at the minimum open-air temperatures (below -15°C) in the regions listed in the breakdown table in JIS C 9612:2013

Note 3: E = energy efficiency standard (APF)

Note 4: A = Cooling capacity (kW) of said model

(4) How achievement is determined

METI will check that the weighted harmonic means of energy efficiency and the number of models shipped in each category each fiscal year after the target year do not fall below the weighted harmonic means of the energy efficiency standard and those same numbers.

In special circumstances, if a category falls below its energy efficiency standard but the weighted harmonic mean of each model's energy efficiency (APF) and the number of models shipped (mean APF by company) does not fall below the weighted harmonic mean of the energy efficiency standard and that same number (standard energy efficiency by company), the categories that did not fall below that value will be deemed as achieving the standard.

However, target years vary by category: METI will calculate only categories I through IV in FY2027 and FY2028. From FY2029, METI will calculate categories I through X.

4. Suggestions for energy efficiency, etc.

The new energy efficiency standards highlight that in order to ensure that the energy efficiency of home-use air conditioners is actually improving, related parties (users, retailers, manufacturers, and the government) must work actively and

continuously toward that goal. It also compiles proposals for the different efforts expected of said parties.

〇 Reference: List of members of the Working Group on Classification Standards for Air Conditioners and Electric Water Heaters of the Energy Efficiency and Conservation Subcommittee of the Committee on Energy Efficiency and Renewable Energy under the Advisory Committee for Natural Resources and Energy

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Note: Member names and titles are as of the date of the fifth working group meeting (January 13, 2022)