

Air Conditioners or Heat Pumps

Summary of Regulatory Impact Statement

October 2008

Proposal:

To revise energy performance measures for air conditioners or heat pumps, from April 2010 including:

- More stringent Minimum Energy Performance Standards (MEPS) levels for selected products (under 10 kW output) for cooling mode
- Introducing MEPS levels for heating mode for the first time for all products with a heating function;
- Standby power and crankcase heater power consumption to be included in the overall efficiency requirements of the product
- New energy labelling algorithm and a refined energy label design
- Minimum power factor requirement 0.9
- Demand response capability

Why change the MEPS & star rating for heat pumps?

Air conditioners are estimated to make up 7% of residential electricity consumption in NZ in 2005 (primarily used for heating) and this is likely to increase.

Energy labelling for air conditioners has been used for many years, with a revision of the energy label algorithm undertaken in 2000. MEPS for air conditioners was implemented in 2004 for single phase units. Labelling has encouraged more efficient models onto the market and allows consumers to identify efficient models, while MEPS has removed the worst performing products.

The result today is that most products available are bunched with a rating of between 3.5 and 5 stars.

The objective:

Introduce a number of refinements to the existing standard to encourage higher heat pump efficiency.

Products covered:

- Non-ducted air conditioners or heat pumps that use a refrigerant circuit, and air and water cooled condensers

Excludes:

- Ducted units
- Evaporative coolers
- Multiple-split systems
- Water-sourced Heat Pumps
- Mobile/windowless units

Revised MEPS levels

Configuration	Rated cooling capacity (kW)	Min EER	Min EER/COP
		1-Oct-07	1-Apr-10
Non ducted unitary (window/wall)	<10	2.75	2.84
Non ducted split	<4	3.05	3.33
	4 to 10	2.75	2.93
Ducted	up to 10	2.50	2.75

Heating MEPS

As the primary use of these products in NZ is for heating, a minimum level for heating performance (COP) is proposed to be introduced. This is to be the same level as for cooling (EER).

Standby power and crankcase heater power

Consumers are not aware of some “hidden” energy consumption, since:

- 55% of models consume power in “Off” mode
- 20 % have crankcase heaters (up to 200W)
- 85% consume some power in standby mode (up to 20W)

Any “non-standby” power consumption is proposed to be included in the annual power consumption (Annual EER will be based on an assumed 1000 hours use). The average impact of this requirement is to raise the EER by about 0.1

Efficiency – ☆ star ratings:

The revised algorithm ‘dials back’ the Star Rating Index by approximately 2 Stars:

Star Rating	Min EER/COP
1	2.75
1.5	3.00
2	3.25
2.5	3.50
3	3.75
3.5	4.00
4	4.25
4.5	4.50
5	4.75
5.5	5.00
6	5.25

Cooling

$$\frac{\text{Old}}{3} = \frac{[(\text{EER} \times 10) - 17]}{3} \qquad \frac{\text{New}}{4} = \frac{[(\text{EER} \times 8) - 18]}{4}$$

Heating

$$\frac{\text{Old}}{3} = \frac{[(\text{COP} \times 10) - 20]}{3} \qquad \frac{\text{New}}{4} = \frac{[(\text{COP} \times 8) - 18]}{4}$$

There may be an optional label showing 7 to 10 stars for products that exceed 6 stars under the new labelling algorithm

Power factor

Introduce a minimum power factor of 0.9

Testing:

Products will need to be tested to ensure they meet test method and requirements under AS/NZS 3823.1:2007 *Performance of Electrical Appliances – Airconditioners and Heat pumps.*

Timeline:

2008	
31 st October	NZ submissions due to EECA
2010	
1st April	Implementation of new Standard