

Minimum energy efficiency standard for air-conditioners

Sustainable housing laws

The facts



For the greener good.

What are the new requirements for air-conditioners?

From 1 September 2010, new or replacement air-conditioners installed in all new or existing buildings (classes 1-10) must have a minimum tested average Energy Efficiency Ratio (EER) of 2.9 or higher for cooling.

This follows on from the ban on installing inefficient air-conditioners in houses, townhouses and units (class 1 and 2 buildings) which has applied since 1 September 2009.

The tested average EER of 2.9 is a minimum requirement. The higher the EER, the greater ability the system has to be more energy efficient and the more money can be saved in ongoing running costs.

The requirement applies to both single phase (i.e. the 240 volt system most commonly used to operate appliances and small motors) and three-phase (i.e. the 400 volt system typically used to efficiently run larger electric motors and appliances) air-conditioners. However, it only applies to units up to a cooling capacity of 65 kW that are required to be tested for an EER under Australian Standard AS/NZS 3823.2.

How is the air-conditioner requirement implemented?

Installation of energy efficient air-conditioners is regulated through the Queensland Development Code (QDC) 4.1 – Sustainable buildings.

Why was the minimum energy efficiency requirement for air-conditioners extended?

Increasingly, more air-conditioning systems are being installed in Queensland buildings. This is contributing to increased energy consumption and greenhouse gas emissions, particularly when less energy-efficient air conditioners are installed and used.

From 1 September 2009, a one-year sales ban took effect for air-conditioners that did not meet the EER standard. The sales ban ended on 31 August 2010. The sales ban applied irrespective of what building the unit was to be installed in. The extension of the installation ban effectively replaces the sales ban and provides a more streamlined compliance structure and helps to reduce any market confusion.

The increasing usage of air-conditioners also places additional demands on electricity infrastructure which contributes to 'peak demand'. Extreme peak demand occurs on a few very hot days when most buildings are running air conditioning at the same time. Having to build infrastructure that is only required for 1-2 per cent of the year is a major factor driving up Queenslanders' electricity bills.

How will this benefit Queensland?

As part of the Queensland Government's Towards Q2 initiative, Queensland has committed to reducing its greenhouse gas emissions by a third by 2020.

As the prevalence and use of air-conditioners increases, implementing a minimum energy rating is considered to be an effective way of reducing Queensland's energy consumption and greenhouse gas emissions. It also minimises the state's carbon footprint and helps to protect the lifestyle Queenslanders value.

Does this requirement apply to all air-conditioners, including window/wall box units and evaporative systems?

The requirement applies to split systems, ducted systems and window/wall box units, however it does not apply to evaporative or portable systems as these are not required to be tested for an EER under current Australian Standards (AS/NZS 3823.2).

How do I determine the tested average EER of an air-conditioner?

If a system is not labelled with the tested average EER, check the product manual (if available) or contact the manufacturer of the system and give them the model number.



forthegreengood.qld.gov.au
For the greener good.



If the air-conditioner was tested under a previous Australian Standard, can that EER value be used?

Air-conditioning systems that had their EER values tested using an older Australian Standard (such as the 2001 or 2003 version) will still comply with the QDC requirements, provided the tested average EER is at least 2.9.

For example, a system that was first manufactured in 2004 and was tested under the old 2003 version of the Australian Standard to have a tested average EER of 2.93 is still able to be installed in Queensland buildings.

How does the Queensland requirement differ from the national Minimum Energy Performance Standard (MEPS)?

New increased MEPS and energy labelling requirements for air-conditioners with a cooling capacity of up to 65 kW were enforced on 1 April 2010 with transitional arrangements commencing in October 2009. These requirements are more stringent than the Queensland standard for split systems but less stringent for the majority of ducted systems. For any installations where the MEPS is lower than the Queensland standard, the Queensland standard will apply.

For example, a 16 kW ducted air-conditioner with a 2.75 tested average EER meets the April 2010 MEPS but would not meet the Queensland standard. This unit can not be installed in Queensland buildings.

Further increases to the MEPS have been proposed from April 2011 and will be considered following the outcomes of a Regulatory Impact Statement. These proposed requirements are more stringent than the Queensland standard for all unit types.

What factors influence the optimal performance of an air-conditioner, apart from its EER?

Building envelope—areas that are to be air-conditioned should have a good thermal performance. Ways to achieve this include roof insulation

(and wall insulation wherever possible), ventilating the roof space, sealing rooms for draughts, preventing heat entry through glass by closing internal curtains or blinds, using external shading to west or north-west facing large windows and installing appropriate glazing types or reflective film.

Unit sizing—all parts of the air-conditioning system should be sized by a trained professional taking into account the building floor plan, aspect, construction materials and occupancy levels. This is a good starting point to assist in selecting the correct unit size to service the total area to be conditioned ('fit for purpose').

Quality of installation—the system should be installed by a suitably qualified and licensed person, positioned with unrestricted airflow and located away from, or shaded from, the hot afternoon sun.

Operation—frequency of use and seasonal thermostat settings, which are 24°C during summer and 19°C for winter (if reverse cycle).

Maintenance—a basic check, such as cleaning the air filter, should be carried out every three months. The system should also be checked annually by a service professional to ensure efficient operation.

What other factors should I consider when purchasing an air-conditioner?

Type of system—a split system is generally more energy efficient to operate than a cheaper window/wall box unit.

Noise—some systems can create excessive internal noise that may interfere with sleep or conversation. Council noise restrictions may also apply to account for amenity and proximity to neighbouring properties.

Airflow—look for a model that has a wide airflow range from very high (to help the room cool or heat quickly) to low (for reduced noise).

Load control—look for a model that is factory-fitted with load control capability that meets AS4755.3.1 – 2008. This should make it easier to take advantage of future tariff incentives.

What measures can supplement air-conditioning?

A range of passive design features can promote a more comfortable indoor environment, which can also minimise the use of air-conditioners, including:

- northern orientation of frequently used rooms
- minimised western and eastern facing walls and windows
- a covered veranda or balcony for outdoor living
- insulation in the roof space and walls
- ventilation of the roof space
- natural ventilation with appropriate size, types and positioning of windows
- treated glazing, reflective film or external shading (wide eaves or awnings), particularly for large windows facing west and north-west
- ceiling fans
- light colours on the roof and walls
- shade trees and shrubs around the building

How much will it cost to comply with this requirement?

Currently, only around 12 per cent of air-conditioner models tested and registered under the relevant Australian Standards do not meet an EER of 2.9 or higher, so there is not expected to be a significant cost impact on consumers.

For more information

For further information refer to the QDC 4.1—Sustainable buildings, which is available on the Department of Infrastructure and Planning's website or contact Building Codes Queensland.

Building Codes Queensland Division

Department of Infrastructure and Planning

tel. +61 7 3227 8548

email. buildingcodes@dip.qld.gov.au

www.dip.qld.gov.au