



Building Newsflash

Energy Efficiency Provisions for Class 1 and 10 Buildings

Purpose

The purpose of this Newsflash is to provide advice on the energy efficient housing provisions of the Building Code of Australia (BCA).

Commencement date

Part 2.6 (performance requirements) and Part 3.12 (deemed-to-satisfy provisions) of the BCA will commence in Queensland on 1 September 2003 as part of Amendment 13 to the BCA.

Amendment 13 to the Building Code of Australia (BCA) comes into force on 1 July 2003. However, the energy provisions will not commence in Queensland until 1 September 2003 to give industry time to provide education and training and to prepare for the changes.

Background

The energy efficiency provisions are intended to reduce greenhouse gas emissions by using good design and construction methods to make houses cooler in summer and warmer in winter thus reducing the need for artificial cooling and heating. The focus is to eliminate worst practice as the first step towards better housing design. The amendments will achieve this by including requirements for roof and wall insulation, eaves or equivalent shading to glazed windows and doors facing the sun, high performing windows where there is a very high percentage of glazing in walls, and an increase in the natural ventilation of spaces.

Legislative provisions

The energy efficiency provisions are located in Part 2.6 and Part 3.12 of Volume 2 of the BCA. Queensland contains four zones (zones 1, 2, 3, and 5 – see Figure 1.1.4 of the BCA). Zone 1 represents coastal tropical North Queensland. Zone 2 represents the coastal strip from Mackay to the New South Wales border. Zone 3 covers western Queensland and Zone 5, the Darling Downs.

Compliance with the BCA can be achieved by:

1. Meeting the deemed-to-satisfy provisions (Part 3.12); or
2. Using a computer simulation method to confirm the design meets the required energy efficiency levels (V2.6.2.1); or
3. Using a computer simulation method to confirm equivalence with a reference building (V2.6.2.2); or
4. Satisfying the performance requirements (P2.6.1 and P2.6.2).

Queensland Variations

Queensland will have three variations to the national provisions. The first involves a concession for single skin masonry (concrete or clay) external walls for two storey houses. The second involves reducing the insulation requirement for external walls. The third removes the concession in V2.6.2.1(b) applying to the use of solar hot water systems or gas or electric heat pump water systems.

Single skin masonry

The national provisions of the BCA (section 3.12.1.4) require single skin masonry walls to be insulated to R1.4 to reduce the transfer of heat through the wall, or to be shaded. To meet that standard, single skin masonry walls would need to be internally lined and insulated, or shaded with eaves projecting at least one quarter of the wall height. For single storey houses, the shading option is feasible. However, for two storey houses, eaves about 1.2m wide would be required to shade the bottom storey. This is not feasible given the need to design these houses for cyclones.

With the inclusion of the Queensland variation 3.12.1.4(a)(vi), there are three options for the external walls of single leaf masonry having a thickness of not less than 140mm in Zones 1, 2 or 3. They are:

1. The walls can have the R-Value specified in Table 3.12.1.3; or
2. The shading requirements of Figure 3.12.1.2 can be provided; or
3. The upper storey of two storey houses can comply with 3.12.1.4(a) (i) or (ii). The bottom storey is not required to be insulated or shaded.

The variation does not apply to houses in excess of two storeys.

Some examples of the application of Queensland 3.12.1.4(a)(vi) are detailed in the Explanatory Notes accompanying the Queensland variation.

Insulation of all external walls

The national BCA provisions (clause 3.12.1.4) require all external walls for Queensland houses to be insulated to R1.4. That standard would prevent the construction of lightweight external walls (eg timber cladding) without bulk insulation. The Queensland variation reduces the level to R1.0, for Zones 1, 2, and 3, to allow the use of reflective foil in these walls rather than bulk insulation. However, for the climate zone 5 where more severe winters occur, the national standard of R1.4 will apply.

Concession in V2.6.2.1(b)

In climate zones 1 to 3, the national BCA provisions in V2.6.2.1(b) allow a concession if a solar hot water system or gas or electric heat pump water system is used in a building. This allows a reduction in the thermal performance of a house if an energy efficient hot water heater is installed. While energy efficient hot water heaters provide a significant greenhouse benefit, it is also important that the thermal benefit is not reduced. The concession therefore does not apply in Queensland.

Impact on Town planning schemes

The provisions will apply in all local government areas throughout the State and in accordance with IPA section 3.1.3 (5), will override any similar provisions of a local government's planning scheme.

Application of provisions to existing buildings

The building certifier responsible for approval of the building work has discretion as to how far an existing building should be up-graded to meet current standards of energy efficiency. Each case must be assessed on its merits and should take into account the difficulties associated with requiring compliance when compared with the perceived benefits. To assist in the application of the provisions, the following is provided as a general guide.

Building certifiers discretion

In accordance with section 10 of the *Building Act 1975*, the provisions of Amendment 13 of the BCA will not apply to development applications:

- Lodged with the building certifier before the amendments commenced;
- Approved before the amendments commenced;
- Where the application is approved and the work has started before the amendments have commenced.

The building certifier may also allow work to be carried out in accordance with the provisions in force prior to Amendment 13 if, it is considered that to comply with Amendment 13, it would cause financial hardship to the owner.

Alterations and additions

Part 3.12 applies to all new building work associated with a class 1 building and a class 10a building with a conditioned space. This means they can also be applied to any new alterations and additions to these buildings.

Section 17 of the *Standard Building Regulation 1993* enables the building certifier to require the whole building or only part of the building to comply with the provisions of the BCA. Generally, any new building work involving the addition of a habitable room to a building, should comply with the Amendment 13. However, it is not anticipated that the entire building will need to be up-graded to meet current energy efficiency standards.

For alterations to the habitable parts of a building, for example the removal or relocation of internal walls, the replacement of windows, or other minor alterations, it is not generally expected that the work would need to comply with current standards.

If the building work involves a change of classification, for example, if it proposed to change the classification of an existing class 10 building to a class 1 building, the energy efficiency provisions should be considered in full.

As a general guide, the energy efficiency provisions should also be applied to:

- An extension/addition which creates separate rooms, including the enclosed spaces under a raised dwelling;
- All extensions/additions to Class 1a and 1b buildings where the original building work was previously assessed against the energy efficiency requirements;
- Manufactured or relocatable dwellings built off site and moved to a *permanent location*.

It is not expected that the provisions will be applied to the following building work:

- Extensions/additions which extend or increase an existing space without a dividing wall in an existing dwelling not previously assessed against this standard;
- Separate Class 10 buildings;
- Existing dwellings raised above the ground level and not enclosed to the lower level where no other work is carried out.

Removal buildings

Where the building work involves the removal of an existing building from one site to another or the relocation of the building onto a different part of an existing site, the extent of compliance with the energy efficiency provisions will be dependent on things such as:

- The extent of dismantlement of the building to facilitate removal. For example, if the wall cladding was not removed or replaced, it would be reasonable to not require insulation in these walls. However, even if the building work did not involve removal of the roof structure or roof covering then it would still be reasonable to require insulation to be installed above the ceiling.
- The intended use of additional rooms. For example, a habitable extension would require compliance with the BCA. It would not be expected that the entire building be made to comply with the BCA.

- If the house is to be elevated, the new space below could readily be made to comply in full with the BCA.
- If window shading can be reasonably achieved, it should be addressed. It is not expected that eaves overhangs would be required to be extended to satisfy the BCA. Verandahs, awnings or the orientation of the building may also be used to satisfy the BCA.

Future amendments to the energy efficiency provisions

As mentioned previously, the introduction of the energy efficiency provisions in amendment 13 is the first step in achieving appropriate energy efficiency design of buildings. Over the next year the Department will continue to work with the housing industry and other parties to progressively improve the standard.

Further Information

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