

Making homes energy efficient

From 1 September 2010, all new homes and extensions built in South Australia need to achieve a 6-star level of energy efficiency. These energy efficiency requirements are included in the *Building Code of Australia (BCA)* and the *South Australian Housing Code (SAHC)*.

How can new homes and extensions comply?

Homes and extensions should be designed and constructed so that they:

- comply with a comprehensive set of prescriptive technical standards for thermal comfort, or
- achieve a minimum 6-star energy efficiency rating when assessed using a computer-based energy rating program and meet certain other construction requirements.

In addition, separate BCA or SAHC energy efficiency requirements for services such as hot water, lighting and air conditioning ductwork still apply.

Who will check that new homes and extensions comply?

Under the *Development Act*, development approval is required from the council for all building work to ensure it complies with the BCA or the SAHC. Before this approval can be issued, either the council or a private certifier must assess the design of new homes and extensions against the BCA or the SAHC. This assessment includes checking the design for compliance with the 6-star energy efficiency requirements.

If the energy efficiency of the home has been rated using a computer-based energy rating program, a printed verification report, signed and dated by the house energy rater who did the assessment, with all supporting documentation must be submitted to the Council or private certifier for verification. A house energy rating can be completed by any person with the necessary software and skills, including an architect, building designer, builder or building surveyor.

A house energy rater may also register with the Department of Planning and Local Government on the *Register of House Energy Rating Assessors*. These raters must agree to comply with a *Code of Practice* and can undertake energy rating assessments as an 'independent technical expert' (under *Regulation 88 of the Development Regulations 2008*). If a house energy rating has been verified by an 'independent technical expert', this must be accepted by the Council or private certifier.

For a list of registered House Energy Rating Assessors, contact the Building Policy Branch or visit www.planning.sa.gov.au/go/hera

Designing and constructing an energy efficient home?

Consider the location of the house

The manner in which the 6-star energy efficiency requirements are achieved will depend on the 'climate zone' in which a house is located. Climate zones are based on climatic data and are generally aligned with local government boundaries.

There are three climate zones in South Australia:

- Climate Zone 4 (covering the far north of the state)
- Climate Zone 5 (covering most of metropolitan Adelaide, the mid-north, the Riverland and the Eyre and Yorke Peninsulas)
- Climate Zone 6 (covering the South East, the Mt Lofty Ranges and the Flinders Ranges).

For climate zone maps of South Australia visit www.planning.sa.gov.au/go/building

Consider the orientation of the house on the block

Good orientation of a house has the potential to achieve substantial energy savings through appropriate design. Houses that are built with a north facing orientation for the main living areas will readily achieve the mandatory 6-star energy efficiency requirements and may even achieve a higher rating.

Houses with large areas of glass facing west or east and with no eaves may still achieve the 6-star requirements but at significant capital and ongoing cost.

Consider the 'envelope' of the house

The design and construction of the house's envelope—roof, external walls and floors—will have an effect on the thermal comfort of a house. For a house to achieve a 6-star level of energy efficiency, the following will be required:

Insulation of roofs and ceilings

Both tiled and metal roofs must be insulated. Insulation must be placed under the roof or above the ceiling and must be continuous.

One option is the installation of insulation batts—although a combination of bulk insulation and reflective foil can be installed.

Selection of appropriate glazing systems (windows and doors)

Standard aluminium or timber windows and doors with clear glass may be used; however the percentage of glazing area to total floor area will be limited. The percentage of glazing area can be increased by:

- selecting glazing with higher level of thermal performance (such as toned, or solar control glass or double glazing); and/or
- fitting permanent or adjustable external shading devices. Shading can be provided with eave overhangs (including gutters), verandahs, pergolas or external blinds and canopies.

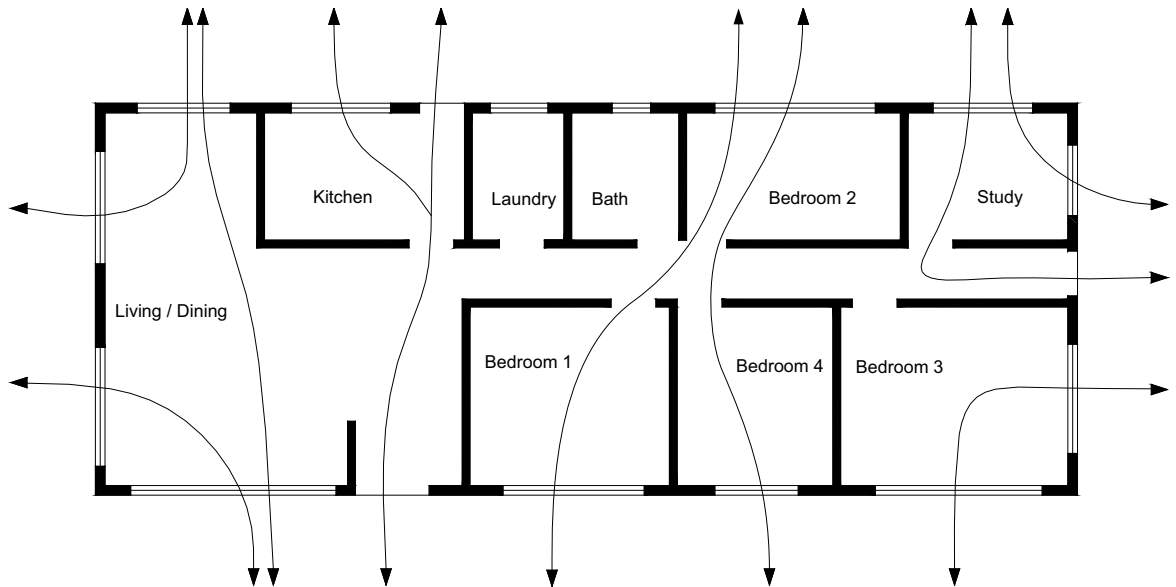
Consideration of the number and size of roof lights

Roof lights provide a point of heat transfer and as such their affect on the overall thermal performance of the house must be limited. All roof lights where the total area is 1.5% or greater of the room area must be fitted with transparent elements/ceiling diffusers that demonstrate high thermal performance.



Provision of adequate cross ventilation in each habitable room

All habitable rooms (bedrooms and living areas) must be ventilated. The number of opening windows and the circulation of air must be considered for each habitable room. The area of opening windows may be reduced if a ceiling fan or evaporative cooler is installed to improve circulation.



Sealing of openings to prevent draughts

External doors, chimneys and flues, exhaust fans and evaporative cooler outlets are a source of heat loss in cold weather. To reduce this heat loss:

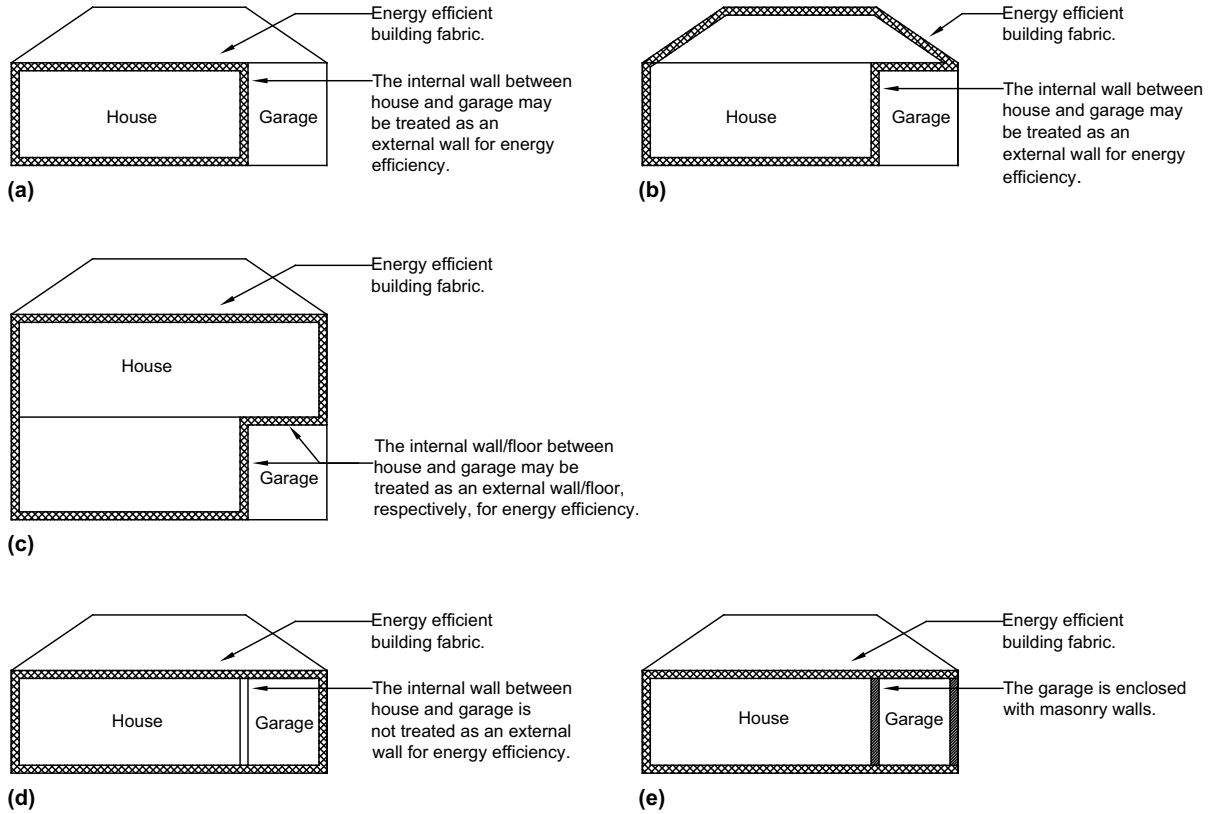
- draught protection strips must be fitted to the bottoms of all external swing doors
- dampers or flaps that can be closed must be installed to all chimneys and flues
- a sealing device or self-closing damper must be fitted to exhaust fans
- a self-closing damper must be fitted to evaporative cooler outlets.

Sealing devices are not required if ventilation is necessary for the safe operation of a gas appliance.

Separation of garages and conservatories

The design and construction of garages and conservatories must not compromise the level of energy efficiency achieved by the house. This requires the garage or conservatory to be:

- constructed to meet the same energy efficiency as the house, or
- separated from the house by construction that meets the energy efficiency requirements, or
- enclosed by masonry walls (other than glazed openings and doors) and be separated from the house with a masonry wall that extends to the ceiling in climate zones 4 and 5.



What about services?

The BCA and SAHC also have specific requirements for certain services.

Hot water services and air conditioner ductwork

Hot water pipes will need to be fitted with insulation to improve their efficiency and hot water heaters must meet minimum standards for energy efficiency. Air conditioner heating and cooling ductwork will also need to be insulated.

Artificial lighting

The numbers and types of artificial light fittings impact on energy efficiency. New standards have been introduced for the provision of light fittings in new houses and house extensions.

Contact details:

Building Policy Branch
Department of Planning and Local Government
 GPO Box 1815, Adelaide SA 5000
 tel: 8303 0602
www.dplg.sa.gov.au

Energy Division
Department for Transport, Energy and Infrastructure
 GPO Box 1533, Adelaide SA 5001
 tel: 8204 1888
 Freecall: 1800 671 907 (country callers)
www.energy.sa.gov.au

