

What you need to know about

# 5 Star for new houses, home renovations and relocations



## Introduction

**Victorians living in houses and apartments built since 2005 are enjoying energy efficiency and water saving features that are not only good for the environment but deliver greater comfort and lower utility bills.**

These homes are 5 Star homes.

Victoria was the first state to implement the 5 Star standard in its building regulations and feedback from residents show they experience greater comfort and economic benefits from living in 5 Star homes.

In fact, 5 Star homes use 50 per cent less energy for heating and cooling compared with the typical 2 Star dwellings built before 2005. This is saving residents, on average, \$200 annually on heating and cooling alone.

As more consumers experience the benefits of 5 Star, combined with increased awareness of sustainability in our built environment, support for greater energy efficiency outcomes is growing.

Accordingly, from 1 May 2008 coverage of the 5 Star standard will extend to include the 40,000 houses renovated, extended or relocated in Victoria each year.

As a flexible, performance-based standard, 5 Star allows homeowners, builders and designers enormous choice in meeting the requirements – whether building a new home, renovating or relocating a home.

The result will be that new homes, large renovations and relocated homes will provide occupants with greater comfort, lower household running costs and produce lower greenhouse gas emissions.

\* A renovation is an alteration

## Why the regulations?

With the impacts of climate change and global warming widely accepted as a reality, both the Victorian and Australian governments have responded to the challenge by setting targets for the reduction of greenhouse gas emissions.

As part of the Victorian Government's strategy to reduce greenhouse gas emissions, 2005 saw the introduction of the 5 Star standard for new homes come into effect.

It is estimated that within five years of its introduction, 5 Star for new homes will deliver up to \$40 million in annual energy savings. A saving of 600,000 tonnes of greenhouse gas emissions is anticipated over the same period – the equivalent of removing 150,000 cars from our roads or planting 750,000 trees.

While this is a sizeable impact, it only relates to a small proportion of all Victorian homes – those built since 5 Star came into effect. Existing older dwellings represent more than 95 per cent of housing stock in Victoria, so improving the energy efficiency of these buildings is essential to reduce greenhouse gas emissions and address the impact of climate change.

That is why the Victorian Government made a commitment to require alterations to existing homes to achieve a 5 Star energy performance.

Requiring a 5 Star energy rating for renovations and relocated homes from 1 May 2008 brings Victoria into line with the national standard in the Building Code of Australia. This will deliver benefits to the environment as well as to residents. It is estimated that energy efficiency levels for heating and cooling of the upgraded dwellings are expected to increase by 40 – 50 per cent compared with the old insulation regulations that have been in force since the early 1990s.

If you are planning to build, renovate or relocate a house in Victoria it is important to ensure your design takes into account the flexible, performance-based 5 Star energy efficiency requirements.



## How the regulations apply

### 5 Star for new homes

Since July 2005, new houses and apartments in Victoria must be built to meet the energy efficiency and water management requirements of the 5 Star standard.

The 5 Star standard requires:

- 5 Star energy efficiency rating for the building fabric;
- Water efficient taps and fittings; plus
- Either a rainwater tank for toilet flushing, or a solar hot water system.

For most houses, achieving the 5 Star standard requires a few simple improvements to the standard design and construction of a home. This may be achieved through a wide range of options, such as increasing the level of insulation, better orientation and exterior shading, better seals and draught-proofing and the use of high-performance glazing.

The 5 Star standard is designed to be a flexible standard – it is performance-based rather than prescriptive. This means designers and builders can use their creativity on how they meet homeowners' requirements of being cost-effective, functional and aesthetic in designing and constructing 5 Star homes.

The combination of energy and water saving features, of a 5 Star home, work together to ensure a high degree of occupancy comfort and reduced operating costs.

For example, residents of new homes who install a rainwater tank use 20 per cent less reticulated drinking water. Their homes are also 50 per cent more energy efficient for heating and cooling than the average 2 Star dwelling built before the regulations took effect.

The 5 Star standard is one of the many initiatives helping to make a positive difference for our environment – but there is always more that can be done.

The Victorian Government, in consultation with the building industry and stakeholders, has been working to extend coverage of the 5 Star standard to include alterations or extensions to existing homes and relocated homes.

As a result, from 1 May 2008 new requirements for existing home renovations and relocations will come into effect in Victoria, bringing the State into line with national standards.

## 5 Star for home renovations and relocations

From 1 May 2008, the national energy efficiency standard will apply to all relocated homes and alterations to an existing home in Victoria.

### What will the new regulations involve?

For some simple renovation work, that does not require a building permit, the new regulations will not apply.

All building projects to alter a home including an extension that requires a building permit will be required to comply with the new energy efficiency regulations.

The new requirements for alterations or relocations apply to the thermal performance of a home and do not require a solar hot water system or a rainwater tank for toilet flushing.

Alterations representing more than 50 per cent of the original volume of the building (including any alterations carried out in the previous three years) require the existing building to be brought up to the same standards as the new construction (that is 5 Star building fabric, not a rainwater tank or a solar hot water system).

Any extension above 25 per cent of floor area of the existing building or 1,000 square metres (whichever is the lesser) must fully comply with the new standard.

There are certain circumstances where the relevant building surveyors has discretion, under *Regulation 608*, to allow partial compliance where the requirement is overly onerous, technically impractical or does not provide a level of benefit commensurate with cost. A revised Practice Note No. 55 is available to building practitioners regarding the application of the new technical requirements and the use of their discretion under *Regulation 608*.



5 Star applies to all new housing developments where the building permit was issued after 1 July 2004. This includes detached houses, terraces, medium density units and high-rise apartments.

From 1 May 2008, new requirements will come into effect for existing home renovations and relocations.



## Why extend 5 Star?

With more than 40,000 homes to be renovated, extended or relocated each year, the 5 Star energy rating requirement for the building fabric will further reduce greenhouse gas emissions while delivering home occupants greater comfort and lower energy costs.

The new standards are expected to lift energy efficiency levels, for heating and cooling, of the upgraded building by 40-50 per cent compared with the old insulation regulations that have remained largely unchanged since the early 1990s.

It's also worth knowing that there are further benefits if a home renovation does include a rainwater tank or solar hot water system or other sustainable features, such as increased levels of:

- Draught-proofing;
- Window design (including size, quality of frames and glazing);
- Shading, where possible; and
- Higher levels of insulation.

## 5 Star in action

### Case study – sustainable relocations

Carmine Bernardo's family owned and operated relocations company, *Better House Removers*, has been relocating homes for almost 25 years. It has also been insulating and weather proofing homes before the introduction of the 5 Star regulations. Limitations do exist for weatherboard homes, but an overall rating of R3.1 is achievable without significant costs.

To enhance the thermal performance of the homes, the perimeter walls of brick veneers are insulated with green smart allergy-free polyester insulation batts and breeder non-rip foil. In addition, R2.4 insulation is added to the ceiling. Some brick veneer homes are re-bricked with new bricks, whilst most are re-clad with new weathertex board, hardies planks or weatherboards. Additionally, in bushfire prone areas the perimeter base is fully enclosed.

As many houses are re-erected in the country, water tanks are typically installed and if sewerage is not available, Tylex clear water 90 or similar septic tanks that recycle water to the garden are installed.

In terms of draught-proofing the homes, window and door seals are included and elimination of internal wall vents occurs. As the company deals with pre-existing structures, there may be limited scope to change the window design, size, frames or glazing as the replacement cost would exceed the thermal benefits. However, if any additions or replacements do occur then these comply with sustainability standards.

When considering that buildings consume or are responsible for 25 per cent of timber harvests and 40 per cent of solid waste landfill, re-erecting a house is at the forefront of recycling and reducing greenhouse gas emissions.

### Case study – sustainable renovations and home extensions

Renovations and extensions provide a great opportunity to improve the energy efficiency of your home. Take this example of one family's home extension experience.

A Melbourne suburb family was planning to extend on the western side of their house. They wanted to keep the view of neighbouring parkland, but were unsure how to manage the summer sun and winter cold temperatures. To improve the energy efficiency they included as part of their extension:

- Insulated glass – with an outer solar control glass sheet and inner clear glass sheet.
- Window seals to maximise the insulation effect and reduce heat transfer.
- Timber frames made from Victoria Ash, rather than a metal frame which conducts heat.

While the extension added 25 per cent to the floor area of the home, the added insulation and double glazing means the heating and cooling load for house has been reduced.

This example is utilising some effective approaches that have been used successfully in other countries – making your home extensions energy efficient doesn't mean you need to reinvent the wheel. Investing in high-quality fittings can contribute to a home that is comfortable to live in all year round.

Here are some scenarios that consumers and building practitioners will likely come across as the new regulations come into effect.

### Scenario 1: Size of the alteration – does it matter?

**Q:** If I'm undertaking building work for an alteration to an existing home and it's 50 to 100 per cent of the volume of floor space of the existing home - which means the whole house needs to be brought up to 5 Star – does this mean that I need to go back and insulate old walls?

**A:** As a starting point people undertaking an alteration that is more than 50 per cent of the volume of the existing building, will need to make their home comply with the new requirements, unless their building surveyor agrees to a lesser standard. This means achieving a 5 Star building fabric using software or complying with the provisions set out in the Building Code of Australia.

However, the regulations provide the building surveyor issuing the building permit discretion to allow partial compliance in certain circumstances. If the interior of the house is being gutted, then there is an opportunity to install insulation and this would be expected. However, if it is considered financially onerous (compared to the resulting benefit) or technically not possible, the building surveyor can approve an alteration that hasn't had insulation installed in the old walls.

The 5 Star standard is a flexible standard, allowing homeowners, builders and designers a great deal of choice to comply. There is a range of options available to achieve the 5 Star energy rating requirements. These include simple things, such as increasing the level of insulation, draught-proofing, orientation of the building, internal design and better window design.

### Scenario 2: Small renovations – what is exempt?

**Q:** If you, or your client, is wishing to have building work for a small renovation and you are unsure as to whether the work is exempt from the new laws, where should you go for information?

**A:** In the first instance, contact your local council to find out if you need a building permit.

Some simple renovation or maintenance projects and non-structural works that do not require a building permit will not be affected by the new regulations. All building alteration projects including home extensions that need a building permit will be required to comply with the new energy efficiency regulations.

The relevant municipal or private building surveyor will then issue a building permit based on what is required for the renovation or relocated home to comply with the new laws. The building surveyor may conduct inspections throughout the construction process to ensure the requirements are being met.

### Scenario 3: Past renovations – does this matter?

**Q:** You, or your client, completed a renovation that is more than 50 per cent of the volume of the existing home two and half years ago. You, or your client, are proposing to undertake another renovation after 1 May 2008 – must the whole home now meet 5 Star?

**A:** Yes. The only time the existing building needs to be considered for upgrading to comply with current regulations is where there is an alteration or extension taking place to that building. If the building was renovated two and half years ago and that renovation, in combination with a renovation after 1 May 2008, totals a volume greater than 50 per cent of the existing building then the whole of the building would need to comply.

Even in this instance, there are certain circumstances where the relevant building surveyor has discretion to allow partial compliance where the requirement is overly onerous, technically impractical or does not provide a level of benefit commensurate with cost.



## Why reach for the stars?

The sustainability of our built environment plays an important role in the sustainability of our future.

By ensuring that our new homes are 5 Star homes, and extending the coverage to alterations or renovations of existing homes, we are further advancing the sustainability of our built environment and reducing greenhouse gas emissions.

Not only are 5 Star homes helping the environment, feedback from residents shows that they enjoy living in their 5 Star homes because they are more comfortable, more liveable and more economical.

Increasingly, the financial sector is recognising the value of going green, with 'green home loans' being introduced. Inevitably, houses that are better adapted to climate change and that are water smart will demand a premium price. Already, the market demand for 5 Star features is driving down the price of sustainable housing products, such as double glazing, while increasing the comfort and resale value of energy efficient homes.

Energy efficient regulations make owning and renting a home more achievable by lowering running costs.

### Did you know?

Once the cost of insulation is recovered, an insulated building continues to save money for the householder. If a building remains uninsulated, over its projected life of 60 years the householder will have unnecessarily paid for the cost of insulation 12 times over through wasted energy.

(source: Insulation Council of Australia New Zealand)

## Where to go for further information

### Who should I contact?

Victorians who plan to build a new home, extend or renovate should contact a building designer, builder or building surveyor for advice on 5 Star compliance.

When renovating or extending, you will need to demonstrate that your plans meet the new requirements. The relevant building surveyor will then issue a building permit based on this. The building surveyor may conduct inspections throughout the construction process to make sure the requirements are being met.

There are a range of organisations that are key sources of information on the 5 Star standard in Victoria. These include:

#### Victorian Building Commission

[www.buildingcommission.com.au](http://www.buildingcommission.com.au)

#### Sustainability Victoria

Level 28, 50 Lonsdale Street  
Melbourne Vic 3000  
[www.sustainability.vic.gov.au](http://www.sustainability.vic.gov.au)

#### Housing Industry Association

70 Jolimont Street  
Jolimont Vic 3002  
[www.hia.com.au](http://www.hia.com.au)

#### Master Builders Association

Level 1, 16 Bentham Street  
(PO Box 7170)  
Yarralumla ACT 2600  
[www.masterbuilders.com.au](http://www.masterbuilders.com.au)

## Need more information?

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