

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 extended 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 is 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 delivers 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.

Renovation & relocations regulatory requirements

Type of work	Compliance required	Entire building to comply?	Building surveyor discretion?
Building renovation work including extensions less than (the lesser of) 1000m ² or 25% of existing floor area	Yes	No*	Yes
Building renovation work that represents more than 50% of the original volume of the building (including the re-erection of an existing dwelling)	Yes	Yes	Yes [^] (discretion applies to compliance of both the alteration work and the remainder of the building)
Building renovation work that is an extension of floor area greater than (the lesser of) 25% of floor area of the existing building or 1000m ²	Yes	No*	No

* Subject to the alteration not triggering the 50% rule

[^] If the alteration includes an extension that exceeds the size described in the row below, the discretion only applies to the requirement to bring the remainder of the building into compliance.

5 Star for home renovations and relocations

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

What do 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 surveyor 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 2005. This includes detached houses, terraces, medium density units and high-rise apartments.

From 1 May 2008, new requirements effect 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, of the upgraded building envelope 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 sustainability features, such as increased levels of:

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

5 Star in action

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 suburban 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 the house was 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 over 50 per cent of the volume 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 only partially complies.

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 carried out 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 building surveyor or a private building surveyor to find out if you need a building permit.

Some simple maintenance projects or non-structural works that do not require a building permit will not be affected by the new regulations.

If you are intending to undertake a small renovation that requires a building permit the work will need to comply. However, a building surveyor can allow partial compliance in certain circumstances.

Scenario 3: Large extension – Can I design for partial compliance?

Q: I am going to build quite a large extension on the back of my house. Does the building surveyor have the same discretion to allow partial compliance?

A: If an extension is more than 25% of the floor area of the existing house or over 1000m² (whichever is the lesser) then the extension must comply. The building surveyor has no discretion to allow partial compliance. There is no requirement for the existing building to comply.

Scenario 4: Past renovations – does this matter?

Q: You, or your client, completed a renovation of the existing home two and half years ago which was equated to 30% of the volume of the existing building. You, or your client, are undertaking another renovation after 1 May 2008 which is also equivalent to 30 % of the volume of the existing building – 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 renovations and relocations 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.

Tips to reach 5 Star

The following ten tips show that the key to achieving 5 Star energy performance rests with considered design and building principles:

1. Consider your home's orientation by having living spaces positioned to make the most of northerly sunlight through appropriate window orientation, sizing and shading.
2. Make better use of the sun by shading windows in summer with eaves, verandahs, external blinds and tailored landscaping.
3. Design your home to suit its construction. Houses with concrete slab floors and those with suspended timber floors each perform *differently* in summer and winter. For example, carpet can provide timber floored homes with extra floor insulation for warmth in winter whereas tiles on a concrete slab will make it easier for the floor to store solar energy collected through good passive design.

4. Consider the internal layout of your home to enhance energy efficiency, such as locating windows opposite one another to create cool breezes, and minimising large stairwells so your home does not lose valuable warmth.
5. Insulate walls, ceilings and exposed floors to reduce heat losses in winter and heat gains in summer.
6. Utilize windows to improve energy efficiency, not the other way round, by making use of the large range of high performance energy efficiency glazing products on the market.
7. Consider installing a rainwater tank for your home.
8. Think seriously about going solar when replacing your hot water system, or at least installing the latest high efficient gas water heating system.
9. Install the best available water-saving showerheads, taps and fittings.
10. Install compact fluorescent lights or energy efficient LED downlights.

Where to go next

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.

Need more information?

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