



NCC 2022 residential energy efficiency

Overview of provisions

The Australian Building Codes Board

The Australian Building Codes Board (ABCB) is a joint initiative of all levels of government in Australia, together with the building industry. Its mission is to oversee issues relating to health, safety, amenity and sustainability in building. The ABCB promotes efficiency in the design, construction and performance of buildings through the National Construction Code, and the development of effective regulatory and non-regulatory approaches. The Board aims to establish effective and proportional codes, standards and regulatory systems that are consistent between states and territories.

For more information see the [ABCB website](#).

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This document is a text transcript of the [NCC 2022 residential energy efficiency provisions infographic](#).

Policy direction

In mid-2019, Building Ministers directed the Australian Building Codes Board (ABCB) to develop enhanced residential energy efficiency provisions. The provisions were to be informed by Energy Ministers' Trajectory for Low Energy Buildings policy.

What's changed?

The minimum level of thermal performance has increased to the equivalent of seven stars under the Nationwide House Energy Rating Scheme (NatHERS).

A new annual energy use budget has been introduced for the first time, which is based on the societal cost of energy.

An annual energy use budget applies to the heating and cooling equipment, hot water systems, artificial lighting, swimming pool and spa pumps and onsite renewable energy systems (such as rooftop photovoltaics - PV).

The NCC changes apply to houses and apartments (it is estimated there will be around 1.8 million new houses (seventy five per cent) and apartments (twenty five per cent) over the life of the regulation).

Societal cost of energy

This is the total cost of greenhouse gas emissions and the time-of-use impact on the energy network, which is comprised of the energy used by a building multiplied by the costs to society for that energy.

NatHERS

- Software accredited under the Nationwide House Energy Rating Scheme (NatHERS) rates the thermal performance of homes on a scale of zero to ten stars. There are currently four accredited NatHERS software.
- To support NCC 2022, NatHERS has been expanded to provide both the thermal performance rating and the annual energy use of homes.

Benefits of the new provisions

- Less energy use
- Lower greenhouse emissions
- Lower energy bills
- More comfortable homes
- Fuel and technology neutral
- Lower peak load on the energy network

National approach

- The mix of solutions to improve energy efficiency will be different in each climate, and will vary for different homes within the same climate.
- The energy efficiency provisions in the NCC account for varying climates using climate zones, based on data from the Bureau of Meteorology.
- The zones account for seasonal temperature and humidity changes.
- The approach means the practical solutions available for each home are sensitive to, and sensible for, each location.

The NCC's climate zones are described in the definitions section of NCC 2022.

Compliance options

There are two new Performance Requirements:

- Thermal performance
- Annual energy use budget

Options for demonstrating compliance with the Performance Requirements

- NatHERS accredited software
- Deemed-to-Satisfy (DTS) elemental provisions
- Verification methods
- Performance Solutions

Thermal performance

The increase to the equivalent of NatHERS seven stars is going to deliver a significant improvement in thermal comfort for occupants.

Here are some of the improvements we are likely to see:

- More options for roof, wall and floor insulation
- Reduced heat loss and gain through roofs, walls and floors due to thermal bridging
- Lighter colour roofs and external walls in warmer climates to reduce heat gain
- New ceiling fan requirements for warmer climates (efficient and effective cooling)
- Window requirements more appropriate for climate
- Lower heating and cooling demand

Annual energy use budget

The new annual energy use budget provides a flexible approach to encouraging the selection of more efficient equipment, the major contributor to household energy use.

Here are some improvements we are likely to see:

- More energy efficient air conditioners for heating and cooling
- More energy efficient instantaneous gas and electric heat pump water heaters
- More on-site renewable energy systems (particularly rooftop solar)

The annual energy use budget covers heating and cooling equipment, hot water systems, lighting, pool and spa pumps, and on-site renewable energy (e.g. rooftop solar). The total of energy used by these appliances, minus any energy generated on site must be less than or equal to the annual energy use budget.

The annual energy use budget for apartments is around 40 per cent higher (or more lenient) than the budget for houses. This is to account for the practical challenges of installing rooftop PV on apartments.

Energy use in Australia

Residential buildings are responsible for:

- 7.9 per cent of all energy use (all fuels)
- 29 per cent of all electricity use
- 11 per cent of all greenhouse gas emissions.

Nationwide commitment

- Agreed by Building Ministers in August 2022
- Supports the Australian Government's commitment to reduce greenhouse gas emissions by forty three per cent by 2030 and achieve net zero emissions by 2050.
- Aligns with other key policy areas such as transport, environment, energy and cost of living
- Part of a series of improvements for commercial and residential buildings

Net benefits for new households

- Average energy bill savings approximately \$185 per annum for houses
- Average benefit-cost ratios:
 - 1.4 for new houses
 - 1.3 for new apartments.
- Energy efficiency is nationally consistent but fit for the local climate

- Different solutions in different climates to maximise benefits, minimise costs and reduce consequential risks
- Reduced risk of condensation:
 - No increase in building sealing
 - Climate-specific insulation and ventilation.

Support for industry transition

- Proposes an extended transition period to allow practitioners and supply chains to prepare for the changes
- Updated NatHERS software
- Practitioner information sessions
- Teaching tools for educators
- Practical case studies across different climate zones
- Digitally-focused calculators and resources

Some practical improvements from the new provisions

- More comfortable homes
- Better air movement (warmer climates)
- Better insulation
- More energy efficient appliances
- Lighter colour roofs (warmer climates)
- More rooftop solar