

PLANNING AND BUILDING an environmentally sustainable home

Good passive design locks in comfortable air temperatures, low heating and cooling bills and reduces greenhouse gas emissions.

If you are planning to build, buy or renovate a sustainable home there are many aspects you can consider to ensure that your home is environmentally sustainable.

You can:

- use water efficient appliances and fittings, such as water-saving showerheads and water pressure-limiting devices
- include a rainwater tank to supply water for use to gardens, toilets and laundry
- install a solar, natural gas or electric heat pump hot water system to lower energy bills and reduce the single largest source of greenhouse emissions in the household
- use low maintenance materials to reduce the repair and ongoing maintenance costs of your home
- use good passive solar design which allows your home to respond to its local climate through natural heating in winter and cooling in summer.

Using passive solar design

Using passive solar design when planning the build or renovation of your home can help improve energy efficiency and ongoing costs.

Orientation

- Living areas and rooms you spend lots of time in should face north to catch sun and light for the longest part of the day.
- Position bedrooms on the southern side so they are cooler and more pleasant to sleep in at night.

Eaves

- Eaves over north-facing windows can keep unwanted sun out in summer and let the sun's warmth in during winter.

Living areas

- Open plan designs are popular. They can be expensive to heat and cool, and quite noisy. Make living areas more enclosed to keep heating and cooling costs down.

Zoning

- Create 'zones' by grouping rooms with similar uses together – such as living rooms, bedrooms and wet areas. This can allow for more efficient heating and cooling.

Trees

- Use trees and shrubs to block out the harsh morning and afternoon sun on the eastern and western sides of your home during summer.
- Keep grass irrigated this cools the area around your home.

Verandas and pergolas

- Paving directly under north-facing windows reflects heat into the house. Adding pergolas or verandas in these areas can provide extra summer shade.

Glass

- Too much glass can make your home very hot in summer and cold during winter, this can be largely overcome by selecting the right glazing systems for your orientation and climate, and considering the size and location of window openings in your design.
- Limit the number of windows on the east and west sides of your home.

Natural cooling

- Position windows to maximise cross-ventilation, allowing breezes to cool warm summer air that has built up during the day.

Internal temperature

- Light coloured roofs effectively reflect sunlight and keep internal temperatures down.
- Good use of thermal mass moderates indoor temperatures by averaging day-night temperature extremes.

Insulation

- Insulation in conjunction with passive design techniques such as draught proofing and appropriate exterior shading will maximise the benefits.
- Ceiling and wall insulation acts as a barrier to heat flow and will improve keeping your home warm in winter and cool in summer. It can provide year-round comfort by potentially cutting cooling and heating bills by up to half.
- Ceiling and wall insulation can help maintain a quieter and more comfortable home all year round.
- Curtains or blinds that sit snugly in the window frame can improve the insulation of your windows.

Lighting

- While natural light offers the cheapest solution, when required, LED (Light Emitting Diodes) is the most economical and energy efficient lighting currently on the market.

Colour

- Light coloured walls and roofs can reflect heat and help keep your home cool in summer.

More information

The Australian Government, in partnership with the building and design industry, has developed comprehensive, expert and independent advice to everyone interested in building homes for a sustainable future. Detailed information on planning an energy efficient home using the passive design approach can be found at www.yourhome.gov.au/passive-design. More tips can also be found at www.sa.gov.au/topics/energy-and-environment/energy-efficient-home-design/planning-a-new-home-or-renovation.



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