

Solar passion

Energy-efficient houses are not only cheaper to run, they're also nicer to live in and easier to sell. **SERENA KIRBY** reports

Solar-passive and energy-efficient houses provide countless benefits to their owners. They cost less to heat and cool, are better for the environment and more comfortable to live in.

They are also known as healthy houses because their design provides good airflow and ventilation, and they're filled with an abundance of natural light. Solar-passive houses are also proving to be a healthy investment and, as many real estate agents report, this type of house usually sells considerably faster than its less energy-efficient neighbours.

The selling power of solar-passive houses is supported by Linda Sullivan, from Dee Seed Real Estate, who says the first thing that puts buyers off is a dark house.

"Solar-passive houses are certainly more appealing to buyers because everyone wants a house that has a light, bright ambience with good ventilation," she says.

"A dark, stuffy house is rarely appealing and can not only make it harder to sell, but it can affect the selling price because fewer buyers may be interested. Solar-passive represents good design and good design will always sell, so I've no doubt that these houses have a selling edge."

Linda cites a South Perth property she sold last year as a good example of the appeal of energy-conscious design.

"It was an older house, but had a new extension designed by the owner Garry Baverstock, an architect who specialises in energy-efficient homes. It sold before the first official home open to the first people who saw it."

She believes buyers can sense the difference between a house that has solar-passive elements and one that has not.

Henry Willis, from Acton, says while there seems to be no direct correlation in solar-passive design and higher prices, they do sell faster.



Pictured left, from top: Neville Peterkin; Linda Sullivan; Griff Morris; Justin Davies; and Garry Baverstock.



Garry Baverstock's house is oriented to make the most of the sun in winter and cooling breezes in summer.

The way forward

It is aptly called the Eco-Compound and was designed by environmentally conscious architect Garry Baverstock, from Ecotect-Architects.

He designed the Congdon St, Cottesloe, house as his family home – and it looks just as impressive as the surrounding residences. But this is far from your run-of-the-mill luxury abode, having none of the excesses usually found in palatial houses.

There are no water-guzzling lawns and gardens, no energy-draining chandeliers, no giant airconditioning units and no large expanses of unshaded windows.

With heating and cooling the biggest consumer of residential energy, eliminating the dependence on mechanical climate control was a priority.

The building's orientation was one way in which this was done, the use of heavyweight materials was another. To ensure good thermal mass, the internal walls are built of brick with a render finish. Thick, rammed limestone was used externally.

Strategically placed ventilation windows collect cooling breezes at night during summer. And all the main rooms have ceiling fans that circulate air and drop the perceived temperature by about 4C.

These solar-passive initiatives have been so successful that the inside temperature has yet to drop below 22C at night, even when it has been as cool as 11C outside.

And it is just as energy efficient in other areas. The sun heats a solar hot-water system and a gas booster was added to provide hot water on cloudy days. Energy ratings were considered in the selection of all appliances and the kitchen's hot-plates are an induction variety that run on electro-magnetic radiation.

The need for artificial lighting was reduced by the use of skylights in the core of the house. They were fitted with slats that are angled and spaced to allow in the winter sun, but not summer heat. The skylights are so effective that there's no need for artificial lighting during the day.

After dark, illumination is provided by low-energy lights, many with dimmers, and fluorescent tubes.

To further reduce the building's reliance on mains electricity, a series of photovoltaic solar panels were added to the roof.

It is anticipated that these panels will generate more than enough electricity to cater for the dwelling's use. Any excess power will be returned to the power grid.

Efficiency check list

Is the house you are considering buying energy efficient? Here's what to look for.

It's best to have living areas that face north to make the most of the warming winter sun. But beware buildings and trees – either on the block or next door – that may obstruct the sun's rays in winter.

Look for a house that has indoor living and entertaining areas on the north side, with north-facing windows for maximum winter sun. But make sure the windows are adequately shaded in summer.

Bedrooms are best positioned to the south because they are cooler to sleep in during summer.

Maximum heat gain from summer sun occurs through east and west facing windows. Large areas of glass facing west may provide great views of the ocean and sunsets, but are difficult to protect from summer sun.

West-facing windows should have deep eaves and external blinds or shutters. Deciduous trees,

or vines growing on a trellis, will also provide some shade.

Windows lose heat five to 10 times faster than walls, so if the house has large areas of glass they need heavy fabric curtains with insulating backing. A sealed pelmet and thick double-layered drapes provide the same insulation properties as a double-brick wall.

Structural materials such as brick, stone, rammed earth and concrete have a high thermal mass. These materials have the ability to store heat and release it in the evening, helping to reduce heating requirements in winter.

Concrete floors near north-facing windows are an advantage, so look for dark tiles laid where low-angled winter sun hits the floor.

Roof insulation is an important energy-saving ingredient, so ask if it has been installed.

Well-positioned windows and doors can be used to create cross-ventilation and take advantage of summer's cooling sea breezes.

"A well-designed solar passive house will fit like a favourite pair of shoes," Mr Morris says. "Sustainable design also means designing a home for the future – one that provides longevity of lifestyle."

"Clients don't often sell the homes we design. They have no need because the building is designed with versatile living options and a floorplan that can be adapted to changes in lifestyle."

"It's a myth that it costs more to build a solar-passive house, but it's true they save you money on running costs. For example, you can spend \$1500 on an airconditioner for a 300sq m, non-solar-passive home – then spend \$400-\$600 a year running it."

Ian Koochew, executive director of the Australian Glass and Glazing Association, says 85 per cent of the heat that enters a building does so through the windows. By using energy-efficient glass, Australians can make their houses up to 10C cooler in summer without airconditioning. He says consumers can potentially reduce energy bills to heat and cool by up to 40 per cent by double glazing.

But while the appeal of a bright and light home can assist in a speedy sale, the Government and real estate industry in the Australian Capital

Territory have taken the importance of energy efficiency one step further. Every house for sale in the ACT carries an official energy star rating that must be shown in all advertising material and contracts. This mandatory disclosure of energy efficiency has been in force since 1999 and shows the direction house sales may head in WA.

Neville Peterkin, of the Sustainable Energy Development Office, says the concept is being looked at by a government committee.

"We currently conduct more than 2000 energy-rating assessments a year and the number is rapidly increasing," Dr Peterkin says.

"A few years ago the Australian Building Codes Board brought in guidelines to promote efficiency of design, construction and performance of buildings. And all new houses (and extensions) must meet a number of energy-efficiency guidelines."

"This is a great start, but we'd like to see the assessment of a home's energy star rating become as commonplace, and as important, as termite inspections and building inspections, which most buyers undertake as part of the house-buying process."

With all this in mind, you may wish to take a closer look at the next house you buy.