

The Retrofit Review

The beauty of retrofitting is that it can be done in stages and on varying budgets. Not everything is a big-ticket item. Vivienne Reiner offers this update on where you can start, what the Government is offering and how to get further information.

Greening the home or office plays a significant part in moving towards a more sustainable lifestyle and can be justified on economic grounds because of the high – and rising – costs of energy and water. But sustainable retrofitting need not be complex or expensive, and to make it easier, the Federal government offers a variety of rebates for households and businesses. The most publicised rebate, for ceiling insulation or solar hot water, of up to \$1600 has been replaced with a \$1000 rebate and householders must now pay upfront and claim the rebate retrospectively. Interest-free green loans are no longer available but a home sustainability assessment is still on offer under the scheme. Further information: www.environment.gov.au/eehp/index.html

This skylight sends extra light down the stairwell and opens to draw out hot air. (Renovation by Construction Queen)

Choosing materials

David Baggs, author, technical director and principal of **ecospecifier**, says innovations in design and new equipment are continually occurring. To highlight the best products on the market, a green building product certification labelling scheme will be launched early next year that will look at the lifecycle products in categories spanning health, corporate responsibility and the environment. Numerous products are being rated under the scheme, adding an additional layer to schemes already in operation such as Good Environmental Choice Australia.

Making the home draught-proof while allowing for ventilation

Sustainable architect and consultant Caroline Pidcock recently came back from a trip to Europe looking at innovations in the existing building space. While the focus there is on making homes warmer, she says Australians can use the same techniques to keep cool by ensuring buildings are properly insulated. However, in warmer climates it is also important to allow for cross-ventilation once the heat subsides. To utilise to full potential, ensure doors and windows allow for security at night and are insect-proof. It is also a good idea to have any gaps around windows and doors professionally sealed. As well, Pidcock points out that ceiling fans are an energy-efficient way of increasing airflow and comfort and many also come with a winter switch, which allows for warm air to be pushed back down. Airflow may also be improved by knocking out walls to create more of an open-plan environment. For greater flexibility, separate sections of the building may be closed off with concertina doors.

Shading

Good shading is crucial because it can block up to 90 per cent of direct heat from the sun. There are numerous types of shading, from fixed to flexible, and the most appropriate one will depend on location and aspect. Further information: www.ecospecifier.org/knowledge_base/setting_priorities/eco_priority_guide_external_shading_devices.

Windows

Windows in a typical insulated home can account for more heat gain or loss than any other element in the building fabric. The situation may be improved by adding a glazing material onto existing glass. However, glass with insulation properties can sometimes make things worse, depending on the aspect. Further information is at www.ecospecifier.org/knowledge_base/setting_priorities/eco_priority_guide_windows_glass. Good curtains make a huge difference. They can provide better protection than blinds, with blackout-backed curtains covered by pelmets providing the best protection.

Insulation

Ceiling

Most of the heat in a building comes in and is lost through the roof, so insulating this area is crucial. It is also cost-effective, thanks to a rebate through the Federal government of \$1000 that should be almost enough to cover the cheapest forms of insulation. Take care to choose your installer and product carefully; if in doubt go with a reputable supplier. Further information is available in a feature on ceiling insulation in issue two of **green**.

Walls

Retrofitting insulation into walls can be problematic and can cause bridging problems in space needed for water drainage. So it is generally not a good idea to retrofit insulation into the walls in wet climates such as Sydney; however, product manufacturers have started to focus on innovations in retrofitting insulation on both the inside and outside of buildings.

Floor

Floor insulation is difficult to retrofit in buildings that are not high off the ground, and insulating the floor will only result in savings of up to 5 per cent on winter energy bills. However, laying down carpet is a simple way of adding an extra layer of material that can keep the house warmer.

Water

Solar heating

One of the most significant things people can do to reduce a building's environmental footprint is invest in a solar hot water system. A government rebate provides householders, landlords or tenants with \$1000 to go towards the installation of a solar hot water system (or \$600 for a heat pump hot water system). People applying for this rebate cannot apply for the insulation rebate above.

Water tanks

Advances in design mean water tanks are able to be squeezed into smaller areas while also being less conspicuous. A rebate of up to \$500 is available for rainwater tanks or greywater systems. This rebate should cover the cost of a very small, above-ground tank but a few thousand dollars is needed to set up enough capacity for harvesting most of a household's non-drinking water requirements. Keep in mind that the bigger the tank, the more likely there will be reserves in summer.

Taps etc.

Investing in water-efficient taps and showerheads makes a significant difference to water use and does not necessarily mean getting the most expensive varieties. And single-flush toilets can be retrofitted with equipment – even available at hardware stores – that enables conversion into dual-flush. The cost ranges in price from around \$20–\$160, plus labour.

Whitegoods

Upgrading whitegoods can lead to huge savings in water and energy use. Because of constant innovations, from a cost perspective alone, whitegoods should be replaced at least every 10 years. Look out for high energy-efficiency and water-efficiency ratings.

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Ceiling fans can increase airflow and comfort, in both summer and winter.

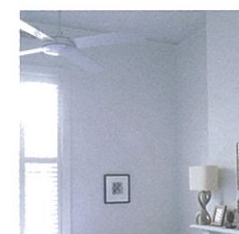
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Solar hot water systems account for big savings in energy use and are currently eligible for a rebate.

03

A showerhead such as the WELS three star rated Crometta 85 Green (Hansgrohe) is both water-efficient and pleasant.

01



02



03



04

Photovoltaic solar panels can provide some, or all, of your energy needs.

05

By installing an opaque window in the ceiling, extra light from an attic room helps illuminate the kitchen in this terrace. (Architect Ande Bunbury)

06

Windows positioned to create cross ventilation, help enormously with cooling.

Lighting and energy

Solar panels

Photovoltaic solar panels can provide a fraction or all of your energy needs, depending on the investment – with a few thousand dollars needed to supply a quarter of the average household use. However, it is important to make sure the aspect and shading of the house does not render solar panels largely ineffective; also be careful that you opt for a high quality product rather than just going for the bottom line.

Skylights/skydomes/additional windows

Council approval is needed for additional windows but skylights and skydomes do not need approval, can cost less than \$1000 including installation and some varieties are easily installed. In cloudy areas, roof windows or conventional skylights with large areas and diffuse glazing systems are recommended. In sunny locations, tubular skylights can deliver very high illumination levels.

Types of lighting

Here's a cheap way to slash energy use – replace all traditional lighting. Where 'down' lights or mood lighting are concerned, upgrading can save energy use for lighting by a factor of 10. However, not all energy-efficient fluorescent lights can be slotted straight into the down lighting space without alteration but new LEDs coming onto the market are designed to fit existing setups.

Federal government assistance

Energy Efficient Homes Package

The energy efficiency and renewable energy functions of the Department of the Environment, Water, Heritage and the Arts have been transferred to the Department of Climate Change and Energy Efficiency. Information on retrofitting rebates will be incorporated into the website at www.climatechange.gov.au but in the meantime, updates can be viewed on the Environment Department's website at www.environment.gov.au/sustainability/energyefficiency/index.html.

Ceiling Insulation

At the time of writing, the ceiling insulation rebate scheme was suspended, with plans for another scheme to be detailed on June 1. Information on the solar hot water rebate - which was reduced from up to \$1600 to a maximum \$1200 at the time of writing – was still available at www.environment.gov.au/energyefficiency/solarhotwater/index.html. For more information on insulation or solar hot water phone 1800 808 571.

Green Loans Program

The loans part of the Green Loans program has been cut, with only free sustainability assessments continuing to be offered at the time of writing. To enquire about home sustainability assessments phone 1800 895 076.

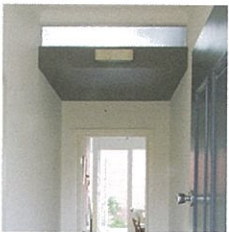
Solar Credits

– for households and businesses that install eligible small-scale solar photovoltaic, wind and hydro electricity systems. This replaces the rebate for installing solar panels. www.orer.gov.au or phone 02 6159 7700

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Business-only

Green Building Fund

www.ausindustry.gov.au/InnovationandRandD/GreenBuildingFund/Pages/GreenBuildingFund.aspx

Re-tooling for Climate Change

Funding for small and medium sized manufacturers from \$10,000–\$500,000 (up to half the total cost of each project) to improve energy and/or water-efficiency of their production processes.

www.ausindustry.gov.au/InnovationandRandD/Re-toolingforClimateChange/Pages/Re-toolingforClimateChange.aspx

Climate Ready Program

Grants from \$50,000 on a matched funding basis to support R&D, proof-of-concept and early-stage commercialisation activities.

www.ausindustry.gov.au/InnovationandRandD/ClimateReadyProgram/Pages/ClimateReadyProgram.aspx

State and local governments may offer additional assistance.

