Be more comfortable, healthy and save!



No matter what your budget, you can make changes to improve the energy efficiency of your home. If you're ready to start making big savings on your energy bills, here is a checklist of steps you can take for a cheaper, more comfortable, and healthier home.

Sustainable Home Upgrades

Image sourced from homescorecard.gov.au



Owner	Renter				
~	~	Conduct energy monitoring to understand which appliances are using the most energy in your home. Suggested products include Powerpal and <u>Power-Mate</u>			
~	~	Draught proof around your windows, doors, heating/cooling vents, exhaust fans, light fittings, etc to reduce the movement of air between inside and outside. Many easy draught proofing products can be purchased from your local hardware store and installed yourself.			
~	~	Check your walls, floor and roof insulation through physical inspections or use a thermal imaging camera. This will help you understand areas where there is no insulation installed, or where insulation could have been moved out of place.			
~		Improve insulation in your walls, floor and roof (where access allows it) to help keep your home warm in winter and cool in summer.			
~	~	Apply a window film to windows that receive a high amount of direct sun during summer. This will help keep your home cool.			
~		Install a secondary glazing system into existing windows, or replace windows with new double glazed or triple glazed windows to improve the thermal efficiency of the home.			
~		Install internal window dressings such as curtains or blinds to prevent the transfer of heat from the room to the window, and thus outside, during winter.			
~		Install external shading devices or deciduous vegetation such as trees or climbers over a pergola to protect windows from direct sun exposure and keep the home cool.			
~	~	Replace older halogen light bulbs with LED alternatives which use approximately 80% less electricity.			

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ELECTRIFICATION				
Owner	Renter			
~		Replace instantaneous or gas storage water heaters with an efficient electric heat pump system, which can be 3-5 times more efficient.		
~		Replace gas heaters with reverse-cycle air conditioning to providing heating and cooling to the home.		
~		Replace your gas cooktop with an electric induction cooktop.		
~	~	Purchase a portable induction cooktop where replacing the existing gas cooktop is not currently an option.		
~		Power your home with renewable energy by installing solar PV panels. Consider purchasing a battery to store any energy generated, but not used during the day.		
~	×	Purchase GreenPower to supply your all-electric home with 100% renewable energy.		
~	~	Purchase an electric vehicle or e-bike that can be charged on clean renewable energy.		

URBAN COOLING					
Owner	Renter				
~		Replace or paint your roof in a lighter colour to radiate away up to 75% of solar energy and reduce the urban heat island effect.			
~		Update the exterior walls of your home to a lighter colour.			
~		Replace areas of hard surface materials like concrete, tiles and bricks with grass and vegetation. Consider permeable paving solutions where a structured surface is needed (such as along your driveway).			
~	~	Plant trees and vegetation around your building, or install green infrastructure (such as green walls, green roofs and raingardens) to provide natural cooling to your garden and home. Consider using indigenous plant species to support Kingston's wildlife .			
~		Install a rainwater tank and use captured rainwater to keep your garden green and reduce your overall use of potable water.			

Professional Advice

The checklist includes a mix of DIY and professional trade work. Always seek professional advice for electrical and gas system repairs, modifications, and upgrades. For help deciding what to do first, get a <u>Residential Efficiency</u> <u>Scorecard</u> assessment completed on the current efficiency of your home and for recommendations for improvements. You can use your score to help sell your house as an energy efficient home!

Check out our more detailed advice below to further support your retrofitting journey.

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ENERGY EFFICIENCY

Energy Monitoring

Energy monitoring allows you to see your energy consumptions in real time, so you can actively take steps towards reducing your energy use.

There are many energy monitoring devices on the market. If you have a solar PV system, some of the higher end devices may be particularly useful.

Powerpal is a free energy monitoring to help you understand how much energy you use, provides tips for energy savings and estimates solar buy back times and savings.

<u>Power-Mate</u> is available to borrow from Kingston's Libraries. This device can measure how much energy each appliance in your home consumes.

Draught Proofing

Uncontrolled air leakage allows hot air into your home in summer and cold air in winter and can account for 15 - 25% of heat loss in Australian homes.

Common air leakage can be attributed to windows, doors, chimney flues, exhaust fans, skylights, wall vents, light fittings, floorboards, architraves, skirting boards, ducted heating/ cooling, gaps around walls, downlights, pipes, cabling, conduits, power outlets, switches, air-conditioners, etc. This leakage can be both internal and external.

The older the house, the leakier it will generally be. Can you see light coming in through doors or walls? Are the curtains rustling with the window shut? Can you feel breezes in certain areas of the house? If so, these are signs of air leakage and sealing these gaps will keep your house more comfortable.

Many draught proofing products (such as door seals and gap filler) are low cost, can be bought from your local hardware store and easy to install yourself. You may need to engage a tradesperson to assist with the hard-to-reach areas, or more complex solutions.

Tips for identifying leaks:

- use a candle on a windy day and hold it near suspected areas to see if the flame is blown.
- Hire a <u>thermal heat sensor</u> from Council's Libraries.

Don't forget to open your windows and maximise the ventilated air when the conditions are suitable outside; this helps naturally cool or heat your home, without the need for mechanical air conditioning.

See Sustainability Victoria's website for more information on draught proofing <u>here</u>.

Insulation

Insulation helps keep your house cool in summer and warm in winter by providing a protective barrier between the outside climate and the indoor climate.

If your roof and subfloor are accessible, these are easy areas to upgrade. If you are thinking of replacing the plaster on a wall, this could be a good time to upgrade wall insulation too. If you do not want to replace your wall plaster, spray foam is another option for wall insulation.

When using a professional always ensure the installer is aware of your expectation that you do not want any gaps between insulation batts, as this can drastically reduce the effectiveness of the insulation. For further information, check out Renew's Insulation Buyers Guide and Sustainability Victoria's website.

Glazing

Up to 40% of a home's heating energy can be lost and up to 87% of its heat gained through windows. Most older houses have single glazed windows, which are not very efficient when it comes to heat loss or gain.

The efficiency of existing windows can be upgraded with simple measures like installing window films, or more involved measures such as retrofitting a secondary glazing unit into the existing frame to achieve a similar outcome to double glazing.

Window films are effective for reducing heat gain in the home and are best used for rooms that receive high direct sun exposure in summer. They can be purchased from your local hardware store and installed yourself. Retrofitting a secondary glazing unit into existing frames is effective at improving the insulative qualities of a window and is suitable to most rooms.

Whole windows and glazing systems can also be replaced with a new double or triple glazed window to improve efficiency even further. This is a more costly option, but will achieve the best outcome from a thermal efficiency perspective.

See windows buyers guide for more information <u>here</u>.

Window dressings such as curtains and blinds are very effective at limiting heat loss and gain when closed (and installed correctly).

For best effect, curtains should be heavy, touch the walls on each side of the window, reach to the floor, and have an enclosed pelmet at the top.

Blinds should be custom designed to ensure they fit snugly within the window frame to reduce air gaps around the edges. The most effective style for thermal efficiency is a honeycomb blind, which is made from fused layers of fabric that form a series of hexagon-shaped tubes when open.

This is an easy retrofit option for both homeowners and renters to improve the comfort of the home.

See **buyers guide for high performance** curtains for more detail.

External Shading

External shading of windows is very effective at reducing heat transfer into the home on warm sunny days. On the northern facades of a home, horizontal shading systems, such as eaves, horizontal shade sails, and pergolas, are most effective. On the eastern and western facades, vertical shading systems such as operable awnings, louvers, sliding shutters, venetian/roller blinds and deciduous vegetation are most effective.

See <u>YourHome</u> and <u>external shading buyers</u> <u>guide</u> for further information.

Lighting

An LED bulb produces approximately 80% less electricity to provide the same amount of light as a halogen bulb does. There are two main approaches to upgrading your lighting - install LED replacement bulbs in your existing light fitting or replace the entire downlight with a light fitting that is IC rated (fire rated). The second approach has the additional benefit of allowing insulation to be installed over it. Insulation will be much more effective if it is not required to have fire clearance around light fittings (speak to your electrician for advice before deciding, or to see if your existing fittings are fire rated). See Sustainability Victoria's website for information on lighting here.

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ELECTRIFICATION

Join the clean energy future and make your home all-electric. Transitioning to all electric appliances has many benefits, including cost savings, improved health and wellbeing and the potential to power your home entirely by renewable energy sources.

Appliances

Upgrading your large home appliances to more efficient and all-electric options will improve the energy efficiency of your home and lead to energy and cost savings.

Most large appliances have an operating life of 10 years or greater, so the efficiency of the products we select is one of the easiest decisions we can make to influence our personal energy use. If you are not looking to upgrade these appliances yet, we recommend creating an appliance upgrade plan. This involves researching the most suitable and energy efficient options in advance to ensure you are ready to make an informed choice when it is time to upgrade.

See <u>energy rating website</u> and <u>appliance</u> <u>buyers guide</u> for more information.

Hot Water

Hot water systems are the second highest user of energy in Australian homes. If your hot water system is a gas or electric instantaneous system, or older electric storage system, you can replace it with an electric heat pump hot water system. This system type is 3–5 times more efficient than the alternatives.

Look for systems with control options that allow you to select the time of day that the system heats the water. This will enable you to connect the system to your solar PV system, to heat the water with the solar generated energy, or to run the system during off-peak times to save money (if you have an off-peak electricity tariff).

You may be eligible for a Victorian Government rebate of up to \$1,000 to switch to a heat pump hot water system. See hot water buyers guide for more information <u>here</u>.

Heating and Cooling

Upgrade your heating and cooling to energy efficient reverse cycle air conditioning to reduce your emissions and lower your bills. Select a system within 1 Star of the best available on the market.

Consider creating zones within the house so that you do not unnecessarily heat or cool areas that are not in use. For example, closing off the living area from hallways with additional doors, will improve the comfort in the living room and reduce the heating/ cooling demand.

See electric heating buyers guide for more information $\underline{here}.$

Induction Cooktop

Induction cooking heats food quickly and evenly, while the surfaces around the pan stay cool and safe. They are safer for families and better for our health and wellbeing.

If your cooktop is the only remaining gas appliance in your home, you could save hundreds each year on connection fees by switching it to electric.

See induction cooktop buyers guide for more information $\underline{\text{here}}.$

Electric Transport

Electric cars are powered by electricity rather than petrol or diesel.

If you are buying a new vehicle, consider whether an electric or hybrid vehicle will suit your lifestyle. Electric vehicles are becoming more efficient and developing longer ranges, and you can charge an electric vehicle at your home or at public charging stations.

Electric cars are cheaper to run than fossil fuel-based cars, and cleaner for the environment. Some electric vehicles also have bi-directional charging capability, which means they can also function as a home battery; storing energy generated by your solar PV system and then releasing that energy back into the home when needed.

You may consider purchasing an electric bike before investing in an electric car. E-bikes have an electric motor and battery that provides additional power to the person riding the bike.

To compare the costs of electric transport options, you can use the <u>electric vehicle cost</u> <u>calculator</u>.

Also see AEVA's website for more information on specific EV models <u>here</u> and information on maximum charging load <u>here</u>.

Renewable Energy

By choosing a 100% GreenPower plan from your electricity retailer, you can power your home with renewable energy.

Solar PV

Installing a solar photovoltaic (PV) system allows you to generate renewable energy and reduce your electricity bills.

The average solar system in Australia pays for itself within 4 years.

Solar panels are generally placed on the roof of your home and perform best when oriented to face north so that they have good access to the sun. Where roof-space is limited facing north, the panels can be placed on the east and west façade.

URBAN COOLING

Urban heat is the cumulative effect of urban materials capturing and radiating heat back into an urban area.

On a hot day this results in elevated temperatures above the regional average temperature, which can result in sickness and death.

The built environment can be designed to combat this by including:

- Light weight and light-coloured materials
- Shading
- · Vegetation and green infrastructure
- Improving the thermal efficiency and ventilation of existing dwellings
- Installing rainwater tanks to capture rainwater to use on your garden to keep it healthy and green

Look out for Council's Urban Cooling Page currently under construction for more detail.