

HEATING & COOLING

The aim of heat and air-conditioning systems is to provide comfortable conditions for customers and house guests. By managing heating and cooling systems effectively, managers can maximise guest comfort while minimising the cost of energy.

Heating and cooling energy use and costs can be controlled by:

- minimising the need for heating and cooling, and
- providing any heating and cooling which is required efficiently and cost-effectively.

These savings opportunities relate to existing systems, but also to opportunities that arise when planning to build or modify existing buildings.

Existing Buildings & Systems

No-Cost Actions

- only operate heating and cooling systems when they are required – don't run them 24 hours a day. Turn systems off when they do not need to be used.
- close doors between areas that are being heated or cooled to avoid heating and cooling more space than is necessary.
- adjust thermostats to provide comfort, without over-cooling or over-heating. The ideal temperatures for thermostats is to heat up to 20°C maximum in winter and to cool down to 24°C minimum in summer.
- minimise the use of kitchen and bathroom exhaust fans, which suck up cool, air-conditioned air. Install exhaust fans which close automatically when not in use.

Low Cost Actions

Reduce the demand for heating and cooling

- seal gaps around doors and windows and close the damper in the fireplace when not in use.
- plant trees and shrubs to shade windows from direct sun; deciduous trees will provide shade in summer and act as insulation in winter to preserve warmth.

Reduce the energy consumption of heating and cooling systems

- use time-switches to limit the hours of operation to the hours of occupancy. This means that your air conditioner is only on when the business or office is in use, and will not run all night when no-one is around.
- maintain air-conditioning systems so that they perform efficiently, paying particular attention to filters, thermostat and time-switch settings and calibration.

Other Opportunities

Reduce the demand for heating and cooling

- install bulk insulation in roof cavities, wall spaces and around hot water pipes. Effective insulation can save up to 40% of your heating and cooling costs.
- use external blinds on windows to provide a barrier against heat from the summer sun.
- reduce winter heat loss through windows by installing heavy curtains.
- reduce heat loss and heat gain through windows by double glazing. This will improve efficiency over hot and cold months while maintaining the view and cutting noise intrusion from outside.

Reduce the energy consumption of heating and cooling systems

- use the most economical and environmentally-sustainable heating and cooling options (see table below).
- install key-tag switches to control the air-conditioning in guest rooms.
- ceiling fans can be an effective way to cool rooms and use far less energy than air-conditioners.
- when installing a new system, ensure that the building can be 'zoned', so that you can choose which areas are heated or cooled.
- Purchase Green Power from your energy retailer to reduce your greenhouse impact and encourage investment in the renewable energy industry.

Accredited Green Power

Green Power is electricity generated from clean, renewable energy sources, such as solar, wind, biomass and hydro power. When you buy Accredited Green Power, renewable energy is purchased on your behalf and distributed to your business in the usual way through the electricity grid. A National Accreditation Program has been developed to ensure that Green Power offered by Green Power providers is generated from approved renewable energy sources. Many electricity and gas providers offer Green Power options, and a full list can be found at www.greenpower.gov.au

Depending on your existing tariff or contract, Green Power may cost more than regular coal-fired electricity. However, by shopping around you may be able to switch to Green Power for no more than you are paying now. Even if you need to pay more for Green Power, the tips in this information sheet will allow you to more than compensate for the slightly higher price, by saving electricity.

If your business, Council or Government Agency joins a Green Power program, you may be eligible to use the Green Power customer logo on marketing materials, letterhead and signage to demonstrate your commitment to the environment.

Selecting New Heating & Cooling Systems

When purchasing new heating and cooling systems, select appliances with the highest available energy star rating. The energy consumption on the energy label can be used to calculate the cost of operating an appliance - also known as the "second price tag".

Energy Efficiency Labelling

Common appliances that use electricity are registered and labelled under the Minimum Energy Performance Standards (MEPS) program, which rates their energy-efficiency – the more stars, the more energy-efficient the appliance. This mandatory rating program includes the following products:

- refrigerators & freezers
- air-conditioners
- clothes dryers
- clothes washing machines
- dishwashers

To search for an efficient appliance, go to www.energyrating.gov.au/appsearch

New Buildings and Renovations

When considering a new building or a major modification:

- specify efficient heating and cooling equipment, with low running costs (see Table 1)
- evaluate the design using an accredited energy rating computer program
- for domestic scale buildings, contact Sustainability Victoria on (03) 86268700 or refer to the *Your Home* manual available at www.greenhouse.gov.au/yourhome
- for larger, complex, commercial buildings, your engineering consultant should have a preferred computer modelling program.

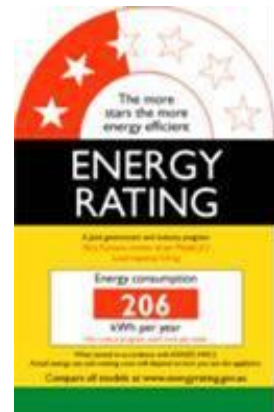


Table 1: Heating and Cooling Options

	Cooling	Heating
⇒ Most preferred	<p>Cross flow ventilation :</p> <ul style="list-style-type: none"> • is free • does not need the building to be closed up, so visitors are free to enjoy their surroundings and fresh air. <p>To make the best use of cross-flow ventilation:</p> <ul style="list-style-type: none"> • find out the direction of the prevailing breezes during the warmer months, and arrange windows and doors accordingly. • design doors and windows to open in the direction which allows them to best "scoop" the breeze. • increase cooling effect with ceiling fans. 	<p>Solar heating:</p> <ul style="list-style-type: none"> • is free <p>Solar heating relies on attention to building design to maximise the benefits such as:</p> <ul style="list-style-type: none"> • verandahs and overhangs on the North which admit the winter sun but exclude the summer sun • concrete floors to act as a "thermal mass" storing some of the heat gained for release overnight <p>For more information see the "Your Home" manual at http://www.greenhouse.gov.au/yourhome</p>
	<p>Evaporative Cooling:</p> <ul style="list-style-type: none"> • also lets you leave windows and doors open; <i>in fact evaporative cooling will not work otherwise</i>. You can direct cooling into a room by opening a window in that room. • is much cheaper to operate and purchase than refrigerative air-conditioning. • requires a water supply, and so the likely water consumption should be considered, especially if water supply is restricted. • does not use any CFCs, as it does not need a refrigerant gas. • systems should be sealed shut in cool and cold weather, to minimise heat loss from the building. 	<p>Biomass (mainly wood):</p> <ul style="list-style-type: none"> • is sustainable, providing the timber is collected responsibly. To be sustainable, the use of firewood should be complemented by the planting of an equivalent wood-lot for later harvesting. • is effective providing a modern controlled-combustion heater is used. Open fireplaces are inefficient because so much heat escapes up the chimney, and they drag in a lot of cold air from outside. Their wood consumption is high, increasing the time and labour required to collect wood and tend the fire. They also emit far more smoke and soot than an efficient heater. • select a wood-fired heater according to its energy efficiency (they are rated in accordance with Australian Standard 4012).
⇐ Least Preferred	<p>Refrigerative Air-conditioning:</p> <ul style="list-style-type: none"> • most expensive to purchase, operate and maintain. • "reverse cycle" air-conditioners can provide heating at a fraction of the electricity consumption of fan heaters and bar radiators. 	<p>High Efficiency Gas or Reverse Cycle:</p> <ul style="list-style-type: none"> • domestic-sized high efficiency gas appliances have an energy rating label to assist your choice. • reverse cycle air-conditioners have the benefit of providing cooling.
		<p>Electric Heating: (including electric slab heating)</p> <ul style="list-style-type: none"> • the most expensive heating to operate. • suitable only for task heating (eg. under desk) or heaters which operate only rarely. • should have a timer to automatically turn the heater off outside of specific hours.