

# HEATING – THE MOST IMPORTANT HOME APPLIANCE PURCHASE YOU WILL MAKE

More than half of all the energy consumed in your Googong home will likely go to heating, so the kind of heating you install is a very important decision. Upfront cost is an important factor when buying a heater, but so is the efficiency of the heater because this influences the size of ongoing heating costs. Locking in a low efficiency heating option can cost you thousands of dollars more than an efficient heater over the life of the equipment. So, it is important to choose your heater carefully, and investing more upfront can save you a lot of energy and money over time.

It is an assumption today that central heating should be installed in every house, but this is a very modern idea as central heating was not so common even 20 years ago. Rather than assuming you need central heating, which can be far more costly to run than room heating, carefully consider your heating requirements. There are two main questions you should ponder before buying a heater:

## 1. Should I invest in central heating or room heating?

What are your patterns of space usage within the home? For example, do you spend most of your time in the living room-kitchen area, or will you use most of the house most of the time you are home? Where are you most likely to spend time during the day/at night? These questions are important because they will help you to determine whether you need central heating or not.

## 2. Do I prefer or require a certain kind of heating?

Convective heaters send out warm air to fill a room e.g. gas ducted and gas wall-mounted heaters, reverse cycle air-conditioners (RCACs). Convective heating can be an issue for people with asthma or chronic allergies as air movement can stir up allergens. Radiative heaters send out radiant heat to heat objects directly, and more slowly heats the air in a room e.g. hydronic radiators, bar radiators.

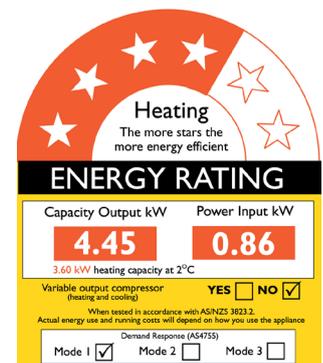
## EFFICIENCY IN ELECTRICAL HEATERS AND GAS HEATERS

There are two distinct kinds of electrical heating: electric resistance heating, and RCACs (aka heat pumps). Electric resistance heating, including column, panel, radiator and fan heaters, provides about one unit of heat output for each unit of electricity input – in energy terms, think of them as “one in, one out”.

*On the other hand, RCACs use electricity to draw heat from outside air, so typical new RCACs can produce up to four units of heat output for each unit of electricity input, depending on the outside air temperature.*

So, RCACs are far more efficient than electric resistance heaters per unit of electricity consumed, and electric resistance heaters should be avoided if possible.

The efficiency of gas heating depends on the thermal efficiency of the machine – that is, how good the heater is at separating heat from the noxious gases exhausted through the flue. Thermal efficiency for typical gas heaters varies from 60-85%, so 60-85% of the heat produced by burning the gas is sent to heat the home, while the rest of the heat is lost with the exhaust gases.



*Whatever kind of heating you buy, always buy the most efficient model you can afford, even if the upfront price is a little higher – extra efficiency is likely to pay off the added upfront cost rapidly.*

To determine the efficiency of a heater look at the Energy Star label and/or discuss with a heating specialist.

## TYPES OF CENTRAL HEATING

Central heaters are powerful devices capable of heating your entire house. As such, central heaters also use a lot of energy, which means they can be costly to run and potentially have a large environmental footprint.

*If installing central heating, it is essential to install zoning, which should help to limit your heating to the areas of the house that are in use.*

The flexibility of zoning depends on the type and brand of heater, so shop around if you require highly flexible zoning.

**Hydronic heating:** hot water pumped through in-slab pipes (make sure to insulate the slab!), radiators, or a combination of both in two storey houses. The water is typically heated by a gas furnace or heat pump, and although rare, solar is also possible. Hydronic heating is the most efficient form of central heating, is zonable to each room in the house individually, produces radiant heat and also warms the air in a room. It is generally more expensive upfront than ducted heating.

**Ducted heating:** warm air pumped throughout the house through insulated ducting. The air is produced by a gas furnace or heat pump. Ducted heating is zonable, but generally to areas and not to every room individually, produces convective heat rapidly, and should be installed under the floor if possible (installing it in the roof punches holes in your ceiling insulation!). Avoid putting vents in rooms that do not need or are not suitable for convective heating, such as bathrooms/laundry.

**In-slab electrical heating:** electric resistance wires running through a slab. It is very inflexible and expensive to run. In-slab hydronic is a far more flexible and efficient choice.

**Heat recovery ventilation (HRV):** used in conjunction with passive solar design, highly efficient.

## TYPES OF DEDICATED ROOM HEATING

Room heaters are usually dedicated to a particular room (sometimes two rooms). They are less powerful than central heaters because they are designed to heat smaller spaces, and are consequently less costly to run.

*If you typically use only certain parts of the house, such as the living area and master bedroom, it makes sense to install room heating instead of central heating.*

**RCACs:** a compressor outside linked to a wall unit in one or a number of rooms, pumps out warm air. New models can be highly efficient and effective at low temperatures, but be sure to check with the manufacturer for an appropriate model. RCACs can also be used for cooling in summer.

**Flued gas space heaters:** mounted into a wall, or portable with exhaust duct through a wall/window, pumps out warm air. Can heat a room rapidly and some models are relatively efficient. Unflued gas heaters should be avoided as they are potentially dangerous.

**Portable electric space heaters:** come in many forms – column, panel, bar radiator or fan heater. They are cheap to buy but relatively inefficient and expensive to run, should only be used if there are no other alternatives. Radiant heaters can be useful in bathrooms (e.g. heat lamps in Tastics).

**Wood heaters:** come in a variety of forms including open fireplaces, slow combustion stoves and pellet heaters. Fireplaces are very energy inefficient, while slow combustion stoves create a large volume of unhealthy fine particle pollution. Sourcing sustainable wood can be an issue. In a residential development like Googong, try to avoid wood as the primary source of heating.

## HOW TO USE HEATING

There are five determinants of heating costs:

1. The efficiency of the building at retaining heat: invest in high levels of insulation, draught sealing, and even passive solar design if possible.
2. The efficiency of the heater: always buy the most efficient heater you can afford!
3. The space the heater has to heat: minimise space heated using room heaters or zoning.
4. The length of time the heater operates: use heaters only when you are home and benefiting from the heat. Turn them off overnight and during the day when not home. Use a timer switch to turn the heater on before you get up and before you get home!
5. The heater's thermostat setting: 16-20°C is comfortable for most, every degree you increase the thermostat will increase your heating costs by 5-10%.

For more detailed information: <http://www.yourhome.gov.au/energy/heating-and-cooling.5>