

live



# Cooking

*Cooking accounts for around 12% of the total energy used in a typical WA household. Good cooking practices, together with careful selection of appliances, can cut your energy bills significantly, as well as reduce greenhouse gas emissions.*

## Gas or electricity?

Both gas and electric cooking appliances provide similar cooking performance. The choice of appliance usually depends on a number of factors including price, appearance, kitchen layout and personal preference. However, energy efficiency should be a priority when selecting appliances.

Generally, when comparing similar conventional cooking appliances, electric and LPG cooking costs more than that of natural gas.

Smaller electric appliances (such as frying pans and deep fryers) can be cheaper to run than both electric and gas stoves when shorter cooking periods are required. Similarly, microwave ovens are very inexpensive to run.

## Energy efficiency

Unlike other electric and gas appliances (e.g. dishwashers, refrigerators, gas hot water systems) energy star ratings are not available to indicate the energy efficiency of cooking appliances.

In general, the larger the cooking appliance and the longer the cooking time, the more expensive your cooking costs will be. Small appliances tend to be more efficient and should be used wherever possible for cooking or heating smaller amounts of food.



## Types of cooktops

### Gas burners

- Respond rapidly and are easy to adjust
- Provide good temperature control
- Consumption varies according to the size of the burner and setting.

### Electric hotplates

There are three types of electric hotplates available – coil, solid and ceramic. Efficiency varies between different types.

Type of electric hotplate	Efficiency (%)
Coil	55 - 65
Solid	50 - 55
Ceramic - Standard	55 - 60
Ceramic - Halogen	45 - 50
Ceramic - Induction	80 - 85

#### (a) Radiant coil hotplates

- Cheapest electric hotplates to buy
- More efficient than solid and ceramic hotplates
- Generally hinge up so that spillage bowls can be cleaned (some models have plug-in elements which can be removed for easier cleaning and replacement).

#### (b) Solid hotplates

- Fixed to the hob and do not need to be moved for cleaning
- Slightly less efficient and have a slower response time than coil hotplates
- Retain heat longer than coil plates so they can be switched off before cooking is finished to save energy
- Look for auto-sensing elements to assist with temperature control
- 'Sintered' elements give faster cooking times
- Require regular cleaning to maintain their efficiency and appearance.

#### (c) Ceramic cooktops (smooth-tops)

- Have elements concealed under a flat, glass surface
- Provide stylish appearance and are easier to clean than coil and solid hotplates

- Less efficient and have a slower response time than coil and solid hotplates
- Generally more expensive to purchase than coil or solid hotplates
- Should have a light to indicate when there is residual heat in the cooktop.

Ceramic cooktops can also use halogen elements. These have precise and accurate heat control with an almost instant response time but take a relatively long time to cool down once switched off. They are less energy efficient than other electric hotplates.

### Induction cooking

Induction cooking uses electromagnetic technology to heat the cooking utensil and its contents with very little energy wasted on heating the ceramic cooking surface.

An electronic circuit supplies power and electronically controls an inductor coil inside the appliance. This coil generates a magnetic field when a saucepan is placed in contact with the hob's surface, causing induction currents to flow through the base of the pan. The cooktop surface stays cool, and spillages are not baked on, making cleaning easier.

Induction cooking provides immediate response and precise temperature control. It is a relatively new technology and is considered to be the most efficient type of electric hotplate.



*Note – only some types of cookware are suitable for use with induction cooktops. These include cast iron, iron, enamelled steel and certain types of glass with an iron-alloy base inset. Standard glass, aluminium, copper based, stainless steel (unless with an iron core) and earthenware cooking vessels are unsuitable.*

## Types of ovens

Gas and electric ovens are available for installation in walls, under benches or as part of a conventional stove. The type of installation has no effect on energy efficiency or cooking performance.

All ovens are available in various sizes, so it's important the oven you choose is sufficiently sized for your requirements. The supplier/retailer will help you find the right size.

There are various types of ovens currently available on the market. Each cooks food in slightly different ways.



#### (a) Conventional ovens

Have a gas burner or an electric element(s) for cooking. As hot air rises, the highest temperature is found towards the top of the oven. This can limit the amount of food which can be cooked at the one time. These types of ovens are no longer commonly available.

#### (b) Fan-forced (or convection) ovens

Have an in-built fan which circulates heated air around the oven. This results in an even temperature throughout the oven, allowing all shelves to be used simultaneously. Fan-forced ovens heat more quickly than conventional ovens, can cook food at lower temperatures, and use up to 35% less energy than conventional ovens.

Multi-function ovens provide the option of either fan-forced or conventional cooking. This greater flexibility means, for example, a pie can be baked using the fan-forced function, and then the top can be browned using the oven conventionally.

## Running costs - electrical appliances\*

	Typical power rating (watts)	Typical running cost per hour when on maximum
Oven	2500 (large)/1800 (average)	35¢/25¢
Grill	2000 (horizontal)/1800 (vertical)	28¢/25¢
Hotplate	2050 (large)/1250 (small)	29¢/17¢
Microwave oven, Kettle	1500	21¢
Frypan, Deep fryer	1200	17¢
Toaster, Sandwich maker	600	8¢
Bread maker	470	7¢
Crock pot	150	2¢

\* Based on the standard domestic electricity price of 13.94 cents per kilowatt hour (c/kWh).

## Running costs - gas appliances\*

	Typical maximum energy consumption (MJ/hour)	Typical running cost per hour when on maximum	
		Natural gas	LPG
Oven	13	25¢	44¢
	10	19¢	34¢
Grill	10	19¢	34¢
Burner	10	19¢	34¢

\* Based on a natural gas price of 7.01 c/kWh and an LPG price of \$76 per cylinder (45kg). To convert MJ to kWh (1kWh = 1 unit) divide by 3.6.

### (c) Microwave ovens

Can be extremely energy efficient as a result of the short cooking times involved. Energy only heats the food, with little wasted on heating cooking utensils or the oven itself. This results in shorter cooking times and significantly less energy consumption than conventional ovens.



### (d) Combination cookers

Combination cookers are also available. These combine convection and microwave cooking in the same oven. The advantage of these ovens is that food can be browned/crisped on the outside using convection cooking, while the microwave energy reduces the actual cooking time.

### Other appliances

Most kitchens are likely to contain a range of smaller cooking appliances such as a kettle, frying pan, toaster, breadmaker.

Smaller electric cooking appliances are generally very energy efficient and inexpensive to run and should be used instead of an oven or grill wherever possible.



## Energy saving tips

- Thaw food before cooking
- Use small appliances where possible - the grill on your stove uses up to three times more energy than your pop-up toaster
- Use energy efficient cooking practices, such as using minimum water in pots, keeping lids on pots and simmering instead of boiling
- Use the right size hotplate/burner matched to the right pot size
- Use steamers and pot dividers to cook all your vegetables at once
- Keep the oven door shut - each time it's opened, more energy is needed to replace the lost heat
- Check the seal on the oven door. A good seal will hold a piece of paper in place when the oven door is closed (make sure the oven is off). If the paper can be pulled out, the seal may need replacing
- Use the oven fully where possible and plan on cooking several dishes at once
- Preheating is unnecessary in a gas oven and should be minimised in an electric oven (especially fan-forced ovens)
- Turn the oven off 10 minutes before cooking is finished and use residual heat
- If using aluminium foil, apply the dull side up
- Keep surfaces of appliances clean to promote maximum heat reflection
- Have appliances serviced in accordance with the manufacturer's instructions - do not attempt repairs yourself.



### More Information

If you want to know more about saving energy at home, phone the **Sustainable Energy Development Office's Energy Smart Line on 1300 658 158** or visit our web site at [www.sedo.energy.wa.gov.au](http://www.sedo.energy.wa.gov.au)

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