

Getting off gas: The practicalities

1) Why bother getting off gas – in case you needed convincing!

- Firstly and importantly: gas is a fossil fuel and a greenhouse gas. That means burning and producing gas drives climate change.



Courtesy: Science News

- Gas has often been touted as a ‘clean fuel’. However, because of the enormous leakage of methane both at the gas platform and from the pipe network, scientists have now realised it’s not a clean fuel at all. Methane makes up 70-90 percent of natural gas¹, and gas production and usage leaks lots of methane into the environment.
- Methane increases global warming more than carbon dioxide. Even though CO₂ has a longer-lasting effect, methane sets the pace for warming in the near term. Methane has more than 80 times the warming power of carbon dioxide over the first 20 years after it reaches the atmosphere. Even though CO₂ has a longer-lasting effect, methane sets the pace for warming in the near term. At least 25% of today’s global warming is driven by methane from human actions².
- When methane is burnt it produces about three times its weight in CO₂! If we stopped burning gas, we could cut Victoria’s greenhouse gas emissions by a significant 17 percent³.
- Not only is getting off gas imperative for mitigating the climate crisis, it can also save you heaps of money⁴ once you’ve invested in your new equipment.
- In addition, Energy Safe Victoria and the Victorian Building Authority recommend that all gas water heaters, space heaters, central heaters and gas cookers are serviced once every two years by a qualified gasfitter to ensure they are working properly. Gas heaters and cookers consume air and release combustion products such as carbon monoxide into the room and can make us unhealthy if there is inadequate ventilation.



2) Starting out

- Almost all electricity retailers in Australia have an Greenpower Accredited product that lets you purchase between 10 and 100% of your energy from a renewable source. When you choose to buy GreenPower, your electricity retailer purchases an equivalent amount of electricity that

¹ <https://www.nrdc.org/experts/merrian-borgeson/gas-stoves-emit-pollution-even-when-not-use-0>

² <https://www.edf.org/climate/methane-crucial-opportunity-climate-fight>

³ <https://climateanalytics.org/media/australia-carbon-footprint-report-july2019.pdf>

⁴ <https://theconversation.com/amp/heat-pumps-can-cut-your-energy-costs-by-up-to-90-its-not-magic-just-a-smart-use-of-the-laws-of-physics-185711>

you've used from accredited renewable sources, such as large-scale wind and solar. The Australian Government's GreenPower website⁵ is the way you can find a provider that supplies 100% accredited renewable energy.

- Consider getting your home inspected by a team of expert energy efficiency assessors. They look for air leaks and drafts, advise on ventilation, insulation, lighting, heating and cooling equipment, and moisture problems.
- Consider double-glazing next time you renovate.
- Thermal curtains or blinds can reduce energy costs as they prevent heat loss through the windows. They also reduce heat gain in summer by up to 77%⁶.
- Investigate the equipment you purchase. Typically, the higher the star rating of an electrical unit, the higher its efficiency, the friendlier it is to the environment and the cheaper it is to run.
- If you are on Facebook, have a look at My Efficient Electric Home page⁷ to get some ideas.
- Every home is different. To find out the best solutions and options for your home, talk to your supplier.

3) Heating

- Depending on where we are in Australia, heating and cooling together use the largest amount of energy in the average home, accounting for around 40% of household energy use⁸.
- During the process of burning gas, gas heaters may emit harmful gases such as carbon monoxide. Adequate ventilation is necessary to ensure it doesn't build up inside your home. Reverse-cycle air conditioners clean and purify the air from bacteria, dust and other pollutants (as long as the filters are regularly cleaned) and do not produce any harmful gases⁹.

Why do it?

- Gas heating costs more to run than reverse-cycle air conditioning – which combines summer cooling and winter heating in the one appliance.
- Gas heaters are much less efficient, especially for older and poorly maintained underfloor ducted gas systems. Half or more of the energy contained in the gas can be immediately lost as the gas is burned and as heat is distributed through the ducts and around your house¹⁰.

Options:

- **Reverse cycle air conditioners** are more environmentally friendly than gas and electric heaters, producing two-thirds less the amount of greenhouse gas emissions¹¹.

⁵ <https://www.greenpower.gov.au/>

⁶ <https://www.consumerreports.org/energy-efficiency/beat-the-heat-with-window-coverings-a9364047186/>

⁷ <https://www.facebook.com/groups/MyEfficientElectricHome/>

⁸ <https://www.yourhome.gov.au/energy/heating-and-cooling>

⁹ <https://www.ibreeze.com.au/blog/reverse-cycle-air-conditioning-vs-gas-heating-whats-best>

¹⁰ <https://renew.org.au/renew-magazine/all-electric/three-steps-to-all-electric/>

¹¹ <https://www.hhaircon.com.au/general-news/reverse-cycle-air-conditioning-vs-gas-heating-which-is-right-for-you/>



Courtesy: Canstar Blue

- Basically a reverse-cycle air conditioner is an air conditioner that also heats. This means you have the added bonus of cooling in summer provided it's reverse-cycle.
- The heating or cooling is really cheap to run. The average, modern reverse-cycle air conditioner, capable of heating large spaces quickly, costs only around \$0.13 – \$0.36 per hour to run¹².
- The average Australian household expends about 40% of their electricity bill on heating and cooling so changing to an inverter system could reduce your power bill by 12% or more.¹³
- You may be able to attach your reverse cycle unit to any existing heating ducts in your house. Ask your retailer. (First get the ducts checked for leaks and insulate them to make them more efficient).
- The Victorian Government is currently helping households by offering rebates to upgrade gas, electric and wood heaters with energy-efficient reverse-cycle air conditioners, with rebates of up to \$1,000 available to help eligible households¹⁴.
- **Electric oil radiators** provide radiant central heating, with no air blowing on you (as you get with convection heat). As they don't have a fan, they are completely silent and don't blow air.



Courtesy: lvi-thermosoft.com.au

- They take longer to heat the room, but run on a thermostat and can keep the room at a constant temperature. They can also be programmed to run at a lower temperature overnight.
- There are no water-filled pipes, so there is less risk of damage to the property from leaking or burst pipework, compared to hydronic heating.
- The average cost of running the 1000W radiator is about \$0.12 cents per hour that it's turned on¹⁵.

¹² <https://sharpairconditioning.com.au/just-how-much-does-it-cost-to-run-your-air-conditioner-during-winter/>

¹³ <https://www.carrierair.com.au/reduce-your-power-bill-with-inverter-reverse-cycle-air-conditioners/#:~:text=The%20average%20reverse%20cycle%20system,units%20of%20heating%20or%20cooling.>

¹⁴ <https://service.vic.gov.au/services/heating-upgrades/home>

¹⁵ <https://www.lvi-thermosoft.com.au/pages/faq>

How to do it

- Choose the type of heating you prefer. One option is to have a split-system and use it to efficiently and quickly get a cold room up to temperature, for when you haven't had the radiators keeping a constant temperature.
- Get some advice about the room measurement and layout of your home, to understand the size, placement and number of split-system or electric radiators you need. The equipment installers will give you a quote and advise on size and placement of equipment.
- If you have any heating ducts that won't be used, close them off or consider having them removed. They leak cold or warm air depending on the season.

Hot Water

- In Australia, water-heating products are the second-largest users of energy out of all household appliances, using 23% to 30% of household energy¹⁶, as hot water is kept hot all day.
- Water-efficient appliances are one way you can reduce energy use—for example, you could replace an inefficient showerhead (e.g. some use 20 litres per minute) with the most efficient, which uses less than 5 litres per minute, saving water and water-heating energy each time you shower.
- Given most of us take showers first thing in the morning or in the evening after getting home from work, you can set automated schedules to make sure that your hot water system is on and hot when you need it, but is otherwise off, through getting a timer on your system. If you need hot water at an odd time, you can easily override the schedules by switching on the hot water.
- If you have solar, using the timer to heat your hot water during the day when you're generating your own electricity is a great way to get more from your solar, and save you from having to buy power from the grid later when the sun has set.
- But far greater energy reductions are possible if you replace a conventional water heater with a heat pump.

Why Do it?

- Heat pumps are an efficient way to use renewable energy to meet your hot water needs. They have the added advantage of reducing your greenhouse gas emissions. For example, for an average family the reduction can be as much as four tonnes of CO₂ per year—the equivalent of taking a car off the road¹⁷.
- Heat pump systems typically use around 60 to 75% less electricity than a conventional electric hot water system. This is because the electricity is used to operate the heat pump and doesn't heat the water directly with an element.
- You could be eligible for a government rebate of up to \$1,000 to replace your old hot water heater with an approved electric system¹⁸.

¹⁶ <https://www.abs.gov.au/ausstats/abs@.nsf/Products>

¹⁷ <https://renew.org.au/renew-magazine/buyers-guides/hot-water-buyers-guide/>

¹⁸ <https://www.energy.gov.au/rebates/solar-and-heat-pump-hot-water-system-rebate>



Courtesy: enviro-friendly.com



Courtesy: Sustainability Victoria

How to do it

- Heat-pump hot-water systems are constructed as either one-piece (water tank and pump are one unit) or two parts (a tank and a heat pump mechanism). The 'integrated unit' has the advantage of needing less space overall, but could be noisy if next to a bedroom window. A split system will need pipes between the two parts, but may allow greater flexibility in placing the units.
- Choose the size of tank that best suits your household needs.
- The plumber who installs your new heat-pump hot-water system can disconnect your gas. Let the plumber know that's what's going to happen before they come.

4) Induction Stove

- Just owning a gas stovetop, irrespective of usage, causes environmental harm. Studies have found that the average natural gas stove leaks (some as unburned methane) and more than 75 percent of this leakage occurs while the stove is turned off. The emissions resulting from gas stoves in the U.S. are estimated to have the same annual climate impact as the tailpipe emissions of 500,000 cars¹⁹.
- An induction stovetop is significantly more efficient than gas – food being cooked with induction will receive 90% of the heat generated instead of only 40 to 55% for gas²⁰.
- Induction cooktops generate energy from an electromagnetic field below the glass cooktop surface, which then transfers current directly to magnetic cookware, causing it to heat up.
- An induction stove is 5 to 10 percent more efficient than a conventional electric stove²¹.
- Unlike a gas flame, very little heat energy escapes from induction cooking, which can save you time and money on your energy bill! The heat is arguably more even and constant than gas because heat is being magnetically conducted across the cooking surface for the entire time they're in contact with one another.

¹⁹ <https://www.nrdc.org/experts/merrian-borgeson/gas-stoves-emit-pollution-even-when-not-use-0>

²⁰ <https://mygreenmontgomery.org/2021/the-benefits-of-switching-to-induction-cooking>

²¹ <https://www.consumerreports.org/electric-induction-ranges>



Courtesy: Home Depot

Why Do it?

- Cooking on an induction stove is very precise – you can control the temperature more accurately with even heat distribution. There are usually many heat settings on each burner, so there's lots of control. This makes slow cooking a breeze. All sorts of things can be left on a really low gentle heat for as long as you need, from slow-cooked meat dishes to caramelised onions.
- Induction stoves are safer. Since the pot or pan is the only thing being heated on an induction stove, the rest of the cooktop stays cool. This makes it a great option if there are young people at home learning to cook.
- Many induction stoves use temperature sensors as a safety control. These sensors are there to shut off the burner if the pot on top of it becomes too hot.
- The rapid response of the electromagnetic cycle can save up to 50 percent off your average cook times, which is great for meals in a flash²²!
- Some induction stoves feature a timer. Once you have something on simmer, you can put on the timer for a length of time, and then it will turn off by itself.
- Cleaning the stove is a breeze. Just clean the cooktop with soapy water and a cloth, as compared to lugging the heavy gas grates over to the sink to scrub, then attacking the gas cooktop, with all its nooks and crannies.

How to do it

- If you are switching from gas to induction, the new cooktop will need to be installed by an electrician. Induction cooktops (like other electric cooktops and electric ovens) need a dedicated electrical circuit rated to their power requirements. This will usually be a circuit in the 30 to 40 amp range. Occasionally, if you have an older house with the original wiring, the stove may trip your meter. The electrician will advise you whether your connection is up to the required capacity, or if your house needs some degree of rewiring.
- Your choice may be constrained by the space available, particularly if you're replacing an existing cooktop. The two most common cooktop widths are 60 cm and 90 cm. In order to find an induction stove that will fit in the exact footprint of the old gas cooktop, without having to alter any of the cabinets on either side, you will need to work out the size of the gas cooktop you are removing. There are manufacturers out there to help. If you know the make, they should be able to advise you of the specifications of the old gas cooktop. New induction stoves should have their dimensions clear – so you can determine the fit. Most gas and induction stoves come in standard sizes. Manufacturers are happy to help if you ask.
- Non-magnetic pans like aluminium and copper do not work with induction stoves. However, there is an easy way to test equipment: simply take a magnet and stick it to the bottom of the pot. If the magnet doesn't stick or only makes a weak connection, your cookware is a problem.
- There are good recycling options to recover the metal content from your old gas cooktop. Many retailers will take your old unit away and recycle it when you purchase a new one; this may be for free or at extra cost as part of installation. Double-check that they will recycle it via a scrap metal yard.

²² <https://mygreenmontgomery.org/2021/the-benefits-of-switching-to-induction-cooking/>