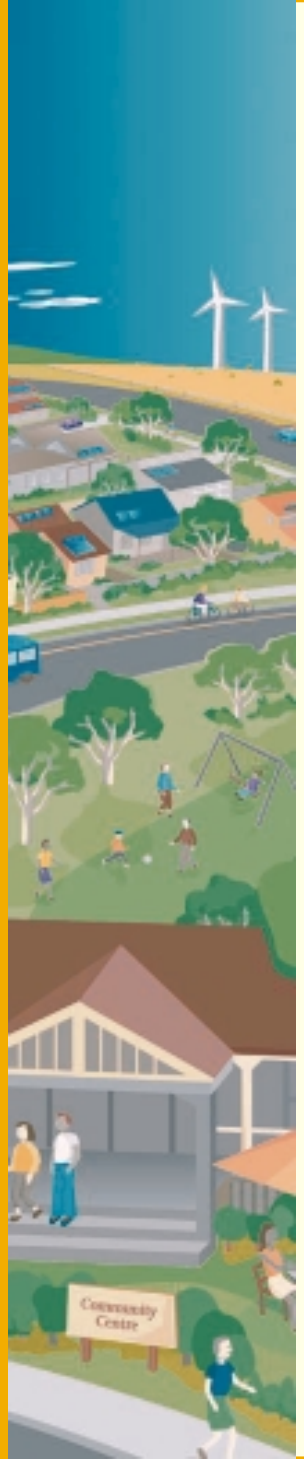


Welcome to Cool Communities

This little booklet is designed for on-screen viewing.

For ease of reading, click View at the top of your screen then click Fit in Window.

To move through the pages, simply click on the scroll bar.

This is a screen file and may not print properly from your computer.

Cool solutions to global warming

Home Energy

Your do-it-yourself guide to saving energy & money.

Australia's 7 million homes produce over 105 million tonnes of greenhouse gases each year.

That's 20% of this nation's greenhouse gas emissions.

If yours is a typical Australian house...

- it works against the climate, - rather than with it.
- it will be energy inefficient.
- it will often be uncomfortably hot or cold.
- it will be costly to run.
- it will be demanding on the environment.

You can do something about it!
This booklet tells you how.

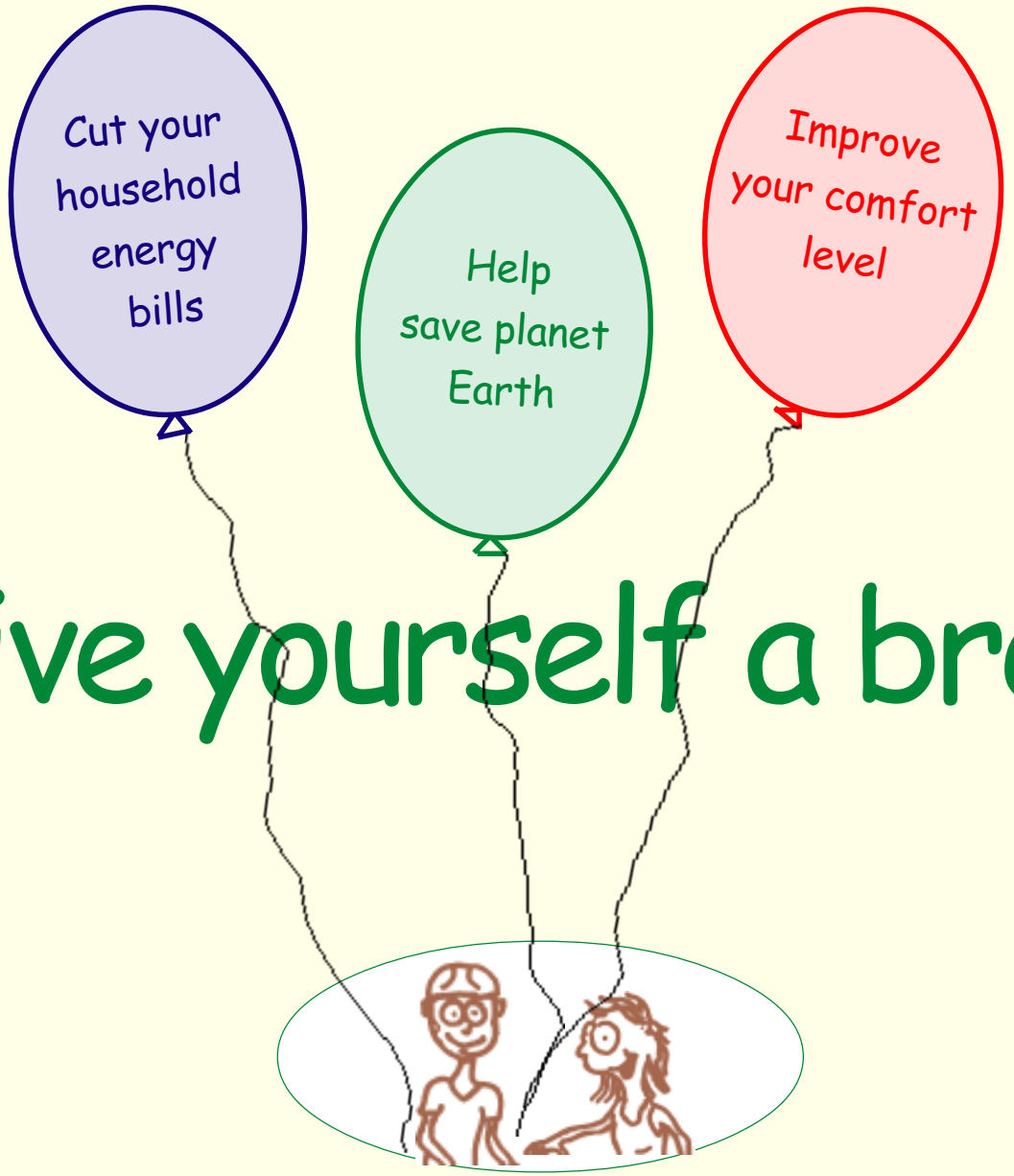
Did you know....?

The typical Australian family spends around $2,000 each year on its home's energy bills? ($5,000 if you include transport energy.)

Unfortunately, much of that energy is wasted. The amount wasted just through poorly insulated windows and doors is about as much energy as we get from two large power stations.

Whether you live in Darwin, Hobart or anywhere in between, by using a few inexpensive energy-efficient measures you can reduce your energy bills by up to 50% while doing your bit to cut greenhouse gases. In the end, your home is likely to have a higher resale value too!

This guide will help take you through the essential first steps.



Give yourself a break!

You can do your own home energy audit on a Saturday morning!

The vital first steps

The first step to achieving these savings is to take a planned excursion through your whole house – looking at how energy is used and where it goes.

To take a whole-house approach, you will need to think of your home as an energy system with interdependent parts – heating, cooling, lighting, refrigeration, cooking, hot water – and note down where savings can best be made.

You can pay a professional Energy Auditor to do a thorough job. Or you can easily do a home survey yourself. With a diligent 'walk-through' you can spot many problems in any type of house.

Just make a commitment to spend an informative couple of hours. The rest is easy!

What you will need.

- ✓ A smidgen of commitment
- ✓ 2 hours of your time
- ✓ Notepad and paper
- ✓ A floor plan of your house (or do a quick sketch)
- ✓ Incense sticks are handy
- ✓ A measuring tape
- ✓ A calculator
- ✓ An all-purpose thermometer (optional)
- ✓ A torch

Taking a whole-house approach ensures that any dollars you invest in energy savings are wisely spent.

How your home uses up energy

Your house uses energy in three main ways – as shown below. As you go through your house you will need to think about each of these three factors, and so pinpoint where your home is losing unnecessary energy and what to do about it.

1

The building shell

This includes:

- the design of your house
- how well it is protected from prevailing weather
- how well it is insulated.

Is it protected from the cold winds or summer glare?

If you are building or renovating, this is the best time to get these things right.

However, there are many 'retro-fit' improvements you can make to your existing home. Your home audit should give you many worthwhile hints.

2

The fittings and appliances

(what you've got)

Your home will contain a range of fittings, whitegoods and appliances – lights, hot water system, heaters, fridge... and so on.

Many home owners are surprised to find how much energy these lose every day – unnecessarily.

For example, if your hot water cylinder is typical, one third of its energy is wasted through heat losses.

That's highway robbery!

3

Your lifestyle choices

(what you do)

This is all about how you and your family manage the home. It's about your habits, preferences and choices.

More often than not, how we manage our homes is determined by our in-grained habits, rather than by deliberate choices.

To keep a home at 23°C in winter uses heaps more energy than keeping it at a comfortable 20°C.

What temperature you use may be a lifestyle choice – or you may not have thought about it.

Holding the heat

Now it's time to put on your knockabout clothes and take a crawl into places you don't usually go. As you look around, ask yourself questions and take notes.

Do you need more insulation?

Improving wall and ceiling insulation is one of the most effective ways to save on heating and cooling costs and it will give years and years of increased comfort.

You will first need to find out how much insulation you already have – if any!

Your ceilings:

No matter if your climate is hot or cold, the biggest exchange of heat is through your ceiling (up to 40%), so good ceiling insulation is your number one target.

Climb up into your roof cavity with a torch and take a good look around. Check the type and thickness of insulation – and what parts of the house it covers.

Check for both building foil (sisalation) and soft insulation materials.

Your walls:

It may also be possible from here to look down into your wall cavities – to check if you have wall insulation (in your exterior walls). If not, ask an electrician to remove a power point so the wall cavity can be inspected.

Walls typically transfer around 25% of heat into/out of your home, but putting insulation into existing walls can be rather difficult.

Your floors:

Next, crawl under your house. Inspect and measure the thickness of any insulation under floors – especially under heated rooms or rooms that have no carpets. You can lose up to 15% of heat through floors in cold climates.

Reflective foil or expanded polystyrene can be easily stapled under wooden floors, or it may be better to carpet a bare floor.

Check that the amount of insulation in your ceiling is at least the recommended minimum (ask at your local council).

Are your windows letting you down?

Windows can be terrible for heat losses (an unprotected pane of glass will transfer ten times more heat than the same area of insulated wall).

But, in nearly all locations in Australia, a well placed window can be fantastic for 'free' solar heat gain.

In cool climates:

You can halve the heat lost through your windows – by insulating them. Firstly, check each window to see if your curtains are adequate.

Close fitting heavy curtains will insulate much better than loose ones. Floor length curtains reduce both heat loss and condensation.

If you don't have pelmets, consider making them - an easy carpentry job. The gap above a curtain rail can suck warm air down past the cold glass.

Also, in colder southern states, take a note of any windows on the cold, south side of your home – and consider double glazing them. It will pay for itself in the long run.

When it's hot:

A window that is exposed to the sun's glare is like a furnace.

External window shadings or a covered pergola can dramatically reduce overheating.

But planting deciduous shrubs and trees, is often your best solution to summer heat protection plus solar gain in winter.

In any climate:

Now note down any dark area inside your home. An insulated skylight (with sun control) can reduce your lighting bills.

Question:

Is it possible to add a 'solar' window to your home?

Is heat leaking through the cracks?

Air 'leakage' can increase your heating and air conditioning costs by more than 20% and make your home uncomfortable.

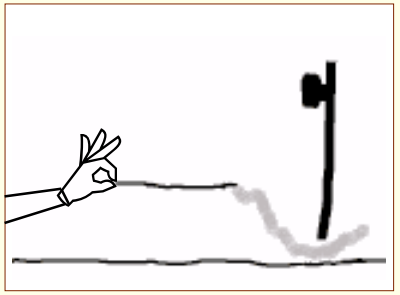
By sealing off draughts you can prevent heat loss in winter and trap cool night air in your house in summer. You'll feel the difference!

List all possible air leaks.

- While in your roof area and basement, check that all openings for pipes, ductwork, and chimneys are well sealed.
- Look for gaps where pipes and wires pass through floors and walls. And check for indoor air leaks such as along the edge of the flooring.
- On the outside, look for any cracks and holes in the mortar and foundations.
- Inspect windows and doors for air leaks. If you can see daylight around frames, or if they rattle when shaken, then they will leak air.
- Check to see if unused fireplaces are blocked off – much heat can be lost up the chimney.

Hints for Locating Air Leaks:

You can use incense sticks (watch the smoke drift) or your damp hand to locate any leaks around your home.



If you are having difficulty locating leaks, close all exterior doors, windows, and fireplace flues, then turn on any exhaust fans (usually in the kitchen and bathroom) – then use the incense stick.

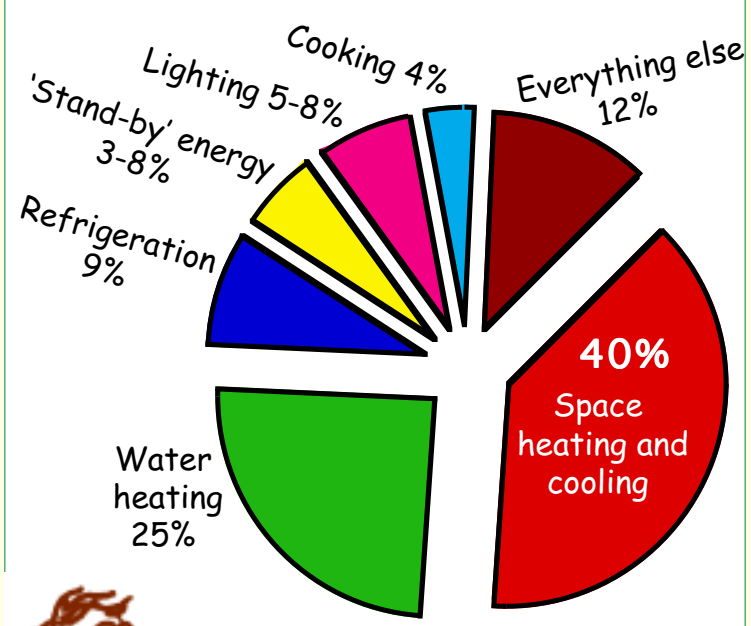
(Warning: In homes where a heating fuel is burned, make sure the appliance can still draw air supply. If in doubt, contact a heating supplier.)

You can seal most air leaks very inexpensively by caulking or weatherstripping them.

The things you use

Now it's time to have a look at the energy-using equipment in your home. You may be surprised at how much you have!

Here's a break down of how much energy they use - in order of magnitude.



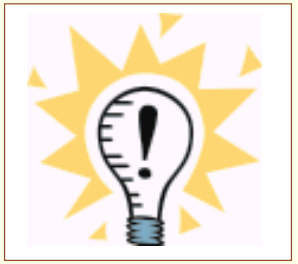
If you do nothing else, at least check out the big energy items.

Save on lighting?

Lighting is generally the quickest and easiest way to instantly save energy.

Examine all your home's lighting, including the wattage of globes (You may have 100 watt bulbs where 60 or 75 watts would do.)

- Which lights are on for long periods? (Use fluorescent or compact fluoros in areas that are used a lot – like living rooms and kitchens. They use about one quarter of the energy of normal bulbs.)



- Can I install sensor switches on outdoor lights?
- Can I install some separate switches, so that I only light up areas I need to?
- Are there places where I could use a local light, to avoid lighting up an entire room?
- Am I making the best use of natural light? (Well placed windows and skylights can save considerable lighting energy.)

NOTE: It's not a good idea to use those little low-voltage quartz lights that have come onto the market – they are not energy efficient.

Save on heating and cooling

Heating and cooling your home uses more energy dollars than anything else – typically 40% of your power bill. You can easily cut this by half.

Take a good look at your heating and air conditioning systems and jot down as much information as you can think of.

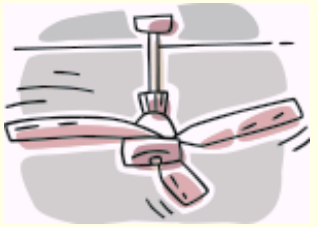
Ask yourself questions

- o What energy sources am I presently using? (Thermal generated electricity is generally your worst choice, gas is better, renewable sources are even better, passive solar is tops).
- o Can I switch to more efficient equipment?
- o Is my whole home centrally heated? (Not sensible unless very well insulated throughout)
- o Can I close off heating to parts of the house when rooms are not in use?
- o Is my heating / cooling equipment working at best efficiency? (Heaters and air conditioners will often work much more efficiently if cleaned & maintained.)

By jotting down your answers to these questions you will get a better idea of all the choices you can make – either now or later on.

For instance, did you know....?

- o Every 1° C increase in temperature adds about 15% to your energy bill. So set your thermostat at a reasonable temperature.
  - 18° C if heating in cool climates,
  - 27°C if cooling in hot climates.
- o A heat pump (reverse cycle air conditioner) can trim your electrical heating costs by as much as 30% – 40%.
- o Ceiling fans use much less energy than air conditioners do. They are effective in both warm and cool climates.



- o In dry hot areas evaporative coolers use much less energy than conventional air conditioners.
- o Open fires are hopelessly inefficient. A combustion stove will give you twice the energy from your wood stack.

Saving on hot water heating

If yours is a typical Australian home, there are a number of easy ways to halve your hot water bills. Here are six quick tests.

1. The shower

Do I have a AAA-rated shower head?

(If not, consider getting one. AAA showerheads will give you a satisfying shower at half the energy and water costs.)

2. The hot water cylinder

Does the overflow pipe drip excessively?

(A leaking pressure relief valve can waste hundreds of litres of hot water. If you can, place a bucket underneath and see how much water collects in a day. (Fixing this may require a plumber)

3. The cylinder cabinet

Is my cylinder outside in the cold?
Outside or in, is it well insulated?

(It's not hard to build an insulated box for it. Save much heat loss by wrapping the tank with extra insulation – especially older cylinders.)

4. The pipes

Are the hot water pipes insulated?
And how long are the hot water pipes?

(Check that the pipes that are outside and the first two metres of pipes coming out of the HW cylinder are well insulated. And is it feasible to relocate the hot water system closer to taps – so less heat is lost from them?)

5. The water temperature

What temperature is my hot water supply?

(Place a thermometer under the tap. If it's well above 60°C, then, on most cylinders, you can simply turn down the thermostat - on the side of the cylinder.)

Warning: Don't drop it below 60°C – harmful bacteria can build up.

6. The taps

Are any leaking?

Leaking hot water taps can cost you $30 per year in wasted energy.

Fridges and freezers

Fridges and freezers are a big user of energy, so it is well worth checking these out.

Many fridges use twice as much energy as needed, simply because they are badly located and managed.

- o Is my fridge/freezer in a cool spot?
  Can I shade it from direct sunlight or other heat source?
- o Is there a good air space at the back of the fridge and around it - so it can let out heat?
- o Are the coils at the back covered in dust?
- o Do the doors seal well?
  (Check this by putting a $5 bill in the door seal when shut. It should stay there.)
- o Is it running too cold?
  Check with a thermometer.
  Fridges should range between 3° and 5° C.
  Freezers between -15° and -18°.
- o Is the motor always running?
  (Not a good sign!)

Other appliances

All the other appliances in your home will use up to 15% of your power bill.

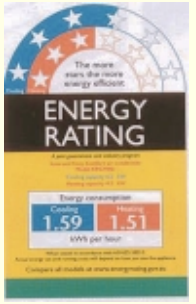
How much energy each appliance uses will be largely dictated by the efficiency of the appliance itself (and whether you leave it on unnecessarily).

- o Should I throw out old equipment?

On occasion, it may pay you to throw out an old clapped out appliance and replace it with a more efficient model. (An ancient fridge that is clunking away to all hours is not greenhouse friendly!)

If you are out to buy a new appliance of any sort, this is the time to be very careful. If you buy an inefficient model, it will be wasting much energy over its entire lifespan.

So, do check carefully the star rating labels – attached to all appliances these days. (Even some window frames.)



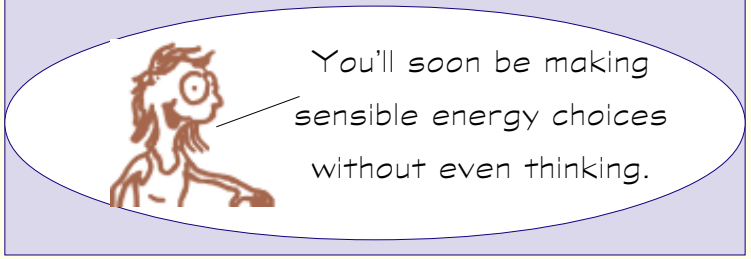
For information about the efficiency of different brands go to this website: www.seav.vic.gov.au/galaxy

The things we do

How we manage our households is all important. For example, there is little point buying the most efficient fridge on the market, if we then go and cram it so full it can't work properly.

Although Australians have grown used to the luxury of wasting energy, research shows that most want to do the right thing, and many are developing pride in wise household management.

There are a million and one little ways to adjust our energy habits. Here we will point to the most obvious ones.



Shedding a few hundred watts

The best way to start is by asking lots of questions and jotting them down. (Involve the whole household in this monitoring activity.)

Your answers will show numerous ways you can reduce your household's energy consumption.

Lights

- Do we make the best use of natural light?
- How many light globes in the home are incandescent?
- Which ones can be changed to compact fluorescents?
- Are the rooms painted in light colours? (Makes a lot of difference to lighting needs).
- Do we turn off lights when they aren't needed?
- Do we leave outside lights on all night? (If needed for security, consider buying an automatic sensor switch.)
- Do we keep the light fittings clean? (Dust causes loss of efficiency).

In the living areas

Heating and cooling

- o Is my home overheated – or overcooled?
  (Try setting your thermostat at the lowest possible setting and increase the temperature gradually until it's comfortable.)
- o Is the home kept warm (or cool) at night or when nobody is at home?
  (You can fix this without sacrificing comfort – install an automatic 'setback' thermostat.)
- o Which rooms really need heating/ cooling?
  (Close off any rooms that aren't occupied and you will use much less energy.)
- o Do we switch off heaters / air conditioners when we go out?
- o Do I regularly clean the filter on the air conditioner?
  (They need cleaning every 3 months.)
- o Do we choose the most appropriate heater for the occasion?
  (If you need heat for short periods, it's more sensible to use a small radiator heater.)
- o Do we wear appropriate clothing?
  (When it's not too cold, a jumper is much more sensible than turning on a heater.)
- o Do we purge the house at night?
  (In hot weather, you can save much cooling energy by opening windows and allowing the night breeze to do the job.)

Stand-by power

- o Do we turn off appliances at the wall?
  (Many appliances use electricity even when turned off – including many TVs, computer modems, and those little black transformer boxes.)

Like lots of dripping taps!

- o Do we leave things on when they are not in use?
  (They use up lots of energy over a year – think of computers, electric towel rails and pool filter pumps.)

In the kitchen, bathroom and laundry

In the kitchen

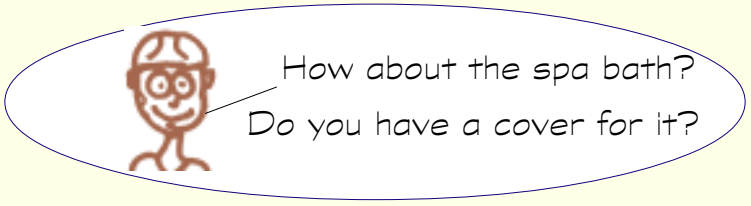
- How many extra fridges do we have going?
  (Many Australian households have a spare fridge/freezer unnecessarily turned on.)
- Are we good food managers?
  (Cramming a fridge with food that eventually goes off just makes it overwork)
- Do we use a microwave oven?
  (They use less than half the power of a conventional oven)
- Do we put hot things into the fridge?
  (Much better to cool them first in a pan of cold water.)
- Do we use the dishwasher for small loads of washing up?
  (A half-load uses up the same amount of energy as a full-load.)
- When we make a cuppa, do we boil more water than is necessary to fill the teapot?
  (Boiling twice as much water uses twice as much energy.)

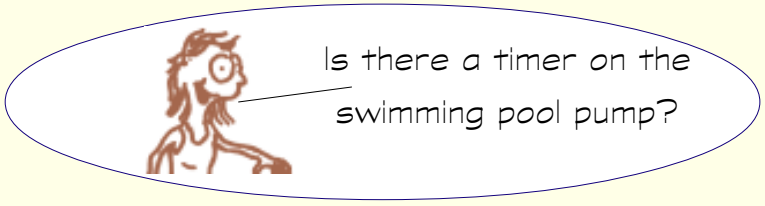
In the Laundry

- Do we wash clothes in hot water?
  (Washing clothes in cold water can reduce your energy bill substantially .)
- Do we adjust the clothes washing cycle to match the quantity of clothes being washed?
- Do we use sun and wind to dry clothes?
  (It's best to use a dryer only when needed.)

In the bathroom

- Do we prefer to take a showers or bath?
  (The choice is yours, but note that showers generally use half the amount of hot water.)
- Is the shower head a AAA-rated one?
  (You will be amazed at how much less hot water they draw)
- Do we get cold water out of the hot tap?
  (Getting a cup of cold water out of the hot tap, before it runs hot, draws hot water out of the hot water cylinder.)

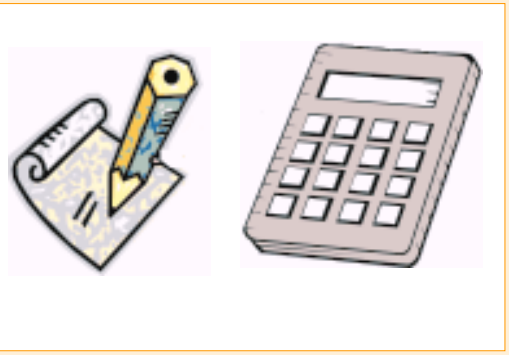




Putting it all into practice

At this stage you should have a running checklist of areas you have inspected and problems found.

This will tell you how to make smart purchases and home improvements that maximize energy efficiency and save you the most money.



Big gains for little pain.

Like most people, you probably have too many things to do in your life, so you feel daunted. Yes?

Remember that some of the most effective things you do take little time and money.

A simple act, like turning down the temperature of your hot water cylinder can save more energy than turning off a hundred lights.

And if money is your main constraint, then just do what is most cost effective. If you can't insulate your whole home at once, start with the main living area – that's where you require the most heat.

Ask yourself this.

- How much money am I presently spending on home energy?
- Where are my greatest energy losses?
- What bits can I fix up easily and will cost me next to nothing?
- How long will it take for any investment in energy efficiency to pay for itself?
- What jobs can I do myself?
- How much time will I need to allocate to make the desired changes?

Looking for good value?

What are the most cost effective actions you can take to save energy?
If only we could tell you! No two houses are the same.
But some rules of thumb are a good guide.

The great dollar busters

- Installing a AAA-rated shower head will cost you about $25, it should take you just 10 minutes to install and it will pay for itself in a matter of months.
- Similarly, you can now buy compact fluorescent light globes for around $7 each, they take just seconds to install and they will pay for themselves in lower energy bills.
- If you are looking at insulation, focus firstly on your ceilings. This is where most heat is lost. No matter where you live, an uninsulated ceiling will make your home uncomfortable and costly to run. In many situations, ceiling insulation will pay for itself in a couple of years.
- If your hot water cylinder is losing heat, here is another quick fix. An hours work and a few dollars in insulation materials can be repaid in less than a year.

Big cost items?

Bigger investments need more careful working out, and will depend on your particular situation.

For example, if yours is one of those cold older-style houses, then building on a solar addition will make a world of a difference to your quality of life, it may pay for itself in energy costs alone and will certainly add value to your property.

A word about fuels

When checking your home's space heaters and hot water heaters, do note the fuel source that is being used. You can consider fuel switching.

- Consider switching to gas
  (Gas heating generates much less greenhouse gases than does fossil-fuelled electric heating.)
- Even better, consider switching to solar
  (Solar hot water is one of the most effective ways to save home energy. Why not get a quote?

  Perhaps consider this option next time your hot water system needs replacing?)

Action sheet

At this stage you will find it useful to create an action plan like this.

Problem identified	Action taken
Gap underneath back door	Attach door seal
Polished lounge floor is uninsulated	Stople builders foil underneath
Uninsulated wall on South side	Hang large foil-backed wall hanging
Poor solar gain on East wall	Get quote from builder to install window
Inadequate insulation in ceiling	Buy 3 packs batts for lounge area
Inefficient lighting	Buy 5 compact fluoros
Fridge icing up a lot	Clean and replace rubber door seal
Garage fridge hardly used	Decommission it until needed
Hot water running at 85°C	Turn down thermostat to 60°C
Hot water pipes unlagged	Insulate exposed pipes
Older style shower head	Obtain AAA rated shower head
Air conditioner unit exposed to sun	Build a shade for it
Disused fireplace in study	Cap chimney top with concrete tile

Things you may need to get

You may find it helpful to make up a purchase list.

	Supplier	Quantity/Specification
Gap sealant		
Draught excluder		
Building foil		
Soft insulation		
Compact fluoro lights		
AAA shower head		
Water pipe lagging		
Thermostat		
Timer switch		
1 double glazed panel		
Other…		

Want more information?

There are dozens of good ideas on how to make your home more energy efficient and comfortable.

Contact *Cool Communities* for a full professional *Home Greenhouse Audit Manual*... or try these.

Your Home

Great magazine with CD Rom.

From *Cool Communities* or you can download it:

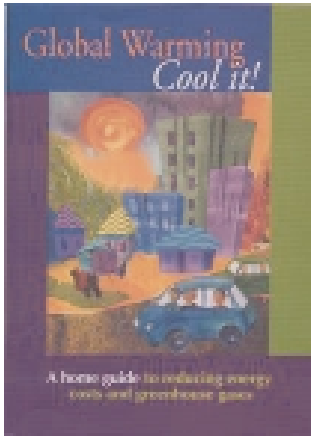
Web: <www.yourhome.gov.au>

The Australian Greenhouse Calculator

Calculate your home's greenhouse emissions on your computer.

You can download it from:

<www.greenhouse.gov.au/coolcommunities/>



Global Warming - Cool It!

Contains many tips

You can download it from:

<www.greenhouse.gov.au/coolcommunities/>

About Cool Communities

Cool Communities is a network of Australian communities who are working to reduce their domestic and transport greenhouse emissions.

We are a joint initiative of the Australian Greenhouse Office and environmental organisations in each state and territory.

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<www.greenhouse.gov.au/coolcommunities/>

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