

Welcome to Sustainable Living Tasmania

This 'Home Energy' booklet is
designed for on-screen viewing.

For ease of reading click (*Ctrl + L*).
(*Apple + L*) if using a Mac.

Then, to move through the pages
simply click on the up/down arrows
on your keyboard.

Printer Friendly But please avoid printing the first and last pages

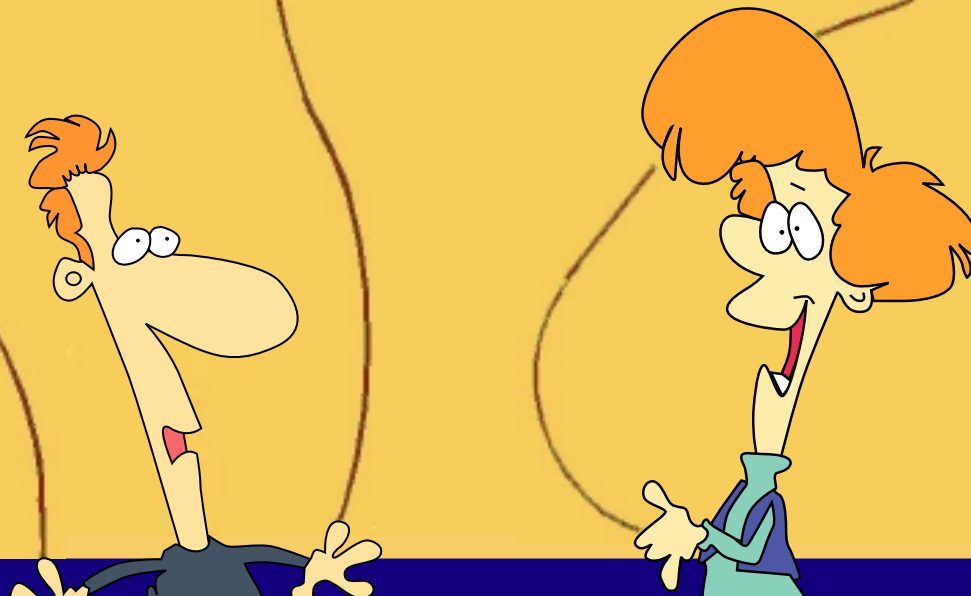
Home Energy

Cut your household energy bills

Help save the Environment

Improve your comfort & health

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

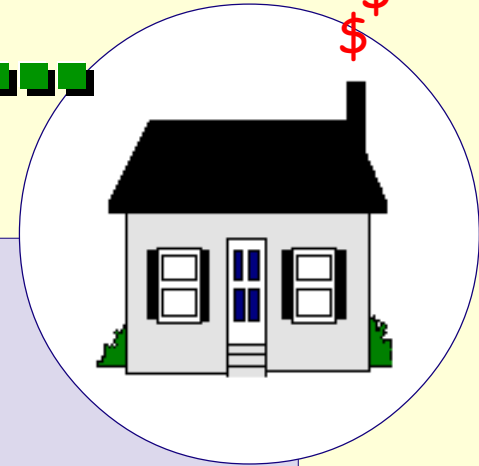


Home solutions to global warming



If yours is a typical Tasmanian house...

- it will be energy inefficient.
- it will often be uncomfortably cold in winter / hot in summer.
- 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 Tasmanian family spends between \$2,000 and \$3,000 each year on its home's energy bills. Unfortunately, much of that energy is wasted.

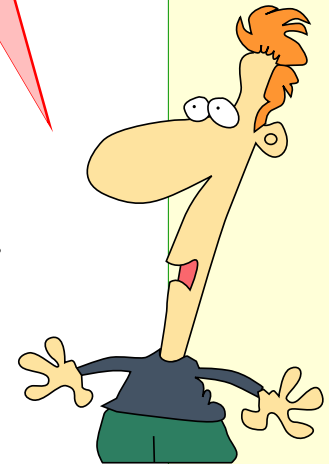
And now that Tasmania is part of the national electricity grid the energy we waste directly increases our nation's greenhouse gas emissions.

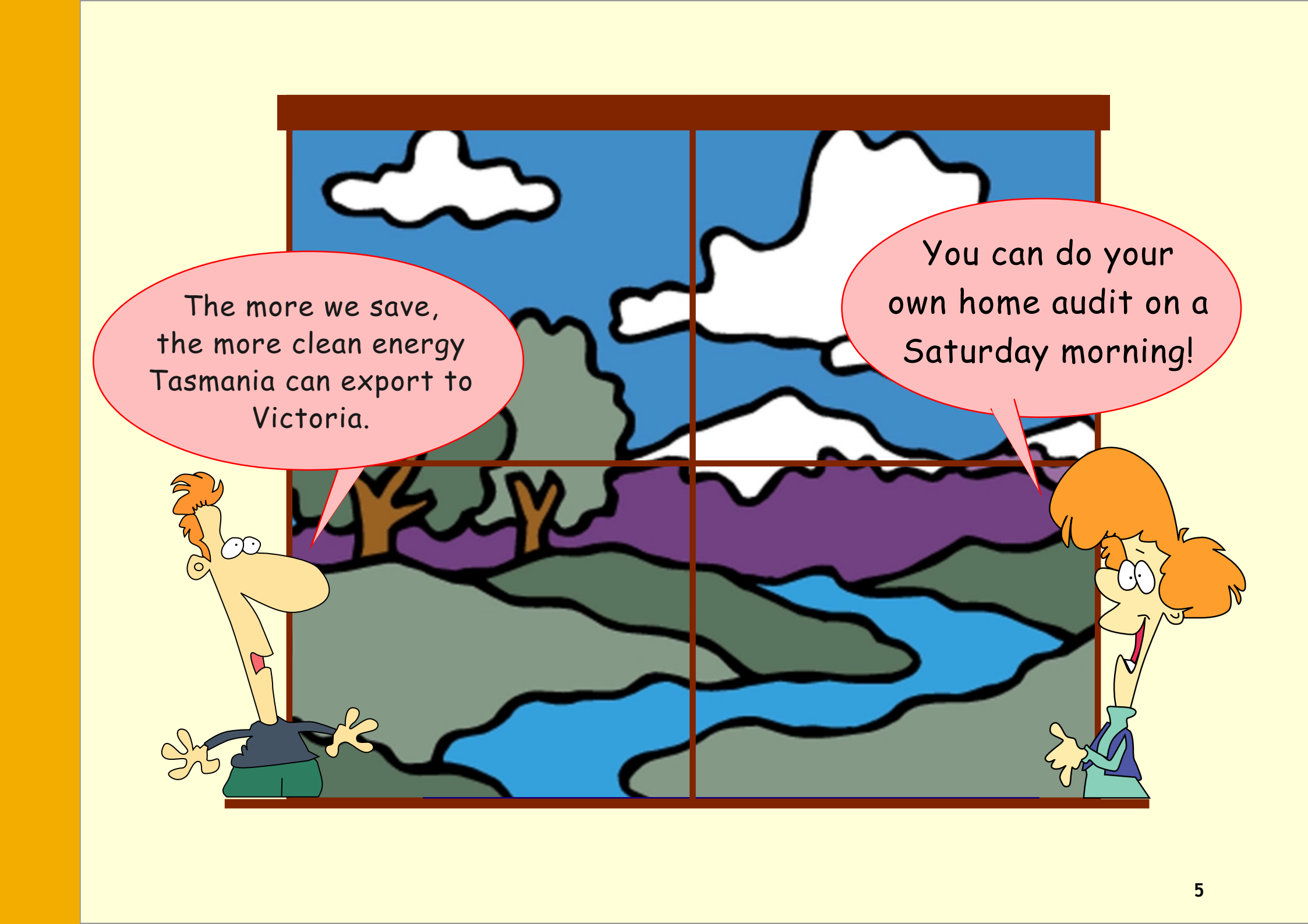
Just through poorly insulated windows and doors, Australian households waste about as much energy as we get from two large power stations.

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 will be much more comfortable and healthy to live in too.

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

It doesn't have to be like this!





The more we save,
the more clean energy
Tasmania can export to
Victoria.

You can do your
own home 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.

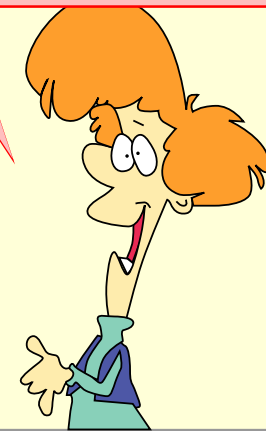
You can pay a professional Energy Auditor to do a thorough job. Or you can easily do a simple home survey yourself. With a diligent 'walk-through' you can spot many problems in any type of house.

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?

The best time to get these things right is when you are building or renovating.

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, curtains, 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 ceiling, wall and floor 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!

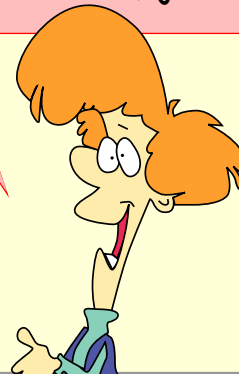
Your ceilings:

The biggest loss of heat is through your ceiling (up to 35%), 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. The building code recommends a minimum R 3.8 to R4 when adding both together.

Check that the soft insulation in your ceiling is at least 100mm thick. If not, just add more!



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).

Walls typically transfer around 20 - 30% of heat into/out of your home, but putting insulation into existing walls may not be possible and can cause other problems.

But do add wall insulation if you are doing major renovations.

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.

Polyester batts, perforated builders foil or expanded polystyrene can be easily stapled under wooden floors - or it may be better to carpet a bare floor.

On the other hand, where you have concrete or brick solid floor that is exposed to sunlight, when painted with dark colours it can act as a very useful heat bank.

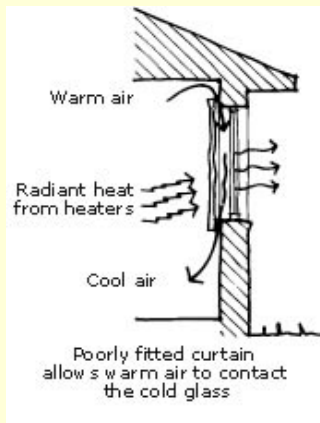
Are your windows letting you down?

Windows allow a lot of heat to escape - an unprotected pane of glass will transfer up to 15 times more heat than the same area of insulated wall.

But a well placed window can also be fantastic for 'free' solar heat gain.

In cool seasons:

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.

Note also that the gap above a curtain rail allows warm air to be sucked down past the cold glass.

If you don't have pelmets, consider making them yourself - you can use low-cost, lightweight materials such as cardboard, polystyrene and cloth.

Also, take note of any windows on the cold, south side of your home - and consider double glazing them - or maybe make shutters? 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.

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

Question:

Is it possible to add an extra window to the sunny side of your home? Take note of any sunlit walls that have inadequate windows.



A well placed 'solar gain' window can also reduce your lighting needs in darker spaces.

Something to think about if you are renovating.



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.

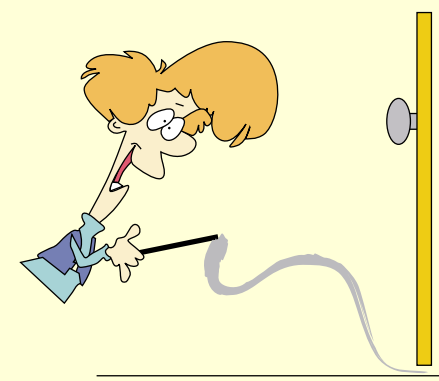
By sealing off draughts you can prevent heat loss in winter and trap cool night air in your house in summer. You'll feel the difference!

List all possible air leaks

- While in your roof area and underneath your home, 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.
- Remember to seal off unused fireplaces - a lot of 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.

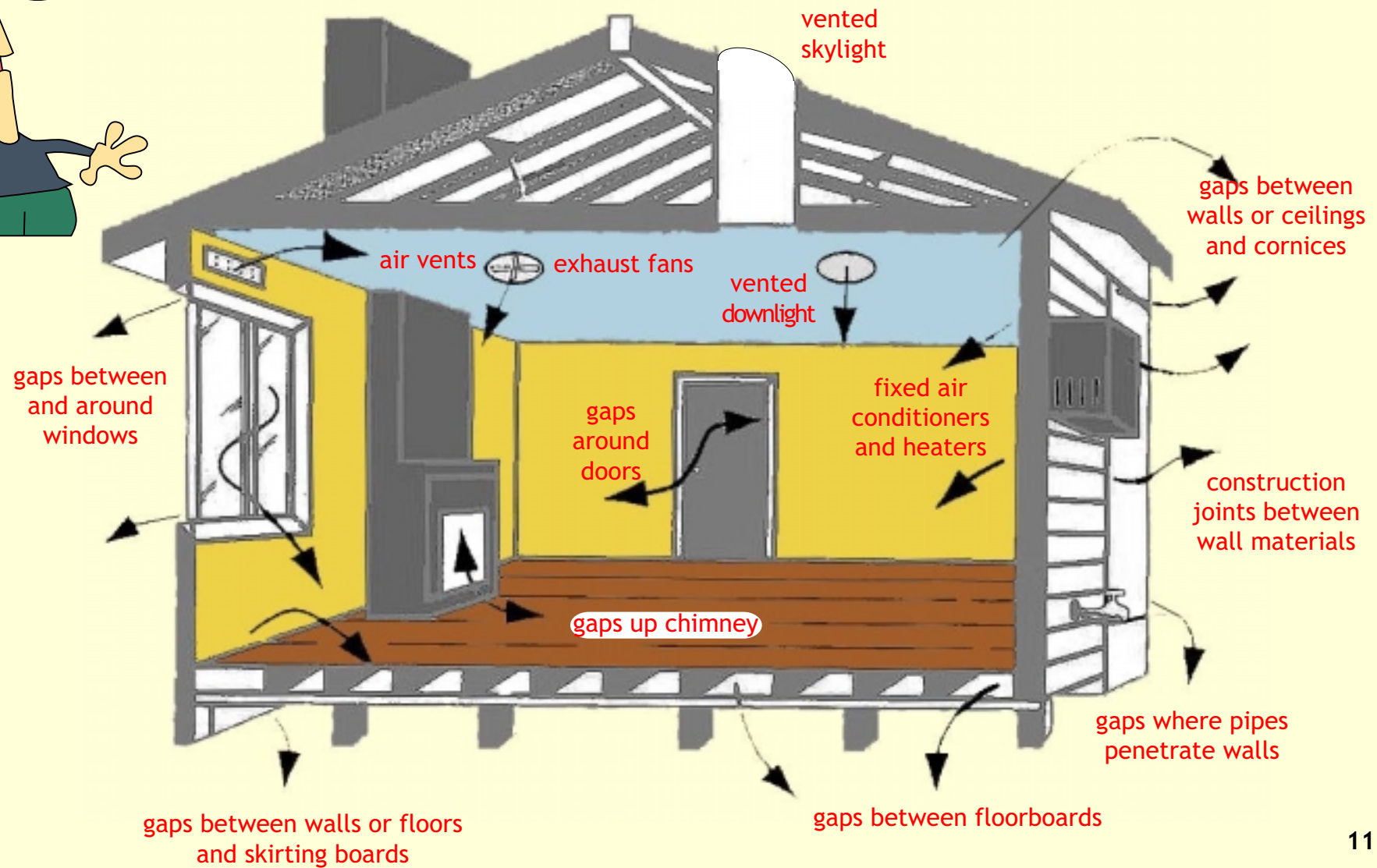
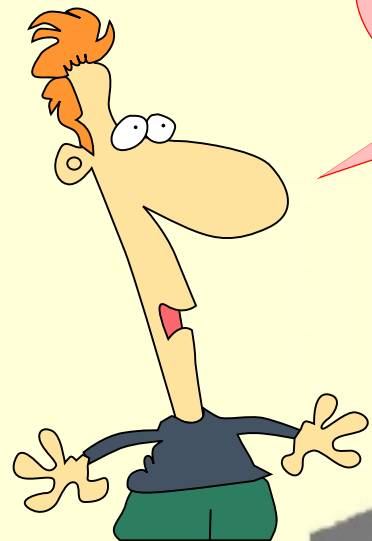


If you are having difficulty locating leaks, close all exterior doors, windows, and fireplace flues, then turn on any exhaust fans (usually in the kitchen and bathroom) - then use the incense stick.

Keep in mind:

- Do eliminate cold drafts, but note that some fresh air is needed for optimum human health and to prevent condensation and mould growth.
- Also, in homes where a heating fuel is used, some air inflow is needed for the fire to burn - so make sure the appliance can still draw adequate air supply. If in doubt, contact a heating supplier.

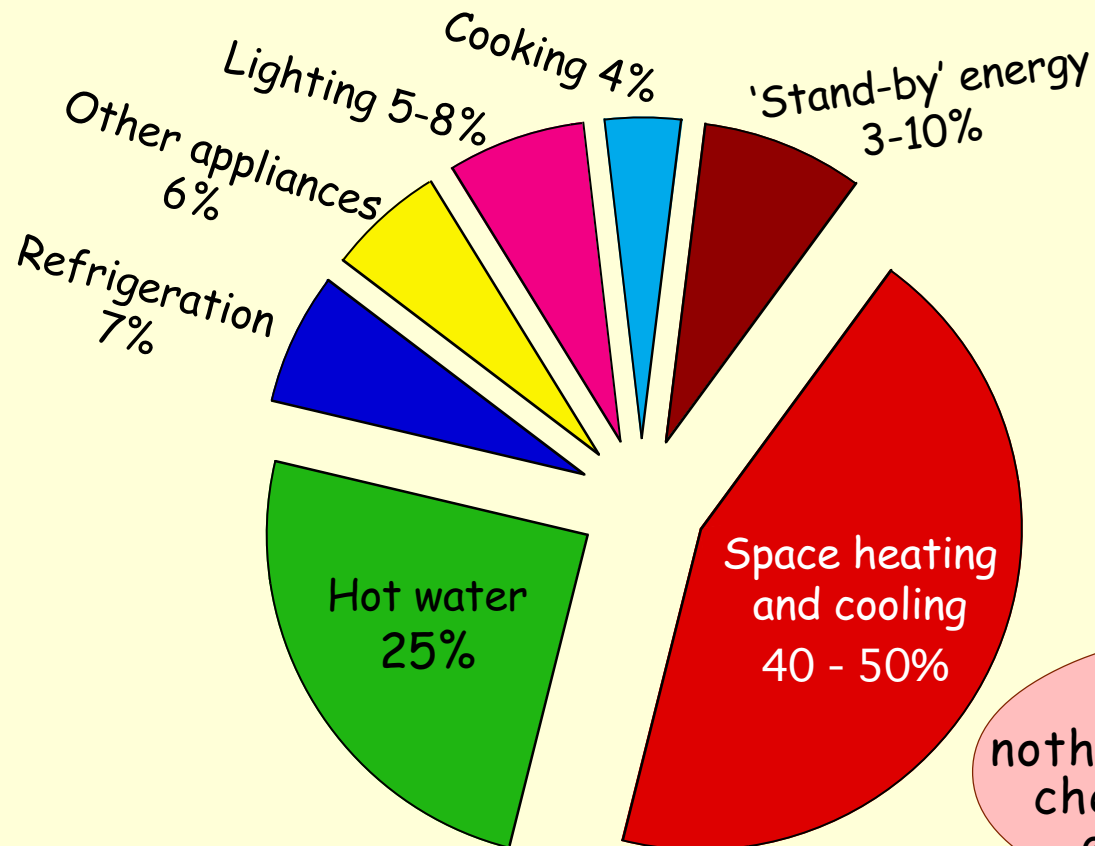
You can seal most air leaks very inexpensively by caulking or weatherstripping them.



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!

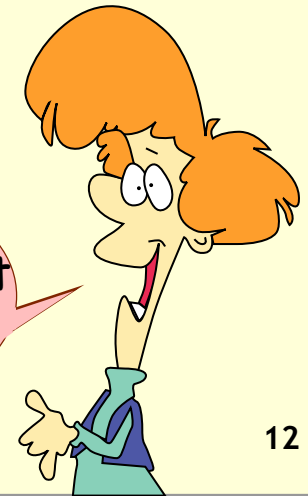
Here's a rough breakdown of how much energy they use - in order of magnitude.



Energy usage varies from home to home - depending on what you have and how you run your household.

With energy prices likely to increase in coming years, it is in everybody's interest to find out what we are spending it on and how to minimise energy wastage.

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.

Switch to new technology



There's no need to live in the dark, by using modern compact fluorescent lighting your home will be well lit whilst using one quarter the energy of old fashioned light bulbs.

Make sure you install them at least in areas that are used a lot.

- Are there places where I could use a local light, to avoid lighting up an entire room?
- Can I install some separate switches, so that I only light up areas I need to?
- Can I install sensor switches on outdoor lights?

- Am I making the best use of natural light?
Well placed (insulated) windows and skylights can save considerable lighting energy.
- What about low voltage lights?



In recent times many people have installed arrays of small 12 volt quartz lights in their living rooms and kitchens, thinking that they are saving energy.

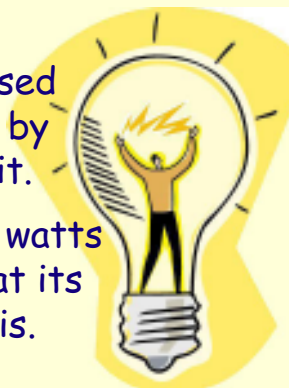
Unfortunately, these are not energy efficient. A set of five 50-watt quartz lights consume 250 watts of energy!

(By contrast, L.E.D. lights are very efficient)

Lighting Factoid

The amount of energy used by any light is specified by the wattage marked on it.

A 50 watt light uses 50 watts of power, no matter what its physical size or voltage is.



Save on heating and cooling

Heating and cooling your home uses more energy dollars than anything else - typically 40 - 50% 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.

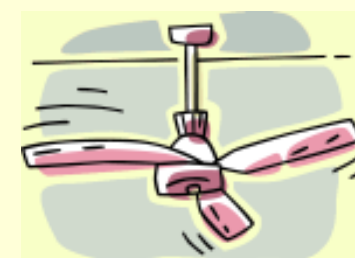
Ask yourself questions

- 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.
And remember - burning green or damp firewood loses up to half its heat output.

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 10% to your heating bill. So set your thermostat at a reasonable temperature.
18 - 21° C when heating in Winter
25 - 27° C if cooling in Summer
- o A heat pump (reverse cycle air conditioner) can trim your electrical heating costs by as much as 30% - 40%. But take care -this advantage is lost if you use it extensively for Summer cooling.
- o Ceiling fans can be used in Winter to send warm ceiling air downwards - especially if you have high ceilings.
- o In Summer time, fans use much less energy than air conditioners do.



- o Open fires are very inefficient. A combustion stove will give you twice the energy from your wood stack.

Saving on hot water heating

If yours is a typical Tasmanian 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. (If more than a small amount, then call 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. **Warning:** Under no circumstances cover the pressure relief valve.

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?

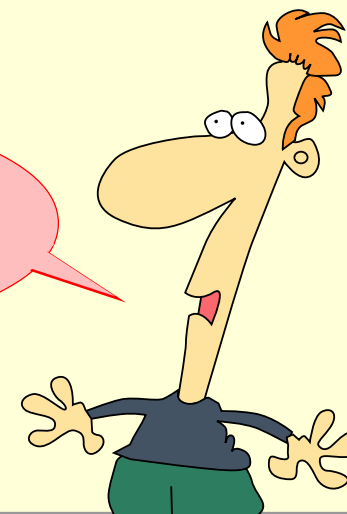
Place a thermometer under the tap. If it's well above 60°C, then, on most cylinders, you can simply turn down the thermostat - on the side of the cylinder.

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 about \$30 per year in wasted energy.



Fridges and freezers

Fridges and freezers are big users 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.



● Is my fridge/freezer in a cool spot?

Can I shade it from direct sunlight or other heat source?

● Is there a good air space at the back of the fridge and around it - so it can let out heat?

● Are the coils at the back covered in dust?

● Do the doors seal well?

Check this by putting a \$5 bill in the door seal when shut. It should stay there.

● Is it running too cold?

Check with a thermometer.

- Fridges should range between 3° and 5° C.
- Freezers between -15° and -18°.

● Is the motor always running?

Not a good sign!

Other appliances

All the other appliances in your home may use up 15% or more 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).

● Should I throw out old equipment?

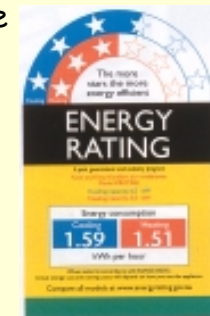
On occasion, it may pay you to recycle an old worn out appliance and replace it with a more efficient model. (An ancient fridge that is clunking away to all hours is wasting energy!)

● Buying new equipment?

If you are buying a new appliance of any sort, take great care. 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 most large appliances these days (even some metal window frames).

Take extra care not to buy appliances that are designed to use up energy in 'stand-by' mode.



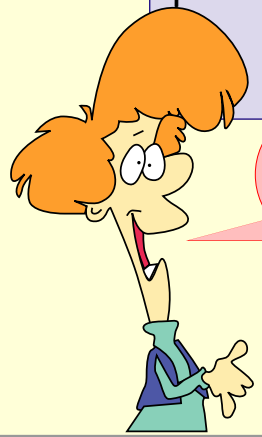
Go to this website for information about the efficiency of different brands
www.energyrating.gov.au/productmenu.html

The things we do

How we manage our households is very 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 Tasmanians 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.



You'll soon be making sensible energy choices without even thinking.

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 help to demonstrate how you can reduce your household's energy consumption.

Lights

- o Do we make the best use of natural light?
- o How many light globes in the home are incandescent?
- o Which ones can be changed to compact fluorescents?
- o Are the rooms painted in light colours?
Makes a lot of difference to lighting needs.
- o Do we turn off lights when they aren't needed?
- o Do we leave outside lights on all night?
If needed for security, consider buying an automatic sensor switch.
- o 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 at night or when nobody is 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 I regularly clean the filter on the heat pump?

They should be cleaned every month.

o Do we switch off heaters / air conditioners when we go out?

And do turn off your hot water power when going away for three days or more.

o Do we choose the most appropriate heater for the occasion?

If you need heat for short periods - or in a confined space - it's more sensible to use a small radiator or fan heater.

o Do we wear enough clothing?

When it's not too cold, a jumper is much more sensible than turning on a heater.

o Do we air 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.

o What about the curtains?

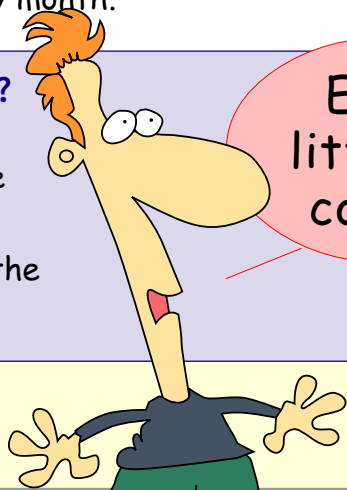
Remember to draw curtains as soon as the sun is off the house.

This way you will hold in the captured heat.

Every little bit counts!

o Beware of automatic timers - they can be a trap!

If you have heaters with timers, make sure they don't turn themselves on when you don't need the heat - like when you are not going to be home or away on holiday.



In the kitchen, bathroom and laundry

In the kitchen

- o **Do we have an extra fridge going?**
Many Tasmanian households have a spare fridge/freezer unnecessarily turned on.
- o **Are we good food managers?**
Cramming a fridge with food that eventually goes off just makes it overwork.
- o **Do we use a microwave oven?**
They use less than half the energy of a conventional oven. (But it's more efficient to use an electric kettle if boiling water.)
- o **Do we put hot things into the fridge?**
They will cool down much faster if placed in a pan of cold water first, then refrigerate.
- o **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.
- o **When we make a cuppa, do we boil more water than is necessary for the teapot?**
Boiling twice as much water uses twice as much energy.

How about the spa bath?
Do you have a cover for it?

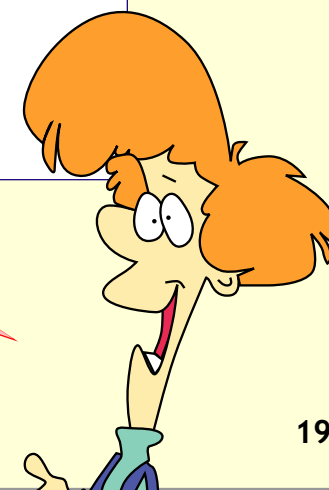
In the laundry

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

In the bathroom

- o **Do we prefer to take a shower or bath?**
The choice is yours, but note that showers generally use half the amount of hot water.
- o **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.

You will be amazed
how much less hot water
an AAA-rated shower
head draws.



Throughout the house

'Stand-by' energy

The home appliance market is being flooded with dozens of new products that are designed to use up energy when they are not in use.

Many Tasmanians are surprised to find out how many of their appliances use electricity even when turned off - including many TVs, hi-fi sets and computers.

o Choose appliances very carefully

Two rules of thumb:

1. If it doesn't have an 'off' switch, then don't buy it.
2. If a panel light stays on when the appliance is turned off, odds are it is drawing power even when turned off.

o Do we turn off appliances at the wall?

The best way to reduce stand-by energy is to develop a household habit - turn all appliances off at the power point.

o Are our power points accessible?

With the best of intention, your household members will simply not turn off at the power point if these are obscured by furniture or are hard to get at.

Turning things off

If you had 12 dripping taps in your house you would do something about. But because leaking electricity is invisible, we just let it drip away.

So....think of your electricity leaks like lots of dripping taps - and do something about it!

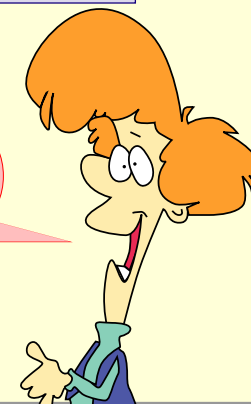
o Do we leave things on when not in use?

They use up lots of energy over a year - think of lights, computers, electric towel rails and pool filter pumps.

- Don't forget those transformer boxes for low-voltage appliances, like children's toys.

Warning: a turned off heat pump will use up power unnecessarily all Summer if not turned off at the fuse box.

In just ten years, 'stand-by' power has trebled in many Tasmanian homes



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 single 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? (Keep your power bills to compare them over time)
- 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 compact fluorescent lights (at just \$5 each) and a AAA-rated shower head (at just \$25) should take a few minutes. They will pay for themselves in a matter of weeks.



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 hour's work and a few dollars in insulation materials can be repaid in less than a year.



Using an Aurora pay-as-you-go meter is a handy way to observe your power use and manage your energy spending

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 energy sources



When checking through your home, do note the energy sources that are being used - wood, hydro, gas, solar. Consider switching to the most appropriate ones.

Consider switching to solar

With rising energy costs and new rebates available, passive solar design and solar (or heat pump) hot watersystems can cut your home energy bills. Why not get a quote? 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	Staple 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	Install AAA rated shower head
Hi-fi power point hard to reach	Relocate to help reduce stand-by power
Disused fireplace in study	Cap chimney top with concrete tile

Things you may need to get

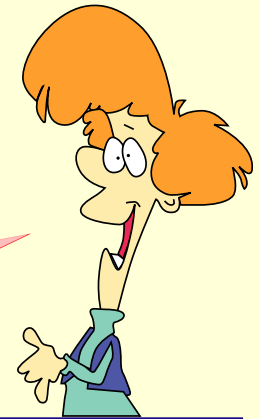
You may find it helpful to make up a purchase list.

	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.

It's the right thing to do and you will be better off!



Take the challenge!

Look up the links on the up2me website below or try these



www.up2me.com.au



- **Global Warming - Cool It!**

Contains many tips

You can download it from:

<www.greenhouse.gov.au>

- **Your Home**

A comprehensive home energy information site.

<www.yourhome.gov.au>

Save your Energy Get online

By registering with Aurora's 'online services' you can check and compare your power bills and manage your energy use.



www.auroraenergy.com.au



SUSTAINABLE LIVING TASMANIA

PRACTICAL PATHWAYS TO
SUSTAINABLE COMMUNITIES

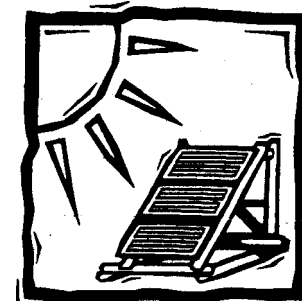
Sustainable Living Tasmania works with communities to help reduce household and transport greenhouse emissions.

Contact us at: Ph: 03 6234 5566

Email: info@sustainablelivingtasmania.org.au

For more information check out our website:
<www.sustainablelivingtasmania.org.au>





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TASMANIA



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