

Energy efficiency strategies



Supported by: Aurora Energy & TasNetworks



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> Draught proofing

Blocking draughts is one of the simplest and most affordable actions you can take, making your home warmer in winter, cooler in summer, and helping to reduce your energy bills.

What causes draughts?

Draughts are those sneaky breezes that slip through gaps and cracks in your home, allowing unwanted airflow in and out which, in turn, messes with your indoor temperature.

Draughts can occur through every opening in walls, floors and ceilings. This includes behind power points, plumbing fixtures, wall vents, as well as gaps between floorboards, doors and windows.

What are the benefits of draught proofing?

Draught proofing is the most cost-effective improvement you can make and will:

- Make your home feel warmer in winter and cooler in summer
- Stop insects from entering your home
- Reduce traffic noise
- Prevent windows from rattling
- Save you money on heating and cooling

How can I tell if I have draughts?

Some draughts are easy to detect:

- Can you see daylight under doors or around window frames?
- Do your curtains or blinds move when its windy outside?
- Can you feel air moving against your hand or on wet skin?

Other draughts are more difficult to find and require expert help.

Using a thermal camera, a draught proofing professional can identify exactly where you have draughts in your home.

Should I install draught proofing myself or get a professional?

Many draught proofing products can be purchased at your local hardware store and installed yourself.

Getting a professional to inspect your home also has several advantages as they will:

- Identify exactly where you have draughts in your home
- Recommend quality products that will last longer while maintaining your home's aesthetic
- Install products on your behalf, saving you the hassle

Draught source

Gaps around plumbing in kitchen & bathroom	<ul style="list-style-type: none">• Acrylic or silicon sealant or caulking• Foam fillers
Bathroom extraction fan	<ul style="list-style-type: none">• Draught stopper, or exhaust fan cover
Gaps around window & door frames	<ul style="list-style-type: none">• Weather strips & seals• Acrylic or silicon caulking• Fabric door snake
Wall vents	<ul style="list-style-type: none">• Piece of contact• Simple plastic cover
Gaps between floorboards	<ul style="list-style-type: none">• Timber filler• Under-floor insulation• Carpet with underlay• Rugs or mats
Unused fireplaces	<ul style="list-style-type: none">• Chimney balloons• Chimney sheep, or similar
Around window architraves & skirting boards	<ul style="list-style-type: none">• Acrylic sealer or caulking





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> Insulation

Insulation keeps in the heat during winter and the cool during summer.

How does insulation work?

Insulation works by slowing down the transfer of heat from inside to outside and vice-versa by trapping air using bulk insulation, or by reflecting heat using foil insulation.

Slowing down the transfer of heat means that you use heaters or air conditioners less, and when you do, it will be for a shorter time, and with greater effect.

Where should I insulate?

Focus on insulating your home's ceiling, walls, and under the floor.

Ceilings

Ceilings are insulated with bulk insulation in the form of batts or 'blankets' made from polyester, sheep's wool or fibreglass wool.

Some bulk insulation also comes with reflective foil attached to one side, which reflects the sun's heat in summer, keeping your home cool.

> Investigate

If you can safely access your roof space, check to see if there are gaps in your ceiling insulation and cover them, to ensure the insulation is effective.

If your current insulation isn't at least level with the ceiling joists when you're in the roof space, you will likely benefit significantly from thicker, or additional, ceiling insulation.

Wall cavities

Your walls can be insulated in two ways:

1. If you're building new walls or have a weatherboard home that needs weatherboards replaced, the walls can be insulated by placing batts directly into the wall cavity.
2. Blow-in wall insulation is an alternative solution where small holes are drilled in into the mortar between the bricks and a 'loose-fill' insulation, such as rockwool, is pumped into the wall. The hole is then filled with matching mortar.

> Investigate

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If your current insulation isn't at least level with the ceiling joists when you're in the roof space, you will likely benefit significantly from thicker, or additional, ceiling insulation.

Underfloor

Polyester batts or polystyrene boards are used to insulate under your home's floor, provided there is adequate access and crawl space under the house.

> Investigate

If you have draughty floorboards or a cold floor, you may benefit from installing underfloor insulation, provided access is possible.

What should I install?

An insulation product's effectiveness is measured by its thermal and acoustic resistance, or 'R-value'.

The higher the R-value, the more effective that product will be at keeping your home cooler in summer and warmer in winter. Choosing the correct R-value depends on your climate, but, as a general rule of thumb to be most effective, the rating requirement for:

- **Ceilings** is between **R4.1 and R6.3**
- **Walls** is between **R2.8 and R3.8**
- **Floors** is **R2.25 to R3.25**





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> Windows

There are many simple things you can do to improve the efficiency of your windows without any major renovations.

Blinds and curtains

Blinds and curtains keep the heat in during winter, and out during summer - saving you from cranking up the heater or air conditioner.

Curtains and blinds trap air between them and the window, creating a layer of insulation however when gaps exist at the top of curtains and blinds, convection air currents draw hot or cold air into the room, working against your heating or cooling efforts.

Are window films a good option?

Window films are a great solution, particularly if you'd like to keep your views uninterrupted.

- Films designed for year-round use can prevent up to 50% of heat from escaping in winter which is comparable to double glazing.
- Unlike double glazing however year-round window films also reflect and absorb heat that hits your windows in summer - reducing the amount of radiant heat that enters your home by 50% while summer-only films can block up to 85% of the sun's heat.

What blinds and curtains are energy-efficient?

To achieve maximum insulation, curtains and blinds should trap in the air by:

- Having multiple layers or being made of thick material
- Going all the way to the ground
- Having a box or ledge pelmet installed above them
- Having no gaps around the edges

Honeycomb blinds (also known as cellular blinds) are the most energy efficient blinds available because each 'honeycomb' in the blind traps still air which acts as an effective insulator, meaning less heat escapes from your home in winter. These blinds are also available with aluminium foil backing, making them a good option for keeping your home cool in summer. Roller, roman, venetian and vertical blinds have become popular in recent times, however they have minimal insulating properties.

What about double-glazing?

Double glazing is the gold standard for windows, trapping air permanently between two panes of glass, but they are expensive to retrofit in existing homes. There are alternate ways to get the same effect.



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> LED lighting

Switching to LED lights (light emitting diodes) is a simple yet effective way to reduce your energy use. LEDs lights are energy-efficient, last a long time, and are available in various brightness levels and colours.

What's wrong with my old light bulbs?

Older light bulbs, of all shapes and styles produce heat and use more electricity than their LED equivalent.

Halogen downlights are especially problematic, as ceiling insulation must be kept clear of these lights, leaving large holes in your insulation coverage.

The heat produced from these fixtures also creates a chimney effect, drawing warm air in winter straight into the ceiling space instead of keeping it in the room.

What are LEDs?

LEDs are very energy-efficient light bulbs. Because LEDs convert 60% of electricity into light, compared to only 5 - 10% for compact fluorescents, they use much less energy. LEDs use 75% less energy than halogen bulbs and last 5 to 10 times longer.

While LEDs can cost slightly more in the beginning, the upfront cost of LEDs generally has a payback time of less than one year.

Can I replace my old, recessed lights with LEDs?

You sure can! LED downlights use less energy than traditional halogen bulbs, and because they produce much less heat, they can be fully covered by ceiling insulation, making the insulation coverage in your ceiling much more effective, however, you must ensure you are installing IC (insulation contact) rated LED downlights.

What types of LEDs are available?

LEDs come in all shapes and sizes to replace almost any type of bulb. You can choose varying levels of brightness and colour temperatures depending on how you'd like to use the light.

Choose a warm white bulb where you want a warm, comforting atmosphere. A cool white or daylight bulb is great for utility areas, such as kitchens and bathrooms, as they produce a cooler, clearer light.

LEDs need much less electricity to produce the same amount of light. Lumens (rather than watts) tell you how bright they are, but many bulbs are still sold with the equivalent wattage listed on the box.



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> Heating & cooling

How we choose to heat and cool our home has the largest impact on energy usage within the home.

50% of a typical household's annual energy usage goes towards heating, so changes made here make a big difference to your energy bills.

What is the most energy efficient way to heat and cool my home?

Not all heaters are created the same. Heat pumps, (also known as reverse cycle air conditioners) are the most efficient and provide heating in winter and cooling in summer at a fraction of the cost of other options.

Heating large areas of your home when no one is using them results in a much higher energy use for no benefit. Close off unused rooms and hallways to reduce heat loss to areas of the home that are not being used.

How are heat pumps so efficient?

Heat pumps are efficient because they absorb heat found in ambient air, compress it, and move it either inside your home to keep it warm in winter, or outside to keep your home cool in summer.

Because moving ambient heat doesn't require a lot of energy, heat pumps use a lot less energy to heat your home.

Is it cheaper to run my heat pump 24 hrs a day?

There is a wide held belief that it's cheaper to operate a heat pump 24 hours a day, 7-days a week, so that it doesn't have to work so hard to heat or cool the room when first turned on. This is not the most efficient way to use your heat pump. Turning off the unit whenever heating or cooling is not needed uses significantly less energy and saves you money.

But how do I make sure I am warm in the morning?

Before heading to bed, program the device timer to switch on 30-minutes before when you wake, to ensure you have a warm home in the morning.

What about cooling?

Whether portable or fixed, fans are the most affordable way of cooling your home, as they cost less than \$10 per year to run. Whilst they don't reduce the room's temperature, a fan makes you feel cooler by increasing the evaporation of perspiration. Combined with natural ventilation from opening windows and doors, this can be an effective way to cool your home in summer.

If you are wanting to reduce the room's temperature, a heat pump is the most economical option. Portable fans or fixed ceiling fans can also be used in combination with a heat pump to move the cool air to where it's needed.

Is it worth upgrading to a newer, more efficient model?

It would be worth considering a newer reverse cycle air conditioner if your unit is:

- More than seven years old
- Excessively noisy
- Costly to repair or run
- Producing uneven cooling or heating.

The introduction of inverter technology to heat pumps is allowing these units to run even more efficiently than earlier models, saving money and making you more comfortable.

What can I do if I am renting?

If you are unable to install a reverse cycle air conditioner, portable electric heating comes through as a practical alternative.

Ensure that you select the right sized heater for your space to avoid energy wastage. Assess whether a convection or radiant heater best suits your needs and prioritize features like adjustable thermostats and timers to enhance energy efficiency. Additionally, consider using portable electric blankets and layering clothing to stay warm during colder months without excessive reliance on heating appliances.

Does the temperature I keep my home at make that much difference?

Choosing the right temperature makes a substantial difference to the amount of energy used. For the greatest efficiency, set your winter temperature to between 18 and 20 degrees, and your summer temperature to between 25 and 27 degrees.

This will make you comfortable at home whilst being as efficient as possible.

Every degree above 20 degrees that your heater is set to will increase the cost to run the unit by around 10%.





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> Hot water

Heating water is the next largest energy consumer in the typical Tasmanian home, using around 25% of the average annual household energy consumption.

Making changes to use less hot water or making a choice to move to a more efficient system, can make a significant difference to the efficiency of your home.

What are the most effective ways to use less hot water?

Moving to shorter showers, or installing a water saving shower head, can have a significant impact, and is the number one way to simply reduce water usage and excessive energy consumption for hot water heating.

Only run the dishwasher or washing machine with full loads and use cold water in your washing machine to avoid unnecessary hot water usage.

What are the benefits of an efficient shower head?

A 7.5 litre per minute shower head should cost around \$100 to purchase, but can save you up to \$500 per year for larger families. Not only will you save on energy use, but your water bills will be much lower as well.

How does a hot water timer work?

Having a timer installed on the circuit in your meter box for your electric hot water system, combined with a time-of-use tariff through your energy retailer, allows you to ensure you only heat water during off-peak periods, saving you money.

This is even more effective if you have a solar system, as you can choose to only heat water when the sun is shining, and heat most of your hot water from your solar generation.

What should I look for when replacing my hot water system?

Hot water systems do need to be replaced, with the average useful life being around 8-10 years. When the time comes to replace your existing hot water system, consider new technology before replacing like with like.

Hot water systems have developed a lot in recent years, and much more efficient options now exist than the regular electric hot water system. Investing a bit more for a solar or heat pump hot water system will save you money in the medium term and will result in a much more energy efficient system.

Talk to your plumber before your existing system dies, as water saving replacements can take time to receive, and it is better to consider making the change before the old system fails.

If you're after a lower-cost option to fit your budget, an electric hot water system with a timer installed will reduce your energy consumption considerably.

Is gas hot water any good?

Whilst gas hot water systems provide you with instant, almost unlimited hot water, they are less efficient than other options, and with gas prices increasing over recent years, will cost more than electric or solar heating.

As there is no storage tank, some heat energy is lost from the gas flame, rather than being absorbed by the water in the tank. This results in a higher energy use for the same hot water output when compared with other options.

Can I control the temperature of my hot water tank?

Yes, you can.

It's recommended to keep the water in your tank at or above 60°C for safety reasons. Your tank likely has a tempering valve that will lower the temperature to a maximum of 50°C for everyday use.

Heating water above 60°C is unnecessary and wastes energy since it will be mixed with cold water to reduce the temperature before it enters your home.





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> New appliances

Older appliances are usually less energy efficient than newer models. Old appliances decline in performance over time and new models are usually more energy efficient thanks to constant improvements in technology. Upgrading to newer appliances can result in substantial energy savings.

What is the energy star rating on new appliances?

The energy star label indicates that the appliance meets or exceeds energy efficiency guidelines set by the Environmental Protection Agency (EPA).

The more stars an appliance has, the more efficient, and cost-effective it will be to operate. You may find that spending a little extra for a more efficient appliance is a cost-effective option, as the savings add up over the life of the appliance.

When shopping for new appliances, prioritise those within your budget that have the highest star rating.

What else impacts on the cost to run new appliances?

Larger appliances usually consume more energy. To ensure you are purchasing a product with the lowest energy usage, and to prevent unnecessary costs associated with running oversized appliances, focus on selecting a model to suit your specific needs. Larger appliances are also generally more expensive to purchase.

Are there specific features or technologies in modern appliances that enhance energy efficiency?

Newer appliances often come with advanced features and technologies designed to improve energy efficiency such as inverter technology, smart functionality, and energy-saving modes that contribute to more efficient operation.

How much difference does an energy efficient option actually make?

The difference in energy usage between an older appliance and a newer one can be considerable.

For instance:

An older model vented clothes dryer will consume around 5 kilowatt-hours (kWh) per load, translating to a cost of approximately \$1.50 per load.

In contrast, a higher end heat pump dryer could use as little as 1.3 kWh, costing just \$0.40 for the same load.

This represents a potential saving of up to \$1.10 per load.

What role does proper maintenance play in the energy efficiency of appliances?

Regular maintenance, such as cleaning filters, checking for leaks, and timely repairs, is crucial for keeping appliances running efficiently. Neglecting maintenance can lead to decreased efficiency and increased energy consumption over time.

How can the lifecycle cost of an appliance impact decision-making?

While energy-efficient appliances may have a higher initial cost, it is essential to consider the lifecycle cost. Factor in potential savings on energy bills over the appliance's lifespan to make a more informed decision about the overall cost-effectiveness of your purchase.

Are there any assistance programs available for purchasing new appliances?

Yes, the No Interest Loans Scheme (NILS) offers support for acquiring energy-efficient appliances.

The scheme covers 50% of the cost of new energy-efficient appliances and provides interest free finance for the balance.

This initiative is designed to help financially vulnerable Tasmanians reduce their energy expenses while upgrading to more efficient appliances.

Simply call 1300 301 650 to speak with one of the NILS team.



> What are the priorities?



Quick! What should I do now?

Below are recommended strategies and products to get you started on making immediate savings and creating a more energy efficient home.

1. Control your heat pump usage

Implementing new heating usage regimes can make an immediate impact, and it costs nothing to implement.

- Learn to use your heater's remote control and timer function
- Review the temperature you maintain your home at during summer and winter
- Switch it off when you're not using the room for an extended period (such as for a few hours, or overnight), and you can start saving money on your energy bill straight away

2. Install a water efficient shower head

A new efficient shower head which will reduce your water usage and hot water heating costs can be purchased for around \$100 and installed yourself.

Check the water flow rate from your existing shower heads using a bucket and a timer and calculate how many litres your shower uses each minute. If it is more than 10-litres per minute, you should consider replacing it with a more efficient unit.

Don't go washing money down the drain!

3. Get around to draught proofing

Find the source of air leaks and get on to stopping those draughts!

Many draught proofing solutions are low cost, easily available and can be applied at home yourself; immediately making your home more warm, comfortable and efficient.

4. Move to heat pump heating and cooling

If you're not yet using a heat pump for your heating and cooling, consider switching your old system for a more energy efficient solution.

Remember, heat pump heating can be up to six times as efficient as an electric or gas heater. You'll be saving money from the moment you switch on the new heat pump!

5. Install solar panels

Whilst we haven't discussed solar panels in this module, it will be covered by our 'smart technologies' module. If you have already implemented the changes above, now you could start seeking quotes for installing a solar system. Government rebates and interest free loan schemes make it a perfect time to consider this purchasing solar with no upfront outlay. Choose the right system and it could pay itself off over the interest free period through reduced energy usage or through feed-in tariffs.

6. Install a hot water timer

If you have electric or solar hot water, consider switching to a time-of-use tariff and installing a hot water timer on the switch board circuit. The energy you use to heat your water can cost you a lot less utilising off-peak periods.

7. Switch your lighting to LED

Changing lights to LED fixtures which are safer, inexpensive and allow you to better insulate your ceiling cavity will instantly save energy and money.

8. Install more insulation

Installing ceiling insulation is an easy and cost-effective solution to reducing your energy usage. It is worth talking to various installers about what options will suit your home and fit within your budget.

9. Switch your hot water system

Switching to a heat pump or solar hot water system is a sound investment. Having undertaken the above steps, your home is already very energy efficient and making this switch to increase the efficiency of your hot water system will further reduce your costs.



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