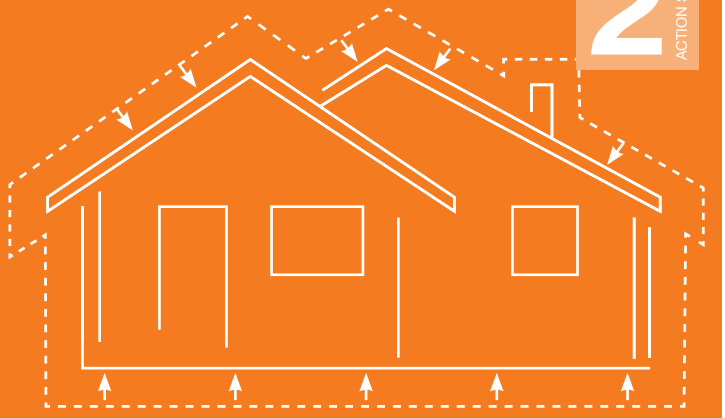
Make your home warmer and healthier

2 ACTION SHEET



We all want a warm, comfortable home, but many New Zealand houses are difficult and expensive to heat to healthy temperatures.

Around 35% of the energy used in the average New Zealand household goes on heating your home. If your home doesn't have adequate insulation (like the majority of our homes), a lot of your heat is just wasted.

Improving your home's ability to keep in the heat and smart use of a clean, efficient heating system will make your home more cost-effective to run and warmer and healthier to live in.

Insulation

Good insulation makes a big difference to a home's warmth, comfort and health. Unfortunately, nearly 60% of New Zealand's homes have inadequate ceiling and underfloor insulation.

Many homes built before insulation became mandatory in 1978 have no insulation at all. In other cases the insulation may have been in place for years and is either not working properly anymore or is well below today's standards.

Either way, there is a good chance your home could benefit from more insulation.

Check your insulation

It should be fairly straightforward to check insulation in your ceiling and underfloor, and if you are renovating you can check your wall cavities.

If there is some existing insulation, check for the following:

- **Is it dry?** The effectiveness of insulation is greatly reduced when it is damp. If it is not dry, repair the source of the dampness and remove and replace the insulation.

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- **Is it thick enough?** You should have a minimum insulation thickness of 120mm in your ceiling and 50mm under your floor (unless you have foil) – if it's less, add another layer. If you have underfloor foil, check that it is not torn, tarnished or otherwise deteriorated.
- **Is it gap-free?** Even very small gaps can impact on the performance of your insulation. There should be no gaps between the insulation and framing, or between pieces of insulation, and no tucks or folds.
- **Does it cover the whole area?** Your insulation should cover the entire area, including the manhole cover, except for areas above/under the eaves, porches or garages.
- **Do you have the right clearances around downlights, chimneys and flues?** For safety reasons there needs to be a 150mm gap between your downlights or metal flues, and a 50mm gap around brick chimneys. If your insulation has moved or blown around, reposition it.

Ceiling and underfloor insulation first

If you have no insulation, your ceiling should be first priority as this is where most of your heat will be lost. Then insulate under your floor – if the floor is cold, you feel cold.

If you already have some ceiling insulation, insulate your floor before topping up the ceiling if it needs it.

Wall insulation is relatively difficult to install in an existing home as the wall lining or cladding needs to be removed to do it. During renovations is a good time to tackle your wall insulation.

Insulation products

There are various insulation products on the market. They come in different forms, such as blanket products that roll over joists and segments that fit between joists, and are made from different materials including fiberglass, polyester, wool, mineral wool and expanded polystyrene.

Cost, ease of installation in your home, and preferences around product material (e.g. natural versus synthetic fibres) are all things to consider when choosing your insulation.

Whatever type of insulation you are considering, you should only use products tested to the AS/NZS4859.1 Standard – it means you can count on them performing as they say they do. Look for the statement of compliance with the Standard on the insulation packaging or label.

Talk to your insulation supplier or visit **www.energywise.govt.nz** for more information.

Work out what R-value you need

The effectiveness of insulation is measured by its R-value. The higher the R-value, the more it slows down heat transfer.

Always use R-values, rather than thickness, to compare different products so you are comparing like with like.

The R-value you need depends on how cold it gets where you live. The table following gives recommended minimum R-values for existing homes (the Building Code Acceptable Solution H1/AS1 specifies minimum requirements for new homes), but it is a good idea to install more if you can.

Minimum recommended insulation R-values for existing homes		
	North Island, excluding the Central Plateau	South Island and the Central Plateau
Ceilings with less than 75 mm of existing insulation	R2.8 blanket insulation or R3.4 segment products	R3.2 blanket insulation or R4.0 segment insulation
Ceilings with 75 mm to 120 mm of existing insulation	R1.8 blanket insulation	R2.4 blanket insulation
Underfloor	R1.4 anywhere in New Zealand	
Walls	Check the thickness of your wall cavity and find the highest R-value product at that thickness	

Good installation is key

Quality of installation is just as important as the insulation product you use. Even small gaps can halve the performance of the insulation.

EECA recommends using a professional to install your insulation for you. As with any service, you should shop around for a few quotes to make sure you're getting the right solution for your needs.

Whether you do it yourself or get a professional, make sure the installation is done properly and safely. Standards New Zealand has a comprehensive easy-to-use guide on installing insulation NZ4246:2006 and it's really worth ensuring that this is being followed. You can download this for free from **www.energywise.govt.nz** (search for "4246").

Other ways to reduce heat loss

There are several other things you can do to reduce heat loss in your home.

Check for air leakage and draughts

If your house is draughty, any insulation you install won't be able to do its job properly. It's important to minimise the amount of air leakage from your house at the same time as you improve the insulation. Common places where draughts occur are around doors, windows, skylights, fireplaces and around plumbing penetrations.

Get good curtains

Hang full-length lined curtains of good quality thermal or close woven fabrics. A pelmet will reduce heat loss further. Drawing your curtains at sunset will help keep the heat in as the temperature cools outside.

Consider double-glazing

Double-glazing can halve the energy loss through windows, and lessen condensation and external noise. It is relatively expensive to install but it is worth considering, particularly when your windows need replacing or when renovating.

Consider replacing your downlights

A safety clearance of 150 mm is necessary between insulation and standard downlights, which reduces the effectiveness of the insulation. If you have standard downlights, consider replacing them with CA-rated models that allow insulation to be fitted right up to them, or with non-downlight fittings that don't require a hole in your ceiling and in your insulation.

Tackle dampness at the source

In most homes insulation alone won't fix dampness problems. If the area under your house is damp, fix any drainage or plumbing issues, make sure it's properly ventilated, and look at installing damp-proof sheeting under the house. Make sure externally vented extractor fans are used in areas of the home that produce a lot of moisture – like kitchens, bathrooms and laundries – are adequately vented.

Heating

An efficient heating system that's used properly will make your home easier to heat properly.

Before looking at your heating, get your insulation sorted – you'll be able to use a smaller heating system and your home will be cheaper to heat.

Size matters

It is important that your heater is the right size for the space you want to heat. This depends on the size of the space, your insulation, what size and type of windows you have and how cold it is where you live. Your heating supplier should be able to advise you on the right size heating system for your needs.

Types of heating

There are lots of heating options available, and knowing what you want from your heating will help you find the best solution for your needs.

The table on the following page gives a broad overview of the most common types of home heating systems. For more detailed information visit **www.energywise.govt.nz** or talk to your heating supplier about your needs.

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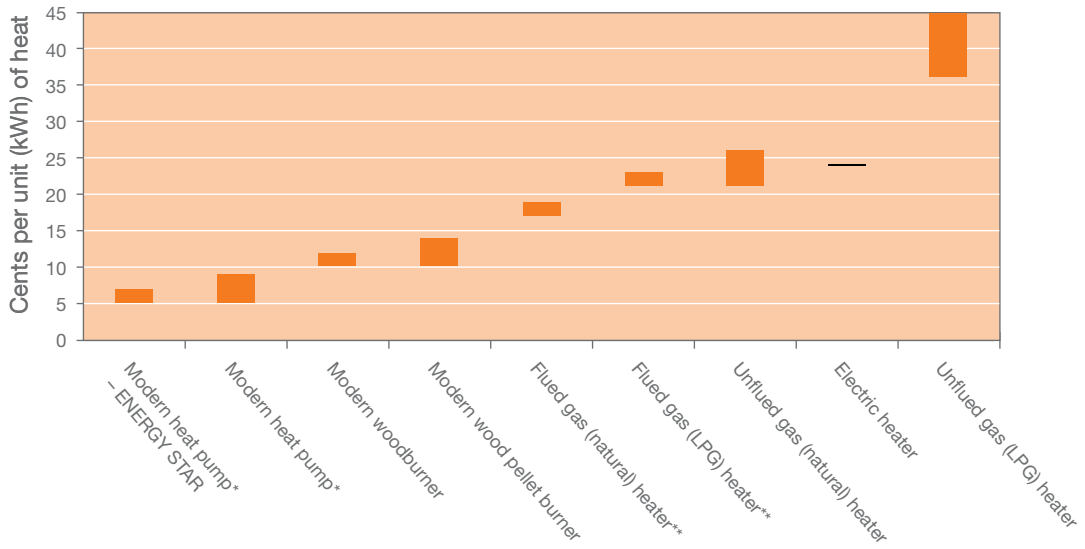
Types of heating

	Good for:	Be aware that:
Heat pump	• low running costs when used properly. • producing instant heat. • convenience – you can control the temperature and timing with the thermostat and timer controls.	• it must be sized correctly – for the space and the climate – to work well (if you live in a colder area, ask the supplier to size the heat pump based on its "H2" performance). • some are alot more efficient than others – look for the ENERGY STAR® mark to show you the most efficient models. • it won't work during a power cut.
Modern woodburner	• low running costs, especially if you have access to free or cheap firewood. • the environment – it produces very little pollution and uses renewable wood energy as a fuel. • heating large spaces. • heating hot water in winter through a wetback system.	• firewood must be dry to burn most efficiently so you need to plan ahead and store it undercover, ideally for at least 12 months. • building consent approval for installation is needed and, unless your property is larger than two hectares, you need to use a woodburner listed on the Ministry for the Environment's list of approved wood burners – **www.mfe.govt.nz**
Wood pellet burner	• the environment – the pellets are made from waste products and burn very cleanly. • heat control (better than a wood burner). • heating large spaces. • heating hot water in winter through a wetback system.	• it won't work if your electricity isn't working (it uses a small amount of electricity). • building consent is needed for installation. • in areas with air quality issues only authorised burners can be installed – a list of these is on the Ministry for the Environment's website at **www.mfe.govt.nz**
Flued gas (natural or LPG) heater	• convenience – you can control the temperature and timing with the thermostat and timer controls. • heating larger areas for longer periods.	• you may have to pay a fixed charge for reticulated gas supply. • it's important to choose one that complies with AS 4553 (AG 103) Gas Space Heating Appliances, and which is currently listed in the Australian Gas Association Product Certification Scheme – ask your supplier or go to **www.aga.asn.au** to check. • some are more efficient than others – look for one with a minimum 4-star rating from the Australian Gas Association. • gas heaters must always be installed by a registered gas fitter.
Electric heater	• heating a small room infrequently and for short periods only.	• they are more expensive to run than most other heating options. • there are different types but they all have the same efficiency (i.e. the same amount of heat output per unit of electricity). • there are different types (e.g. radiant, convection, fan) that deliver heat in different ways. • many have built-in thermostats, but some aren't very accurate.
Central heating	• providing whole-of-house heating. • convenience – you can control the temperature and timing with the thermostat and timer controls. • zoning – many are zone-controlled so you can control the temperature in different parts of the home.	• heat can be supplied by a gas or wood pellet heating system, or a heat pump – see information on these different forms of heating above.
Unflued gas (natural or LPG)	• back-up heating during power cuts, if your normal heating relies on electricity to operate.	• unflued LPG heaters are the most expensive form of heating (except for some open fires). • there are health risks – it will pollute air with toxic gases and large amounts of water vapour, so you must keep at least one window open when it is in use and never use it in bedrooms. • it can make your home damp. • portable LPG heaters can be a fire risk, as anything too close can catch fire quickly.

Running costs of home heating options



Indicative running costs only, based on typical highest and lowest heater efficiencies. Does not include purchase/installation and maintenance costs. Fuel assumptions: electricity 23.7c/kWh; wood pellets $0.45/kg; firewood $80/m³; natural gas 14.7c/kWh; LPG (9kg bottle) $3.50/kg. For unflued gas heaters 30% of the heat produced is assumed to be lost due to the need to have a window open when in use.

* Single-split, non-ducted

** Heaters rated 4-star by the Australian Gas Association

Tips for using your heating

Whatever type of heating you use, smart use can give you a warm, healthy home that costs less to heat properly.

- Only heat the areas you're using, and only while you're using them.
- Set the thermostat and aim for healthy indoor temperatures. World Health Organisation guidelines recommend at least 18˚C in any rooms you're using (or at least 20˚C if you have vulnerable people in the home, like children, the elderly or the ill), and at least 16˚C in bedrooms overnight.
- Use timer features so your heater comes on an hour or so before you need it instead of leaving it on all day. For electric heaters a timer will cost you about $15.
- If you have a woodburner, keep smoke to a minimum – smoky fires are less efficient and pollute the air. Even older wood burners can be run virtually smokeless by using dry wood, making sure the burning zone is very hot, and allowing enough air to reach the fuel.

Smart insulation and heating choices will make it easier and cheaper to have more comfortable home. To find out more – and see whether you're eligible for a grant to help make your home warmer and healthier – visit **www.energywise.govt.nz**

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