Healthy Homes

upperhuttcity.com/eda

Te Kaunihera o
Te Awa Kairangi ki Uta
Upper Hutt City Council

Introduction

Thank you for taking a step towards a warmer, drier, healthier home. A warm, dry, energy efficient home is more comfortable, better for your health, better for the environment, and more cost effective to heat. Cold, damp houses can lead to serious health issues, and are harder, and more expensive to heat.

This Home Energy Assessment Tool kit (HEAT kit) is the first step. It is a self-assessment tool kit that will enable you to assess your home's performance. It has:

- Hygrometer
- Power meter
- Infrared thermometer
- Wood moisture level meter
- Stopwatch
- This user guide

We'd like to thank our neighbour Councils in the Wairarapa District – they have helped us prepare the HEAT kits and this guide for our Upper Hutt community.

WHY DO WE THINK THIS IS IMPORTANT?

We adopted the Sustainability Strategy in 2020. It has eight key goals, including 'Our community will be resilient, adaptable, and inclusive.' It's a big goal, and it gives us a big opportunity to make a difference to our community.

Part of resilience is getting the basics right, including a comfortable home. It's in all our best interest to have a healthy community, living in healthy houses. Unfortunately, not all the homes in our community are in the best state they can be. According to the Wellington Region Healthy Housing Group:

- 49% of the Wellington Region's housing is damp or mouldy
- Over 1,100 of our region's children are hospitalised every year because of preventable housing-related illness.
- Māori and Pacific children are twice as likely to be hospitalised for housing-related illnesses than the rest of New Zealand's kids.

Knowing where to start can be overwhelming, and this is where we can help.

WHAT'S NEXT?

Once you've used this kit, book in with the Eco Design Advisor for a free, independent in-home assessment. They are trained in energy efficiency and can make recommendations specific to your property and answer your questions. During your appointment, they can discuss:

- Heating
- Fixing draughts
- Windows and coverings
- Insulation
- Hot water systems
- Energy efficiency for new and existing homes
- Moisture and mould
- Solar panels
- Ventilation and ventilation systems

The Eco Design Advisor is based at Hutt City Council, and services the entire Hutt Valley. To book in, head to **upperhuttcity.com/eda**

Please note free assessments are dependent on funding availability, as the costs are covered by us.

Warning: The HEAT kit should be kept out of reach of children. It has button batteries, sharp objects, and electronic devices that are not suitable for children.

Hygrometer

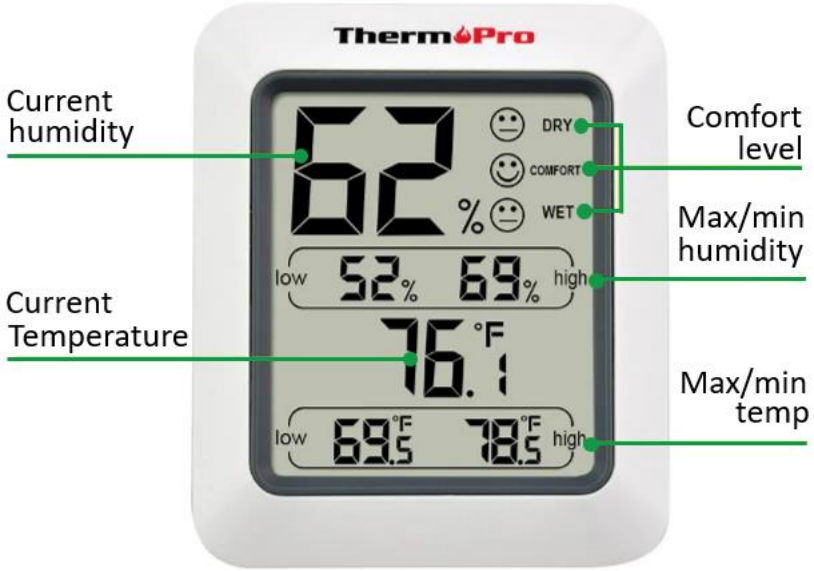
WHAT IS IT?

A hygrometer is a nifty little tool that measures the temperature and humidity in your house. It helps you understand if your home is warm or cold, damp or dry.

HOW DO I USE IT?

- Check the device is set to °C – there is a button on the back.
- Put it into the room you want to assess on a flat surface so the air can circulate efficiently. There is a kickstand and a magnet on the back that will help.
- Wait 10-15 minutes for the temperature to stabilise, then the device will tell you the humidity and temperature levels of your room.

Different rooms will have different readings, so move it around different rooms.



WHAT AM I AIMING FOR?

Ideally, you should be aiming for a temperature of 18-22°C, in line with the World Health Organisation recommendations. Healthy levels of humidity in homes are between 30-65%. At the high end of this scale and beyond, mould and dust mites can thrive.

WHERE CAN I GET ONE?

We bought our hygrometer from the Sustainability Trust. You can buy them online at **www.sustaintrust.org.nz**

Infrared Thermometer

WARNING: the thermometer cannot be used to measure a person's temperature. Do not point the thermometer at a person as it can cause serious eye damage.

WHAT IS IT?

The infrared thermometer measures the temperatures of different surfaces around your house. It can help you find:

- Cold spots – areas of poor insulation or air leads (floor, walls, ceilings, windows, doors etc.)
- Cold/hot spots around your fridge/freezer – air leaks, ventilation requirements
- Hot spots around your hot water cylinder and your hot water temperature – see if your hot water cylinder is well insulated, and whether your hot water is the ideal temperature.

WHAT AM I LOOKING FOR?

- Record the ceiling, floors, and walls; hot water cylinder, hot water; seals of fridges and freezers, and the back of the appliances to find heat loss and low efficiency of appliances.

HOW DO I USE IT?

- Press the trigger to turn on the thermometer.
- Aim it at the surface you want to measure. You should be no more than 70cm from the surface.
- To measure water temperature, **do not place the thermometer in water**. Instead, point the thermometer at the sink where the water hits it, the same way you point it at your walls.
- Hold the trigger until the temperature stabilises.

Floors:

Take multiple measurements – the results should be the same or within a couple of degrees. If a measurement is significantly different, it means the insulation is not efficient – there might not be any, or it might be damaged or displaced.

Compare the measurement of a hard floor surface in sunlight and in shade. This is called passive heating.

Walls:

Take multiple measurements in the same room, on internal and external walls. If the temperatures on the same wall are different, it means your insulation is not efficient – it could be damaged, displaced, or missing.

Temperatures on internal and external walls should be similar. If they're not, this is a sign that your insulation is not efficient.

Ceilings:

Take multiple measurements – the results should be similar. If they're not, your insulation is not efficient. Be mindful on lights that can warm the ceiling nearby. You should turn off the lights and let the ceiling cool down before taking measurements.

Windows and doors:

Take multiple measurements around the window frames. If your results are not the same, it may mean there is an air leak, such as a damaged seal. Take measurements at night on the window glass, and on the curtain/blind fabric to see how well your window furnishings preform.

Fridges and Freezers:

Take multiple measurements around your fridge and freezer door. The results should be about the same. If they are vastly different, it may mean there is an air leak, possibly due to a damaged seal.

Take a measurement behind your fridge/freezer, and another measurement on the same wall but away from your fridge/freezer. Ideally the temperature should be the same. If the area behind the fridge/freezer is warmer, it may mean more ventilation is needed. Check your appliance user guid for required spacing.

Hot water cylinder:

Measure the temperature on the surface of the hot water cylinder. It should not be above 25°C. If it is, your hot water cylinder is not well insulated.

To check your hot water cylinder, run the hot water until the temperature stabilises – at least 30 seconds. Point the thermometer where the water is hitting the sink. **Do not place the thermometer in the water, it is not waterproof.** The temperature should be around 55-60°C.

WHERE CAN I GET ONE?

Infrared thermometers can be found in hardware stores and electronic stores, nationwide.

Power meter

WHAT IS IT?

The power meter measures how much power your appliances use.

HOW DO I USE IT?

Set up the power meter:

Plug the power meter into the wall.

Step 1: Set the clock

- Press 'FUNC' button until 'CLOCK' displays on the right side of the screen. Select 'UP' to set the day and time. Set the time in 24-hour time.

Step 2: Set the price: cost/kWh

- Have a look at your power bill and check out the rate you are charged for kWh. If you are not sure, use 31.02c
- Press the 'FUNC' button for five seconds to display cost/kWh.
- Press set, then add in your rate. Press 'SET' to set the time.

Step 3: Measure your appliance

- Plug your appliance into the power meter.
- Press 'FUNC' to scroll through the options and see how many amps, watts, kWh your appliance is using, and the total price it is costing to run the appliance.

  Different appliances will need to be measured over different lengths of time. For example, to get a correct reading of a fridge, keep it connected to the power meter for 24 hours. On the other hand, an iron will only need to be measured while in use.

Step 4: Measure the number of emissions generated from your electricity use

- To calculate the amount of carbon dioxide (CO_2) emissions you have generated through your electricity use, head to the CO_2 on the GenLess website. Try out your monthly power bill first: https://tools.genless.govt.nz/businesses/wood-energy-calculators/co2-emission-calculator/

WHAT CAN I MEASURE?

You can measure any appliance in your home: fridge, freezer, jug, microwave, washing machine, dryer, vacuum cleaner, heater, TV, computer, phone charger, spa etc.

WHERE CAN I GET ONE?

Power meters can be bought at electrical stores nationwide.

Wood moisture level meter

WARNING: Please be careful when using the tool: the electrodes are sharp and may cause injury.

WHAT IS IT?

A device that measures the moisture level in wood. It helps you understand the moisture level of your firewood.

HOW DO I USE IT?

- Take the cap off the top of the wood moisture level meter, so you can see the sharp measuring electrodes.
- Hold the red button down to turn the device on.
- Hold the MODE button down to switch to °C if needed.
- Press the MODE button to switch to firewood mode (the tree icon – please see right)
- Press the measuring electrodes as far as possible into the firewood.
- Read the moisture level.
- Hold down the red button to turn the device off.

WHAT AM I AIMING FOR?

Ideally, firewood should be burned when the moisture content is below 15-20%. This is because:

- Burning wet firewood is not as efficient – most of the energy is used to evaporate the moisture, rather than warm your house.
- Wet wood burns less efficiently, it produces more smoke and soot that damages your chimney and affects the quality of air we breathe.

It is a good idea to check the moisture content of the wood you buy, especially when it is being sold at a dry firewood price.

WHERE CAN I GET ONE?

Wood moisture meters can be bought at hardware stores nationwide.

Stopwatch

WHAT IS IT?

The stopwatch is used to measure precise timing. Use it to understand the flow rate of your shower head.

HOW DO I USE IT?

- The middle button activates the stopwatch function, the button on the left right is to start/stop, and the button on the left will reset it.
- Record the time it takes to fill a 10L bucket in your shower and use the following table to understand your flow rate.

Time it takes to fill a 10L bucket (seconds)	Flow rate (litres per minute)	Result
30	20.0	High flow rate
35	17.1	
40	15.0	
45	13.3	Average flow rate
50	12.0	
55	10.9	
60	10.0	
65	9.2	Low flow rate
70	8.6	
75	8.0	
80	7.5	

WHAT DOES IT MEAN?

Having a high flow rate means you are wasting water in your showers, as well as energy to heat the water. If you do not have a low flow rate shower head, you may wish to consider installing one.

WHERE CAN I GET ONE?

Stopwatches can be bought from electronic stores and sports stores.

How to improve the health of your house

Keep it warm

Insulate

- Insulate your ceiling and under your floor to reduce heat loss of up to 50%. Go for the highest R-Value insulation that you can afford – the higher the better.
- Insulate your walls – this is harder to do but consider it if you're renovating.
- Check out insulation film to stick to the frames of wooden windows. The film creates a layer of air in front of the glass that mimics double glazing.
- Upgrade your doors and windows to double glazing, thermally broken joinery – although this does come at a cost.

Check out EECA's Warmer kiwi homes tool to see if you qualify for a grant: **tools.eeca.govt.nz/warmer-kiwi-homes-tool**

Reduce draughts

- Tighten loose hinges, catches and latches. Replace any damaged seals.
- Seal gaps around doors and window frames with sealant to make them weather resistant.
- Fit draught excluders or door snakes to the bottom of your doors.
- Block any unused chimneys or fireplaces.

Curtains

- Open your curtains during the day to heat your house with the sun.
- Close your curtains just before dark to keep heat accumulated during the day.
- Use thermal curtains that touch the floor, are wider than the window frame, fit tightly against the wall and window frame, have a pelmet above the curtains to add insulation.

Check out the Sustainability Trust curtain bank to see if you are eligible for made-to-measure curtains: **sustaintrust.org.nz/wellington-curtain-bank**

If you're replacing your old curtains, drop them off to the Upper Hutt library to be recycled.

Heat your home

- Choose a heater that uses renewable energy (wood, wood pellets, electricity).
- Get professional advice to choose a model that is efficient and meets your needs.
- Follow maintenance advice for your heater.
- Burn dry firewood (maximum 15-20% moisture content) to increase efficiency and save money.

Keep it dry

Reduce moisture

- Don’t dry your clothes inside.
- Put lids on pots and pans when cooking.
- Use extraction fans in the kitchen and bathroom.
- Install a ground sheet (polyethylene barrier or vapour barrier) under your house to effectively reduce indoor humidity. This is cost effective, and you may be able to do it yourself.
- If your house is on piles, ensure you have good ventilation under your floor.
- Reduce the occurrence of condensation by avoiding warm air meeting cold surfaces with good insulation, curtains, and double glazed windows. Wipe any condensation of your windows every day.

Reduce and remove mould

Open windows

- Open your windows and doors on opposite sides of the house for 15-20 minutes per day (even in winter!) to maintain good air flow and reduce moisture levels.
- Open your bathroom windows after showering.
- Open your kitchen windows when cooking.
- Leave your bedroom windows open at night if it is safe and suitable – a fingers width is enough in winter.
- Install windows with ventilation latches to allow ventilation, even when windows are closed.

Reduce humidity

- Extract the moisture to outside the house, not into the ceiling; use an extractor fan in the bathroom, a rangehood in the kitchen, vent your dryer outside and use only externally vented (flued) gas heaters.
- Heat your bathroom before you turn the shower on, to avoid creating steam, or use a shower cover to retain humidity to the shower cubical.
- Heat your house to at least 18°C to experience fewer periods of high humidity.

Keep it affordable

Use less hot water

- Reduce your shower time, use cold water for your laundry, run the dishwasher and washing machine with full loads, fix your leaks.
- Install a shower flow restrictor.

- Install an efficient shower head with a flow rate of 9 litres/minute or less.
- Set the thermostat of your how water cylinder to 55-60°C.
- Wrap your hot water cylinder with wrap to reduce heat loss and insulate your hot water pipes.
- Maintain your hot water system.

Choose your appliances

- Choose energy efficient appliances. Use the star rating system to help you choose models that best suit your needs.
- Turn off appliances when they're not in use – don't leave them on standby.
- Unplug devices when they're fully charged.
- Use timers and thermostats to reduce your power consumption (heaters, freezers, lights etc.).
- Find appliances that use a lot of power and replace them (if possible) with more efficient models.

Fridges and Freezers

- Make sure they are sealed properly.
- Leave 3-5cm (about half the length of the long edge of a credit card) between the back of your fridge/freezer and the wall, enabling good ventilation.

Lighting

- Switch your lights to LEDs to reduce your power bill.

More Information

ECO DESIGN ADVISOR

Book in free visit with the independent Eco Design Advisor: go to **upperhuttcity.com/eda** to find out more and book. Check out their website: ecodesignadvisor.org.nz

WARMER KIWI HOMES

The Warmer Kiwi Homes programme provides grants to homeowners to cover 80% of the cost of insulation and heating. Check out their website to see if you're eligible: **eeca.govt.nz/co-funding/insulation-and-heater-grants/warmer-kiwi-homes-programme/**

GENLESS

GenLess has helpful tips to keep your home warm, dry and healthier: **genless.govt.nz/for-everyone/at-home**

HOMEFIT

HomeFit is developed by the New Zealand Green Building Council. It is an online check designed to improve your home to keep it warmer and drier: **homefit.org.nz**