

Energy Efficiency

The cost of energy is rising, so Future-Proofing your home for energy efficiency makes good sense. With good insulation and efficient space heating, water heating, lighting and appliances in your home, you can significantly reduce your energy consumption, carbon footprint and, of course, your energy bills. In addition to making your home warmer, healthier and more comfortable, your investments in energy efficiency will also add value to your home and make it more attractive to potential buyers or tenants. Here are some basic concepts that will increase the efficiency of your home.

Aspect and Design

If you are building a new home, you have the opportunity to influence your home's aspect and design for good energy efficiency by maximising the use of free solar energy. This is called passive solar design and includes the main living spaces facing north with larger windows and rooms not used during the day facing south with smaller windows. Capturing the sun with tubular daylighting systems, will light your home efficiently and economically, provided care is taken to avoid excessive heat losses or solar heat gains through glazed areas. It also includes the use of thermal mass e.g. an exposed concrete floor or a brick wall within the home which heats up during the day and slowly releases the stored heat at night. An independent assessment is available to provide a solution for your current home or for a new build plan. See the 'How To' guide to find out more.

Another important consideration is the use of external solar shading to control the natural heat into the home.

Insulation

Insulating your home helps keep you warmer in the winter and cooler in the summer, which means you will use less energy and have lower energy bills. New Building Code requirements around insulation have been introduced; these changes see a move from only measuring the building R value to an average heat loss calculated over the whole exterior envelope, including windows, floor, roof, etc (an R value measures the

effectiveness of insulation, the higher the value, the better). FPB hosts a range of products that meet and exceed these requirements.

Underfloor insulation or an insulated concrete slab reduces the amount of dampness rising into the home, and also contributes to the overall R value of the building.

If you have an internal garage or a garage attached to your house, don't forget to either insulate the garage, including the garage door, or the wall that connects your garage to the house.

Double Glazing

Double glazing your windows is an effective way to reduce the heat loss in winter, and window tinting or coating keeps your home cool in summer. Recent changes to the New Zealand Building Code in most cases will require double-glazing for all new homes. Always insist on insulating joinery for your double-glazing i.e. joinery made from wood, uPVC or thermally broken aluminium.

Insulated window coverings that cover the width of the window and fall to the floor can increase the R value significantly for example, energy efficient window shades produce an R value of between 4 and 6, thermal curtains can produce between 6 and 7. Both are good options for reducing heat loss. (the higher the R value the lower the heat loss).

Water Heating

On average 30% of a typical New Zealand households energy bill is attributed to water heating.

Traditionally most New Zealand homes have electric water storage heaters. These are now more insulated, which greatly reduces energy loss. If you choose a solar enabled electric water heater then this will allow you to upgrade to a solar system at a later date. Modern insulation standards are such that energy losses from new electric storage water heaters are reduced.

Solar water heating systems or heat pump water heaters can drastically reduce your energy costs. It is important to use an accredited supplier to ensure you get a quality system. Solar systems generally require

a gas or electric booster to ensure hot water delivery performance is maintained even during winter.

Another effective hot water heating source is gas. There are two types of gas water heating systems - storage and continuous flow (or instantaneous gas) and both have benefits depending on your usage.

A continuous flow gas system is a pay-as-you-use hot water system that heats water as and when you need it, therefore does not require a storage cylinder. Continuous flow units are up to 95% thermally efficient.

In situations of very high demand, a gas storage system can provide higher performance and efficiency. What's more, a combination system can provide high efficiency hot water to under floor and radiator heaters as well as the normal household taps.

Solar systems can be used in conjunction with instant gas systems where the gas system acts as a back up system to ensure that hot water is always available.

Home Heating

Home heating is a rapidly developing area, with many different solutions available to suit different lifestyles and home designs. Two key points to consider are:

- creating heat efficiently; and
- using heat effectively to heat the whole home

Too often we heat our living areas but forget about the rest of the house. The appropriate heating solutions for your home depend on a variety of factors including local climate, type of house, orientation towards the sun and personal comfort requirements. Ensure that you have considered these points when making your home heating choices. Heat pumps, 4 star or more AGA rated, flued gas heating, pallet and efficient wood burners and night storage heating are all efficient heating solutions, the key is to use the products effectively, as too much heating will result in extra cost.

Home Energy Ratings

Home energy ratings have been available in New Zealand since the end of 2007. They give homeowners the opportunity to get a star rating applied to their home based on how energy efficient it is. A home energy rating can be obtained at the design

stage to show you the energy efficiency impacts of your choices and what could be done to improve the home you're building. Passive solar design, water and space heating, insulation and glazing will all be components contributing to the star rating the home is given.

Home energy ratings are voluntary in New Zealand. Homes with high star ratings have been shown to fetch a premium price overseas as consumers become more aware of home energy efficiency.

Energy Efficient Appliances

Even small steps can make a big difference. You'd be surprised at the costs of running various home appliances. Choose energy efficient appliances by looking for the energy rating label and the Energy Star® mark. The energy rating label provides you with information on roughly how much electricity an appliance uses in a year, plus a star rating to show how energy efficient it is. The Energy Star® mark is awarded to only the most energy efficient appliances in a product category.

Alongside energy ratings it is important to consider the different formats and features available in the range of home appliances. For example when considering your oven purchase, quadruple and triple glazed doors on ovens are better equipped to keep heat in the oven than double glazed oven doors. Additionally, pyrolytic self cleaning ovens have extra insulation to withstand the high temperatures of the self clean cycle and are again better at keeping heat in the oven.

It is also important to look at the different formats of cooking. In terms of cook tops there is a choice of gas, electric or induction. Induction cook tops are by far the most energy efficient type of cook top as electromagnetic vibrations generate heat directly in the pan, unlike electric cook tops that cook indirectly by heating the glass surface and then transferring that heat to the pot.



Energy Efficient Lighting

There is a wide range of energy efficient lighting products available including compact fluorescent lights (CFL), LED lights and efficient halogen lights. By installing a complete energy efficient lighting solution throughout your home you can save up to 80% on your lighting running costs.

The key to maximising efficiency is to choose purpose designed energy efficient fittings and not just replace the standard incandescent lamp with an energy saver lamp in existing fittings. This is particularly true for recessed downlights. If you choose to install recessed downlights, make sure that they have a completely sealed design and that insulation can be abutted directly to the fitting as open style downlights allow heat loss to and from the ceiling cavity, making heating and cooling your home less efficient. Using externally mounted fittings can also alleviate any transfer of heat through the envelope.

Today's energy saver lamps have more aesthetic designs, warmer colour tones and quicker warm up

times as well as lasting at least six times longer than normal lamps. By looking at innovative lighting design and the wide choice of energy efficient fittings that are now available you can create a more pleasant environment too. A tubular daylighting system that enhances natural lighting will reduce electricity consumption and bring natural light into the home. Improvements in this technology now allows the light to be transferred to internal, ground floor rooms that would otherwise not benefit from natural light.

Efficiency Experts

To ensure you have the right systems installed to meet your energy and lifestyle choices, speak to an energy efficiency consultant or accredited EcoSmart electrician. These experts will create a solution to fit with your unique house plans. To find an energy efficiency expert see the 'How To' guide.

Tips:

- Use tradespeople that provide environmentally friendly services who have an EcoSmart accreditation.
- Use energy efficient light fixtures and lamps.
- Thermal curtains are another effective way to conserve heat for large windows. Double-lined Roman or thermal blinds work well for smaller windows.
- Government funding for insulation, clean heating and efficient water heating is available through ENERGYWISE™ see energywise.govt.nz for details.

Links:

fpb.co.nz
energywise.govt.nz
rightlight.govt.nz
ecanz.org.nz
ecosmartelectricians.org.nz

