

SAVEenergy



SAVEmoney

the benefits of an energy efficient home



GUIDE TO ENERGY EFFICIENCY TERMS

Helping you understand the jargon.



Tasmanian
Government

Sometimes terms used in energy efficiency can be confusing. This is a guide to help you with those terms. It will help you understand the effects of any energy efficiency actions you may be considering, such as fitting double glazed windows or adding insulation to your roof. With electricity prices continuing to increase, a home's energy efficiency – that is, using less electricity and gas to produce the same, or higher, levels of comfort and convenience – should be a higher priority for all Tasmanian households. Not only will it save energy it will also save you money and help the environment.

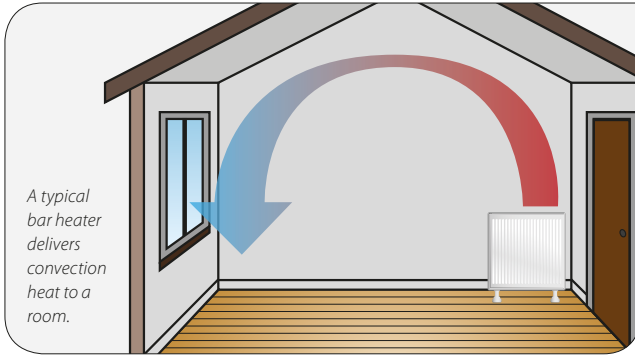
ECONOMIC TERMS

Pay back period

The length of time for an investment to recover or 'repay' its initial cost. For example, installing insulation in your roof is described as having a payback period of a certain number of years. If it costs \$500 to install the insulation and returns \$100 per year in reduced heating and cooling costs it will have a five year pay back period.



HEATING TERMS



Convection

Is the transfer of heat by the movement of warm air.

Conduction

The transfer of heat through a solid material. Heat flows from a region of higher temperature to a region of lower temperature. The greater the difference in temperatures, the more heat flow. This is why it is a good idea to cover windows with curtains or blinds. Remember if a material feels cold to touch then it is probably good at conducting away heat.



Radiation

Is heat transmitted in the form of electromagnetic waves. Such waves pass through space until reflected or absorbed. Old-fashioned electric bar heaters are the most common example of a radiant heater.



Space heating

Is the heating of a space, such as a room or enclosed area of the house. Space heating is usually used to warm a small space, as opposed to central heating, which warms many connected areas in a house at once. Space heaters are usually portable or wall-mounted, and may use natural gas or oil but are most commonly electric.

Heat pump

A device that takes heat from the air, water or earth, adds it to the heat generated from the electrical input to the device and moves it to where it is wanted. This provides an efficient way to heat air (e.g. in a house) or water (e.g. in a hot water service).

A typical fan heater (top), bar heater (middle) and the indoor and outdoor components of a typical heat pump (bottom).



Fitting a weather strip to a door frame.



Caulking around window frames.

INSULATION TERMS

Insulation

Any material that slows heat transfer. Insulation acts as a barrier to heat flow and is essential to keep your home warm in winter and cool in summer. A well-insulated and well-designed home will provide year-round comfort, cutting cooling and heating bills significantly. This in turn helps to reduce greenhouse gas emissions.

Weather stripping

Is the process of sealing around openings such as doors and windows with specially made tape or seals. This reduces heat loss through convection, saving energy on heating and air conditioning. The average heat loss from an unsealed home through gaps around doors and windows is around 15 to 25 per cent.

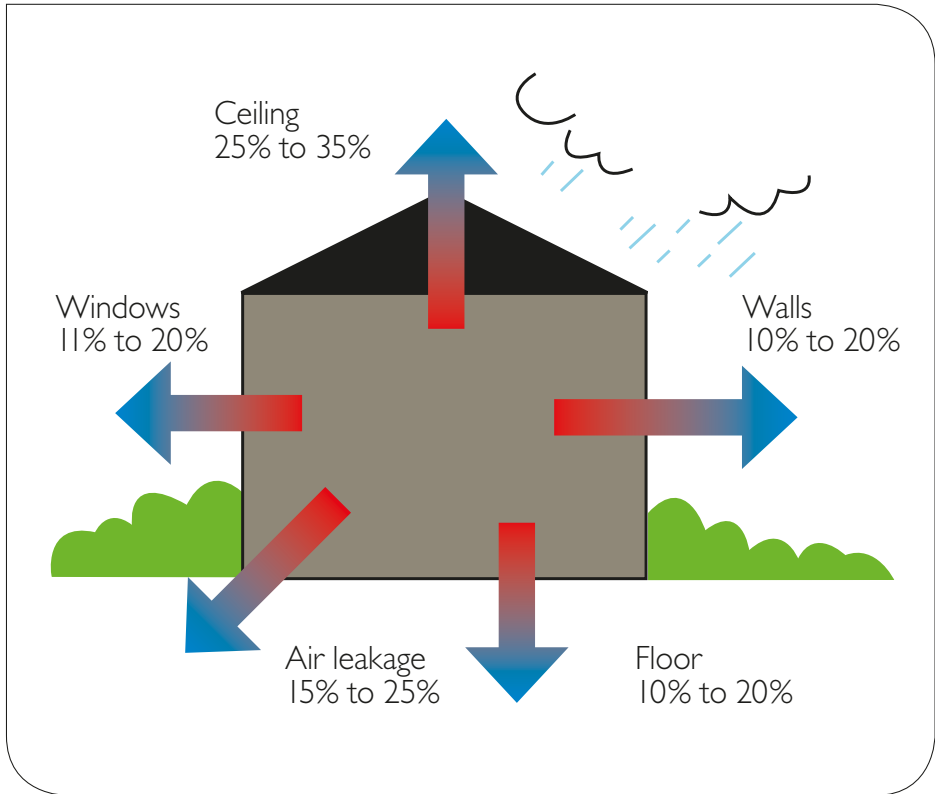
Caulking

Refers to the application of a flexible sealing compound, such as silicone, to close up joints and gaps to make them airtight and less draughty.

Radiant barrier

Thin sheets of highly reflective material, like aluminum are used in home building to reduce heat transfer by radiation. Such barriers can also reduce heat losses through convection.

Heat loss in a typical house



The typical heat losses that occur in a home can be reduced through caulking, weather stripping and using building materials and insulation with a high R value.

Source: Your Home Technical Manual (www.yourhome.gov.au)

R Value

An R-value rates the insulation properties of building and bulk insulation material.

The higher the R-value, the greater the level of insulation provided, delivering a more cost efficient and comfortable home. Think of each R unit as an extra blanket.

To compare the insulating ability of products look at their R-values. However, make sure they are fitted properly. Leaving gaps around wall batts for instance, is like leaving your coat undone.

WINDOW TERMS

Double-glazing

Is a window with two panes of glass and a sealed space in-between. This reduces heat losses by radiation and conduction.

Gas fill

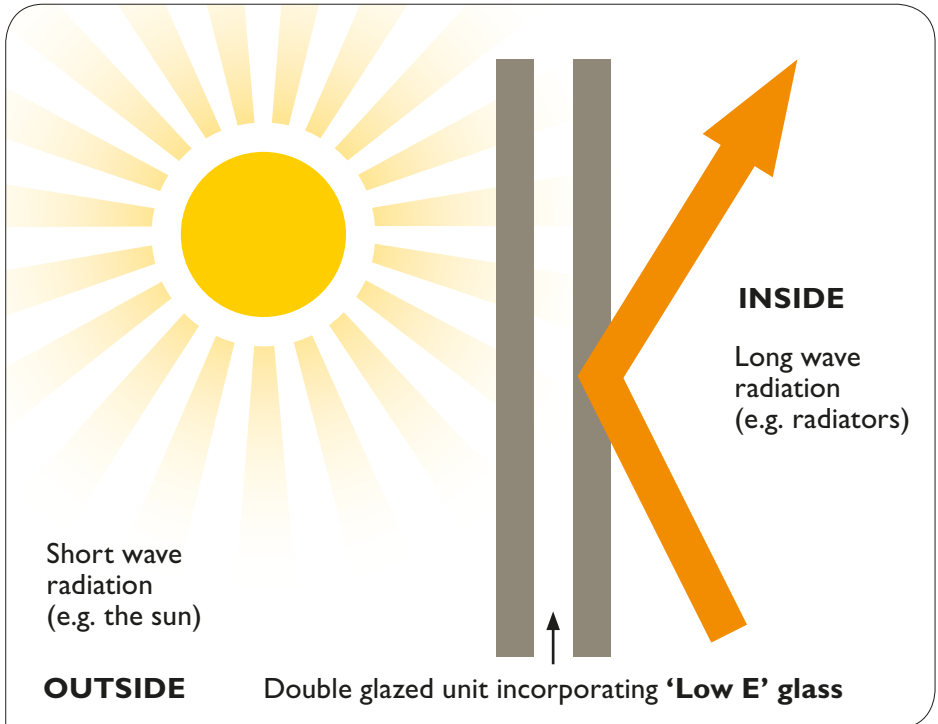
An inert gas such as argon can be used instead of air between the window panes. Inert gases have a much better insulation value than air.

Low E Glazing

Low E glazed windows have an invisible coating that increases the energy efficiency of a window by letting the sun's rays through (short wave radiation) but reflects heat from heaters, fires and radiators (long wave radiation) back into your home. This is not the same thing as window tinting, but the two can occur together.

It is generally available in double glazed windows and improves the energy efficiency of a window's performance by more than 30 per cent compared to conventional double-glazing.

How 'Low E' glass works





U Value

U values indicate how conductive a material is. High U values are bad for insulation.

Indicative value of conducted heat performance

Components	U-VALUE
Aluminium frame	10.0
Timber frame	2.8
3mm clear glass	5.9
Double glazing (uncoated) – 2 x 3mm glass with 6mm air gap	3.1
Systems	
Aluminium frame with 3mm clear glass	6.9
Aluminium frame with double 3mm clear glass and 6mm gap	3.8
Timber frame with 3mm clear glass	5.5
Timber frame with double 3mm clear glass and 6mm gap	3.0

Source: Your Home Technical Manual (www.yourhome.gov.au)

LIGHTING TERMS

Incandescent lamp

The older style glass bulbs with a filament inside. These have now been phased out. Approximately 90 per cent of the energy consumed by an incandescent lamp is given off as heat rather than light, making them very inefficient.

Halogen light

A type of incandescent lamp. They are more expensive to buy but last up to 4000 hours. They can be either mains voltage bulbs (240V) or low voltage bulbs (typically used in downlighting). Although slightly more efficient than traditional incandescent lamps, they still use much more energy than a fluorescent lamp.

Compact Fluorescent Lamps (CFL)

A more energy efficient form of lighting for households. Fluorescent lamps use only about one fifth of the energy used by incandescent bulbs to provide the same level of light.

Although more expensive to buy, fluorescent lamps are much cheaper to run and can last up to 20,000 hours. They can replace incandescent and halogen lights in most situations.

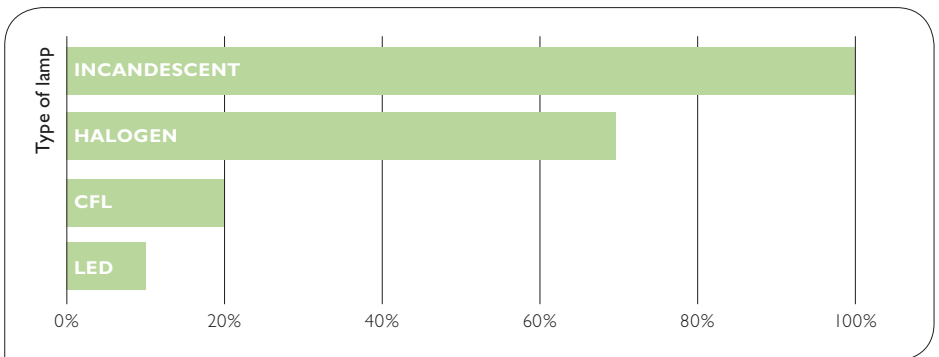
Fluorescent lamps are ideal for areas where lighting is required for long periods of time, such as the living room and kitchen, and for security lighting.

LED (Light Emitting Diodes) lights

An emerging lighting technology that is expected to be the future of household lighting.

The benefits of LEDs include a significant lifetime and potentially very high efficiency levels. LEDs can also be more expensive but as technology improves and demand increases, costs should come down.

Energy use comparison for different types of lighting





Incandescent bulbs



Reflector bulb



A range of compact fluorescent lamps



Halogen bulb



LED bulb

SOLAR TERMS

Solar energy

The radiant energy from the sun that can be converted into other forms of energy, such as heat or electricity.

Photovoltaic solar panel

Is a device that converts the energy of sunlight directly into electricity.

Solar hot water system

Is a device that uses the energy of sunlight to provide hot water.

Evacuated tube system

Is an advanced type of solar water heater that uses glass tubes from which the air has been removed (evacuated) to improve heat retention. Evacuated tube collectors perform better in cold or overcast conditions because of their extra efficiency.

Solar gain

Also known as solar heat gain or passive solar gain, this refers to the increase in temperature in a house or room that results from solar energy warming up the inside of the house.

Passive design

Passive designed homes reduce the need for mechanical heating and cooling and take advantage of the natural climate to maintain thermal comfort, delivering the following benefits:

- Significantly improved comfort.
- Reduced or no heating and cooling bills.
- Reduced greenhouse gas emissions from heating, cooling, mechanical ventilation and lighting.

Passive solar energy

Is the use of the sun to help meet a building's energy needs by means of architectural design (such as arrangement of windows) and materials (such as floors that store heat).





OTHER TERMS

Kilowatt-hour (kWh)

Is a standard of measurement for electricity and is how your electricity use is measured on your electricity bill. One Kilowatt-hour (kWh) is equal to 1,000 watt-hours (Wh).

A watt-hour is the amount of energy delivered at a rate of one watt (W) for a period of one hour. For example, a 100 watt light bulb in use for 10 hours uses 1 Kilowatt-hour (kWh) of electricity.

Peak load

The largest amount of electricity being used by everyone connected to the electricity grid at any point during the day. In Tasmania, these peak times usually occur on cold workday mornings in winter.

'Stand by' energy

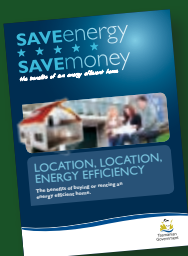
Is the electricity consumed by appliances when they are switched off or not performing their primary function. It's sometimes called leaking, vampire or phantom electricity.

If your computer, printer, fax or photocopier complies with the ENERGY STAR standard, it can automatically switch itself into a energy saving sleep mode after a certain amount of idle time.

Standby losses

Hot water cylinders consistently lose heat by conduction through the walls of the tank and through the first few metres of water pipes. To reduce standby losses, insulate the tank and all hot water pipes, especially those that are outside, and also insulate the first two metres of the cold water pipe leading into the tank. Care needs to be taken when insulating any other metal fittings attached to the tank, especially pressure and temperature relief valves to ensure that they can continue to work safely. You should seek the advice or assistance from a plumber when insulating these fittings.

Other information available in the SAVEenergy SAVEmoney series:



LOCATION, LOCATION, ENERGY EFFICIENCY

the benefits of buying or renting an energy efficient home.



STAR RATINGS

your guide to ongoing power savings.



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