

Monte Rosa Mountain Hut



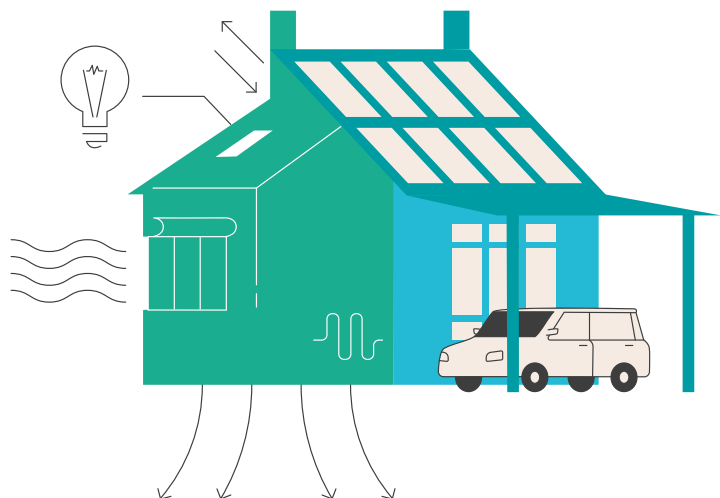
These two images show a typical modern house and a diagram showing how energy is transferred out of it.



1 Identify five different routes energy can take out of a house.

On a cold day, it will be important to reduce the rate of energy transfer. Heat travels in three different ways:

- By conduction, through solids. Metal is a good conductor and wood is not.
- By convection, when a fluid (liquid or gas) gets warm and rises. Heat travels throughout the water in an electric kettle by convection from the heating element at the bottom.
- By radiation, with waves travelling outwards, such as from a glowing fire.



2 Create a table with three columns: one for the route heat might escape from a house, one to explain how heat escapes (using the terms conduction, convection, or radiation), and one for methods to reduce heat loss.

Route heat might escape from a house	How heat escapes this way (use the words conduction, convection, or radiation)	How to stop heat escaping this way
Walls	Houses have cavity walls – two layers with a gap between. If the gap is filled with air, heat reaching it will rise by convection and escape.	Fill the cavity with solid insulation. This will not be a conducting material and it will stop convection currents rising.

For each row, describe how heat is lost through that route and how it can be reduced. The first example, showing heat loss through walls, has already been completed to help you get started.

Why this technology is important:

Understanding energy transfer in building design has long been important and some structures are good at either capturing energy from the sun if they need or reflecting it if it is unwanted. The structure of the walls is crucial and if this is done well energy can be retained effectively, reducing heating bills and energy demand.

Being energy efficient is becoming ever more important as costs rise, availability becomes more variable and the need to avoid releasing greenhouse gas emissions becomes more widely recognised.

