

Questacon at HOME

Energy Activity sheet

Your Home's Energy

BACKGROUND

We live in a world of available energy. We use energy for light, heat, food, entertainment, cleaning and more. We all expect to be able to plug something in and have it work whenever we want. You'd probably miss this available energy if it wasn't there. In this activity you'll learn all of the ways your home already uses energy and find out some ways it might do so in the future.

MATERIALS

- A notepad and pen
- Your house

PROCEDURE

Let's make a list

How many energy-using devices do you have in your bedroom? Put them into categories of lighting, heating and cooling, entertainment, cleaning, cooking, and transport. Could you cope if there was only one you could use? What would it be?

Expand your list of energy-using devices and systems to include the whole house. Which room in your house uses the most devices or has the most energy? With most people it's the kitchen, but yours might be different.

What uses the most energy?

Have a look at your list – how many times a week/day do certain devices or systems get switched on? What do you think uses more energy? (In most people's homes it's heating and cooling).

Heat

Try making a list of all of the devices around your house which change the temperature of something, like a toaster, fridge, water heater, microwave – there's so many! You may also find devices which aren't designed to specifically generate heat but they still produce a lot of heat anyway. Heat is a common consequence of energy transfer. Inefficient devices produce a lot of heat which is generally a waste of energy, like an old filament light bulb.

SAFETY

This activity involves searching around the house for energy-using devices and systems. Don't switch anything on that you aren't familiar with without an adult being present.



Australian Government

Questacon

The National Science and Technology Centre



www.questacon.edu.au

Types of energy

How many different types of energy are used in your house? You might think it's just electricity but there can be a number of other possible sources – batteries, gas, oil, candles, petrol and more.

WHAT'S THE SCIENCE?

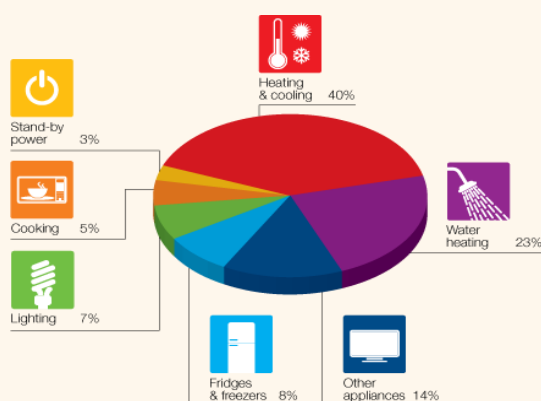
Energy comes in many different forms: chemical, heat, kinetic, sound and electrical – but where does that energy come from? Most of our energy comes from the sun, a hundred million kilometres away and we have a number of ways we can make use of that energy. We can burn fossil fuels (gas, oil and coal) which are the remains of ancient biological organisms or make direct use of the sun's energy through solar, wind and wave power.

Electricity generation in Australia has historically been a conversion of chemical energy (in the form of coal, gas or oil) to heat energy (heating water to make steam) to kinetic energy (to turn wheels of magnets past wheels of conductors) to electrical energy. Although this has been used for decades (and still continues to be used today) it is not an efficient process and much of the energy is lost as heat.

Hydro and wind power cut out the early steps and utilise the kinetic energy of moving wind and water to turn wheels. Solar power uses specially designed solar cells that produce electricity directly from sunlight (no wheels used at all!).

In Canberra the majority of our electricity comes from renewable sources.

Average Australian Home Energy Use – SA.Gov.au



That Little Light

Stand-by power is the energy used by an appliance when not performing its main function. This could be to power an internal clock or to receive a remote control signal. The most effective way to avoid using stand-by power is to switch things off at the wall.

WHAT QUESTIONS SHOULD I ASK?

- How do you feel about leaving the lights on in your bedroom when you aren't there?
- If your house used solar and wind energy, how would it get power at night or if there was no wind?
- How is electricity made in your town/state?
- Do you think you can use less energy?
- Does energy cost money? Is there any free energy?
- Do you use more energy in summer or winter?

WHAT'S NEXT?

The Australian Government has a website that has a lot of information about how to maximise your home's energy efficiency
<https://www.yourhome.gov.au/energy>

