

# How Things Work at Home

Cool **technology** is around us everyday! Explore these exhibits to learn about how things work at home.

## How to use this guide

To help guide your visit, we have developed this learning pathway to explore a specific topic using some of the exhibit components.

1. Follow this path as you explore the gallery, try a different path, or create your own path and follow where your curiosity takes you!
2. Look up the words in bold in the vocabulary list on the back.

## Think About It

- Where can you find each of these devices in your home?
- How many other things at home might work the same way?
- How does each device use or transfer **energy**?

## Path

### BUCKET LOUDSPEAKER

- Place your hand on the on the red circle. What do you feel?
- Why do you think the music gets louder when the bucket is on the red circle?
- Can you find the cone, coil and **magnet** of the speaker?



### HOME THERMOSTAT

- What do you see happen when the **bimetallic strip** changes temperature?
- What makes the fan turn on if it gets too hot? How would this work different in the summertime?



### CLOCKWORKS

- Watch as the different parts of the clock move. Try and find the **cams**, gears and other parts, and then figure out what each part does.



### CIRCUIT BREAKER

- Experiment to find out how many light bulbs can be on at once without activating the **circuit breaker**.
- What do you think makes the **conductor** move and “break” the circuit?



### HOME LIGHT SWITCH

- How does moving the switch break the electric **circuit**?
- How do you think a 3-way switch might work?



### CYLINDER LOCK

- Try opening the lock without a key. Why won't it open?
- Now try each key. What does the working key do to the pins that the other one does not?



## What's Going On?

The Law of Conservation of Energy says that **energy** can not be created or destroyed, it can only change form. Many of the things around your house works by changing energy from one form to another. Energy can exist in many forms, and the different forms make different things happen. In addition to **heat**, light and **sound**, there are forms of energy such as **mechanical**, chemical, **electrical**, **kinetic** and potential. Heat and light are the final forms of energy in most **energy chains** because they are lost to other **systems**, like when the space behind the TV gets hot if it is on too long.



**Learn More About It!**

R. Brown and T. Kneitel  
**49 easy-to-build electronic projects**

Tab Books, 1981

C. Vorderman  
**How It Works: How Things Work**

Readers Digest, 1995

D. Macauley and N. Ardley  
**The Way Things Work**

Dorling Kindersley, 2004

D. Macauley  
**The New Way Things Work**

Houghton Mifflin Books, 1998

P. Chapman and D. Crawley  
**Usborne young scientist: Electricity**

Usborne Publishing Ltd, 1991

**By Kids For Kids**  
[www.bkfk.com](http://www.bkfk.com)

**How Stuff Works**  
[www.howstuffworks.com](http://www.howstuffworks.com)

**Bimetallic Strip** - A long, thin, rectangle with a different kind of metal on each side.

**Cam** - A rotating disc that converts circular motion into motion in a straight line.

**Circuit** - A path that electricity travels.

**Conductor** - A material that electricity can move through.

**Electrical Energy** - The result of the movement of charged particles. A form of kinetic energy.

**Energy** - The ability to do work. It can come in many forms, including kinetic (or motion) and potential.

**Energy Chain** - A way of showing how energy is changed from one form to another.

**Heat Energy** - A form of energy related to the motion of atoms or molecules. A form of kinetic energy.

**Kinetic Energy** - The energy of movement.

**Magnet** - A material that generates an invisible force that attracts certain metals, like iron.

**Mechanical Energy** - The energy of moving parts. A form of kinetic energy.

**Potential Energy** - The potential to do work. It is related to an object's position relative to a force (like gravity).

**Sound Energy** - A form of energy carried by waves of vibrating particles. A form of kinetic energy.

**System** - A group of things working together to perform a function.

**Technology** - The study and/or application of the mechanical arts and applied sciences.