

## **What are energy stores and transfers?**

**James Stewart:** What are energy stores and transfers?

Well, the Principle of Conservation of Energy states that energy cannot be created or destroyed, only transferred from one store to another.

There are several energy stores.

The amount of energy in the gravitational potential energy store depends on the height of an object.

Take books on a bookshelf, for example.

As the book falls, energy transfers from the gravitational potential energy store to the kinetic energy store, which is energy stored in a moving object.

The chemical bonds between atoms means energy is stored in the chemical energy stores, such as in foods, fuels, and batteries.

Stretched or compressed objects like elastic bands, for example, store energy in the elastic potential energy store.

The hotter an object, the more energy there is in its thermal energy store.

Molecules in a pot of water move faster if the water is hotter.

Energy is stored in the nuclear energy store of the nuclei of atoms.

There is lots of energy in the Sun's nuclear energy store.

Magnetic materials positioned in a magnetic field will have energy stored in the magnetic energy store.

As a recap, here are the various different energy stores.

Gravitational potential, chemical, elastic potential, kinetic, thermal, nuclear, and magnetic.

Mechanical work done is when a force is applied over a distance, like lifting this mug.

The mechanical work done transfers energy to the gravitational potential energy store of the mug.

Electrical work done, in the case of the kettle, energy is electrically transferred to the thermal energy store of the heating element, and then energy is transferred by heating.

The transfer of energy from a hotter object to a colder object, like from the heating element to the water.

As you watch this video, energy is also being transferred by light and sound.

But remember, energy is never created or destroyed, just transferred from one store to another.