



Types of Energy and Forms of Energy



Energy



- Energy **exists** in many forms.
- Energy **can** be moved from one object to another.
- Energy **can** be changed from one form to another.
- Energy **cannot** be created or destroyed.



What is Always Present
But Never Visible?

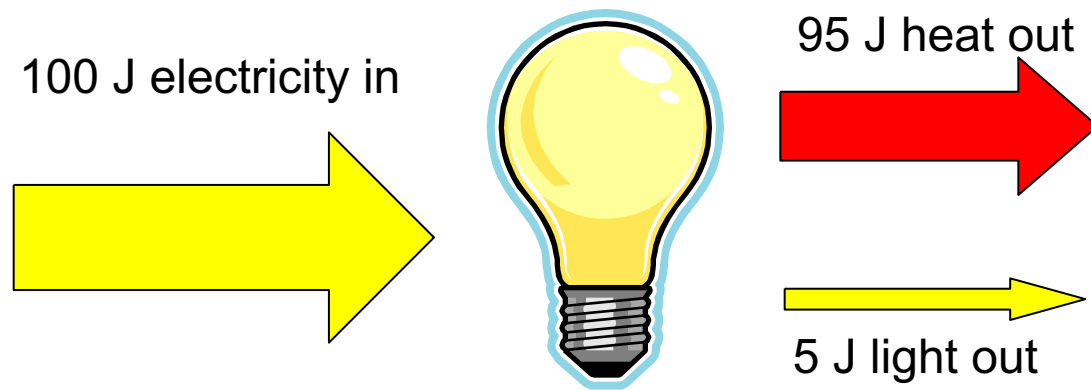
ENERGY

Although energy isn't visible,
you can detect evidence of energy.



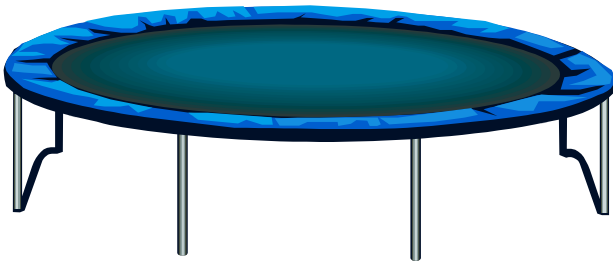
Law of Conservation of Energy

With every transformation, some energy is converted to less useful forms. Energy conversions are not 100% efficient. The energy output for the intended purpose is seldom the same as the energy we put in.



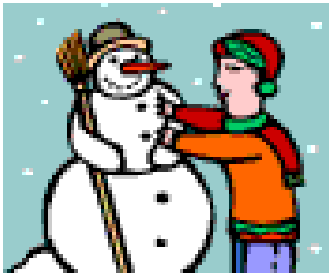
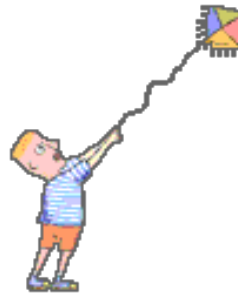
Potential Energy

The energy in matter due to its position or the arrangement of its parts



Kinetic Energy

Energy of a moving object



Six Forms of Energy

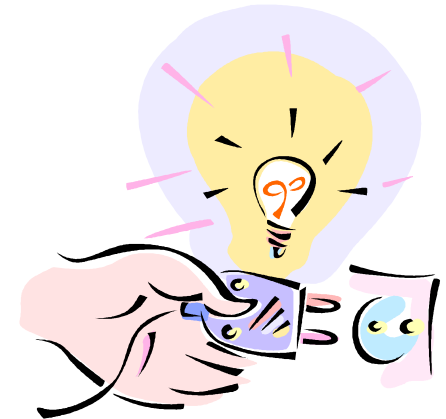
Mechanical



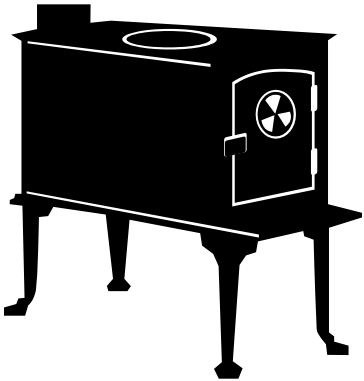
Chemical



Electrical



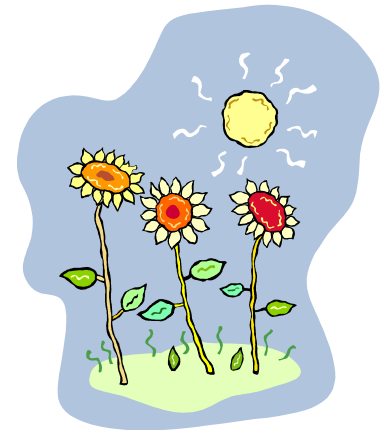
Heat/Thermal



Nuclear



Light/Radiant



Mechanical Energy

- Energy that **moves objects from place to place**
- You use mechanical energy when you kick a ball or turn the pedals of a bicycle
- Other examples include water flowing in a stream, tires rolling down a road and sound waves from your iPod.



Chemical Energy

- **Energy released by a chemical reaction**
- The food you eat contains chemical energy that is released when you digest your meal
- Wood, coal, gasoline, and natural gas are fuels that contain chemical energy



Electrical Energy



- Energy that **comes from the electrons within atoms**
- It can be generated at a power plant or inside a battery and can power everything from remote-controlled cars to refrigerators
- Lightning and static electricity are also forms of electrical energy

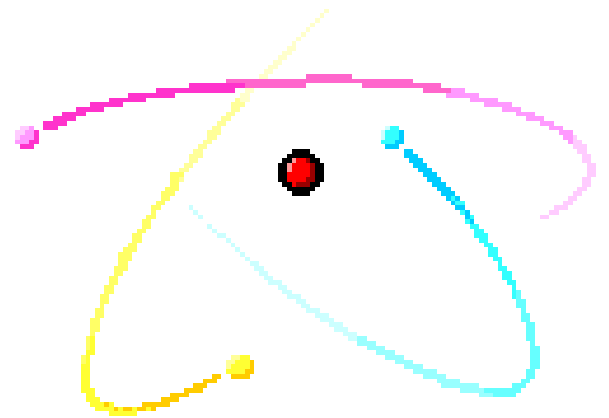
Heat (Thermal) Energy

- Energy created by the motion of atoms and molecules that occurs within an object
- Thermal energy exists when you heat a pot of water on a stove



Nuclear Energy

- Energy contained in the nucleus of an atom
- Nuclear energy is released when nuclei are split apart into several pieces, or when they are combined to form a single, larger nucleus



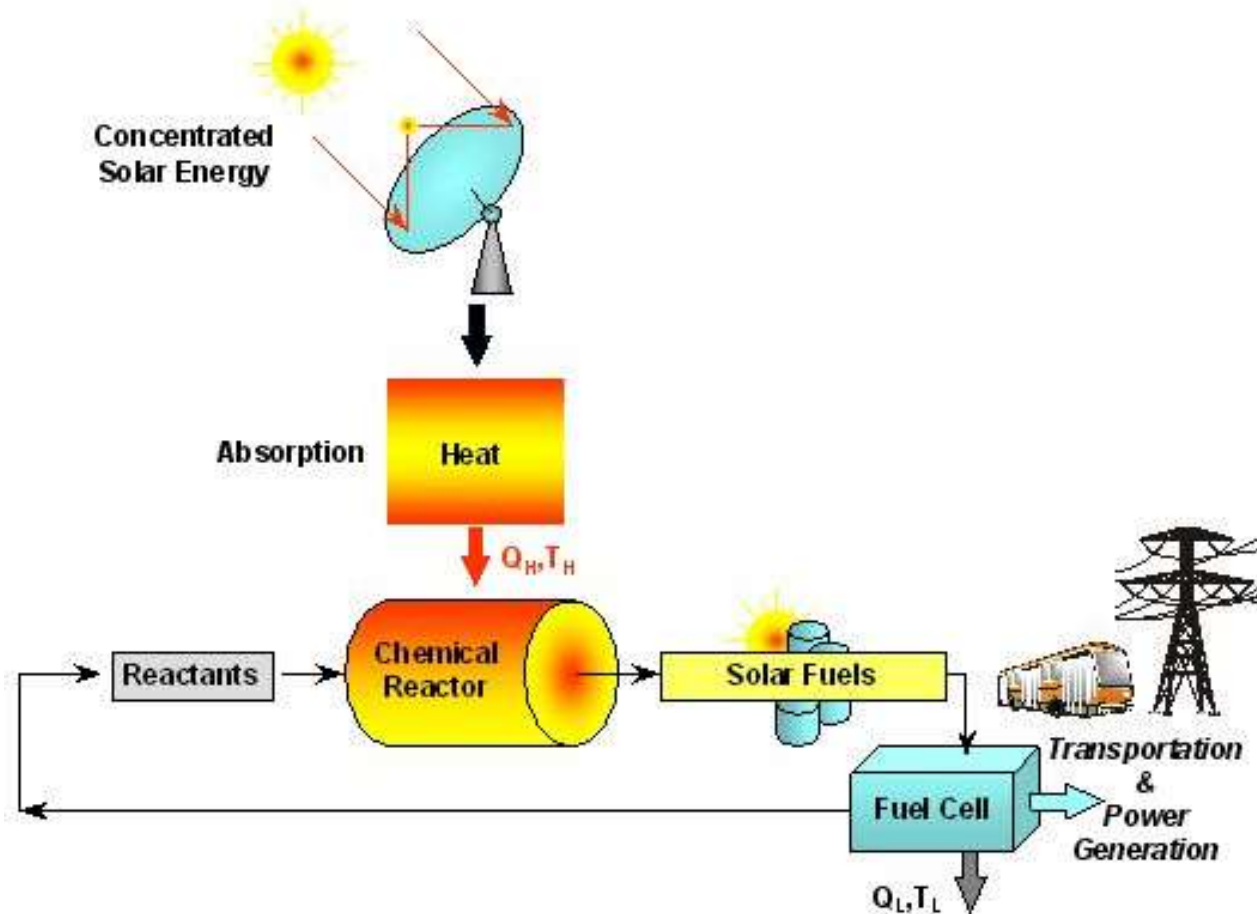
Light (Radiant) Energy



- Energy that can move through empty space
- The sun and stars are powerful sources of radiant energy
- The light given off by light bulbs and campfires are also forms of radiant energy

Energy Conversion

All forms of energy can be converted into other forms of energy





Energy Forms



- These forms of energy do work that end up as motion, light, or heat.
- Energy is used to power manufacturing, light buildings, propel vehicles, and communicate messages.

What else do we use energy for?

Image Resources

Microsoft, Inc. (2009). Clip Art. Retrieved March 24, 2009, from <http://office.microsoft.com/en-us/clipart/default.aspx>

ETH – Renewable Energy Carriers (2010). Professorship of Renewable Energy Carriers. Retrieved May 5, 2010, from <http://www.pre.ethz.ch/research/projects/?id=solarfuels>