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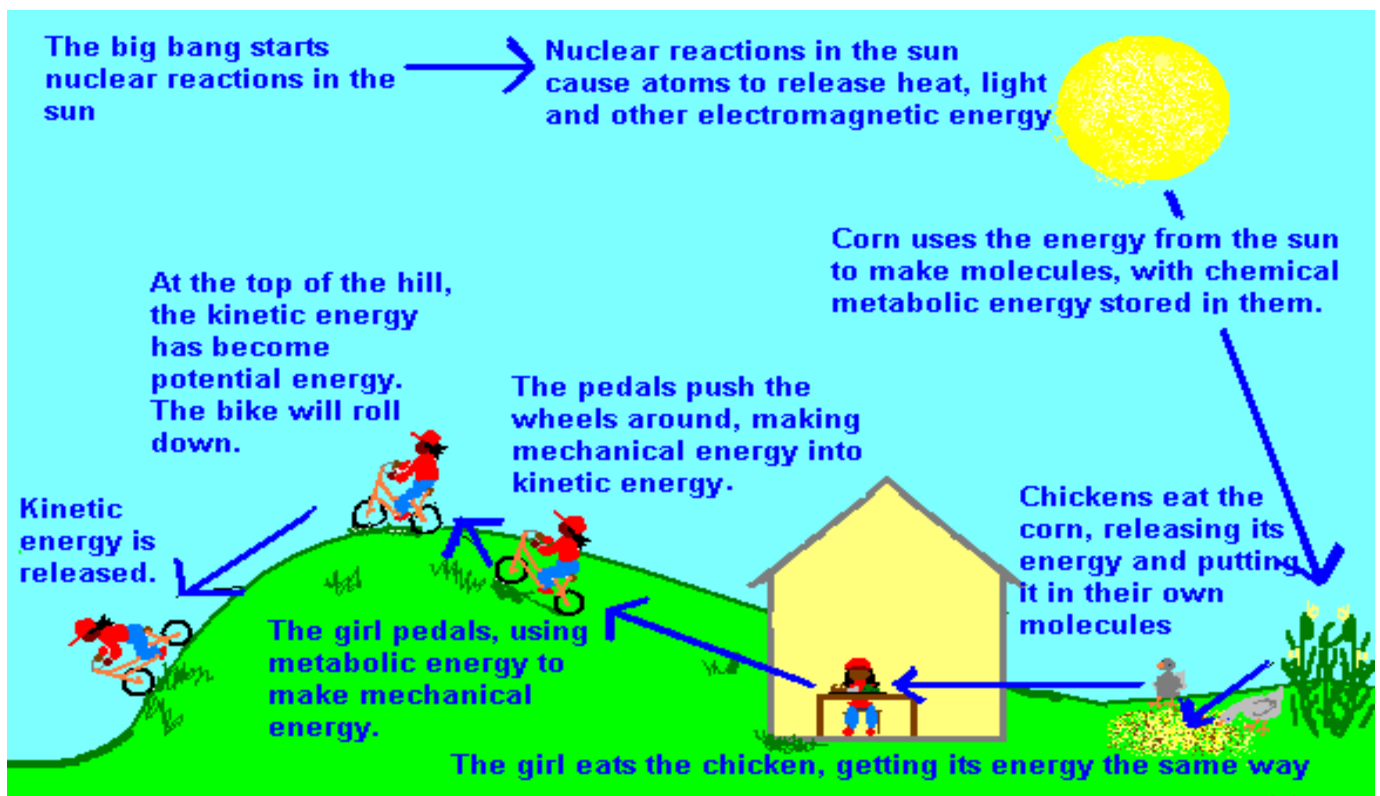
## ***Where does energy come from? Where does energy go?***

Energy can be found in many things and takes many forms. There is **potential energy** in objects at rest that will make them move if resistance is removed. There is **kinetic energy** in objects that are moving.

The molecules making up all matter contains a huge amount of energy, as Einstein's  $E = mc^2$  pointed out to us. Energy can also travel in the form of electromagnetic waves, such as heat, light, radio, and gamma rays. Your body is using metabolic energy from your last meal as you read this. *Energy is constantly flowing and changing form.* If you take your metabolic energy and rub your hands together, you have made metabolic energy into mechanical energy. Your hands will heat up. That is some of the mechanical energy turning into heat energy.

*So energy can change form,* but where did that energy ultimately come from? Let's trace back a chain of events...

A bicycle is rolling down the hill, transferring potential energy into **kinetic energy** (movement). The bicycle got its **potential energy** (energy due to position related to gravity) by the rider using metabolic energy to move the pedals. The pedals used mechanical energy to move the chain, which moved the wheels. The rider's metabolic energy came from chemical energy that was stored in the molecules of the food she ate. That chemical energy entered the animal whose meat she ate by the animal digesting a plant and breaking the bonds in *its* molecules. The plant made the molecules by using light energy from the Sun. The Sun's light energy came from electrons in its atoms lowering energy states, and releasing energy. The energy in the atoms came from the nuclear reactions in the heart of the Sun. What started the nuclear reactions? Physicists think the Big Bang did.



So the short answer is that the energy we encounter and use everyday has always been with us since the beginning of the universe and always will be with us. It just changes form all around us. That is called the law of conservation of energy.

#### Source:

<http://www.qrg.northwestern.edu/projects/vss/docs/thermal/3-where-does-energy-come-from-and-go.html>

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|---------------------------|---------------------------------------------|
| What is Potential Energy? | Create an image that shows Potential Energy |
| What is Kinetic Energy?   | Create an image that shows Kinetic Energy   |

