

# Types and Forms of Energy

Power is the ability to convert energy from one form to another.

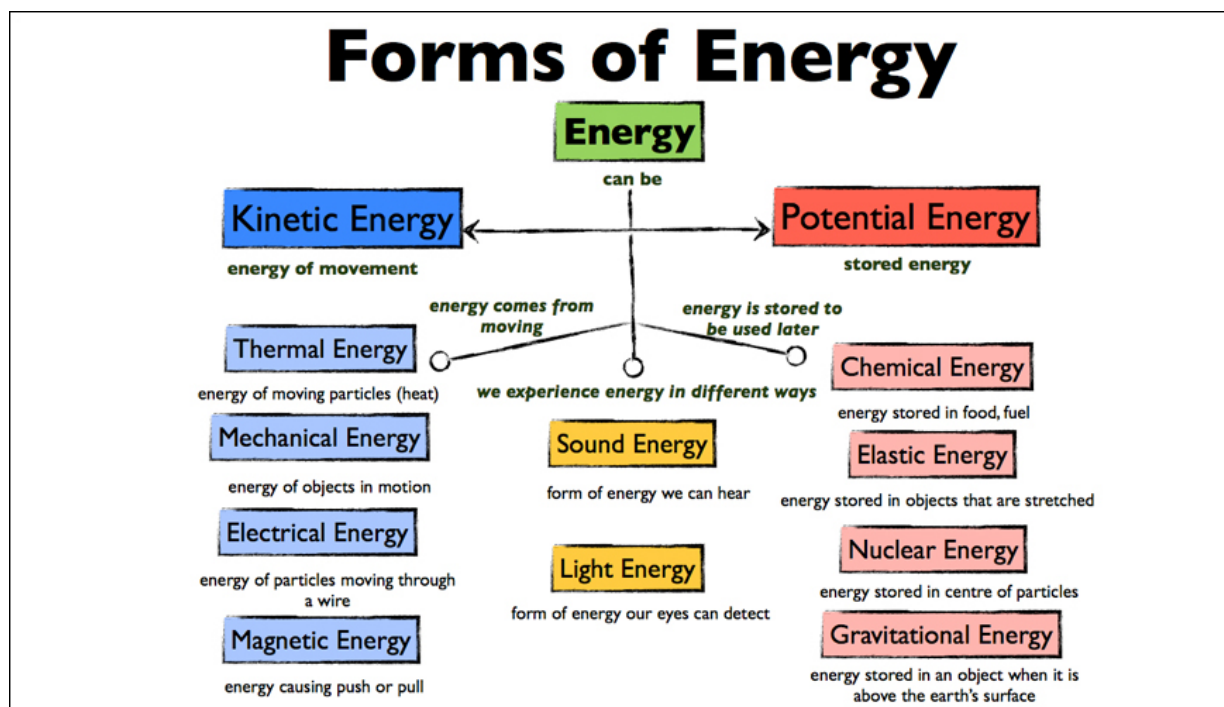
The law of the conservation of energy states that energy is neither created nor destroyed. Instead, it is simply transferred from one form of energy to another form of energy in the unity of the universal energy field. Fields (stratifications of the universal energy field) contain energy that depends on the arrangement of the objects in the field.

Potential & kinetic; there are two types of energy which are expressed in many (apparently) distinct and (yet really) blended forms. Remember that these names are human made labels given (generally from particular cultural perspectives/legacies) in an effort to enhance basic perceptions of some universal truths, they are not yet perfect descriptors. As concepts their relationships to each other still requires much more investigation.

We can identify some forms of energy that an object or system can express as measurable properties, measurably is useful.

$$P = w/t, w = f \cdot d, \tau = Fd = mgd, KE = 1/2mv^2, GPE = mgh, \Delta E = W = Fd$$

“Forces” transfer/convert energy in a process known as ‘work’



**references:**

1. <http://www.thestargarden.co.uk/Force-and-energy.html>
2. <http://hyperphysics.phy-astr.gsu.edu/hbase/conser.html#coneng>
3. <http://quarkphysics.ca/phys2/fields/u-fields.html>

## Forms of energy and their descriptions

### **Mechanical**

- the sum of macroscopic translational and rotational kinetic and potential energies

### **Electric**

- potential energy due to or stored in electric fields

### **Magnetic**

- potential energy due to or stored in magnetic fields

### **Gravitational**

- potential energy due to or stored in gravitational fields

### **Chemical**

- potential energy due to chemical bonds

### **Ionization**

- potential energy that binds an electron to its atom or molecule

### **Nuclear**

- potential energy that binds nucleons to form the atomic nucleus (and nuclear reactions)

### **Chromodynamic**

- potential energy that binds quarks to form hadrons

### **Elastic**

- potential energy due to the deformation of a material (or its container) exhibiting a restorative force

### **Mechanical wave**

- kinetic and potential energy in an elastic material due to a propagated deformational wave

### **Sound wave**

- kinetic and potential energy in a fluid due to a sound propagated wave (a particular form of mechanical wave)

### **Radiant**

- potential energy stored in the fields of propagated by electromagnetic radiation, including light

### **Rest**

- potential energy due to an object's rest mass

### **Thermal**

- kinetic energy of the microscopic motion of particles, a form of disordered equivalent of mechanical energy

- *Mechanical (k&p-sum)*

- *Relative Rest (p)*

- Electric (k) [*fields*]

- Magnetic (k) [*fields*]

- Thermal (k)

- *Mechanical wave (p&k)*

- *Sound wave (p&k)*

- Radiant (p)

- Ionization (p)

- Chromodynamic (p)

- Nuclear (p)

- Chemical (p)

- Elastic (p)

- *Mechanical wave (p&k)*

- *Sound wave (p&k)*

- Gravitational (p) [*fields*]

- *Relative Rest (p)*