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## Sustainable Energy Demonstrations

- **The Law of Conservation of Energy Flow - Energy cannot be created nor destroyed, it can only change forms.**
  - Nuclear Energy- Nuclear fusion in the sun; when hydrogen atoms in the sun collide into each other they form helium. This reaction releases some of the nuclear energy in the form of light.
  - Light Energy and Chemical Energy- When this light energy reaches earth plants use it in a process called photosynthesis which converts the light energy into chemical energy.
  - Potential Energy- This chemical energy is stored in the plant until it is used by the plant or the plant is consumed by another lifeform (ie. humans).
  - Kinetic Energy- As the plant is being digested the chemical energy is absorbed and is used to do work (walking, lifting, breathing, etc.).
  - Heat Energy- As the work is being performed energy is released into the atmosphere in the form of heat.
  - The process continues indefinitely.
- **Nuclear Fission Demonstration**
  - Materials: 10 small marbles and 1 large marble (can also be a small marble)
  - Procedure:
    - Arrange the 10 small marbles where they are bunched together on a flat surface and explain that they represent the nucleus of an atom and that a nucleus is held together by nuclear energy.
    - Next explain to the group that the large marble represents a neutron that is hurled into a large nucleus, breaking it apart; thus releasing the energy that was being used to hold the nucleus together.
- **Magnetic Energy Demonstration**
  - Materials: Balloon and a Running Water Faucet
  - Procedure:
    - Explain that water molecules are polar and that magnetic energy can be used to push the running water creating a bend in a stream of running water.
    - Inflate the balloon and ask for a volunteer to rub the balloon on his/her head creating a static charge.
    - Go to running faucet and slowly move the charged balloon close to the flowing water. The magnetic energy between the water and balloon will cause the water to bend.