Solar Powered Energy Outline

**Lesson Objectives:**

* Students will learn about solar powered energy.
* Students will learn about solar panels as well as solar thermal conversion.
* Students will be able to identify solar powered energy as a renewable resource.

**Materials:**

* Solar Panels
* Solar Powered Grasshoppers

**Introduction of Activity:**

1. The sun has produced energy for billions of years.  Solar energy is power that comes from the sun.
   1. This energy can be converted into other forms of energy, such as heat and electricity.
2. Solar powered energy is an example of a renewable resource.
   1. The use of solar energy does not harm our environment, and will always be available for use, as long as the sun is in existence.
   2. Solar energy has been used by humans for a long time for uses such as heating, cooking food, removing salt from seawater and drying clothes.
3. These days, solar energy is also used to create electricity. As technology has improved, solar power costs have decreased and it has become a more viable alternative, competing with energy sources such as coal and oil.
   1. While solar power is becoming more efficient, it only provides a small fraction of the world’s energy supply.
4. Solar energy can be collected using two different strategies.
   1. The first strategy is photovoltaic conversion, which means that solar panels collect energy from the sun through small PV, or photovoltaic cells.
   2. **Demonstration with Solar Powered Grasshoppers**
      1. Distribute solar powered grasshoppers to the campers.
      2. Demonstrate how the grasshoppers will stop working if you cover the PV panel with you hand.
   3. Another type of solar energy is solar thermal conversion.
      1. Panels that can absorb heat, which are called thermal conversion panels, are used to collect solar energy.  This solar energy is then used to heat pipes that are filled with fluid.
5. Fun Facts:
   1. The largest solar power plant in the world is found in the Mojave Desert, USA which includes California, Nevada, Arizona and Utah.
   2. Spacecraft and space stations such as the International Space Station often use solar panels to generate power.

**Follow Up Questions:**

1. What is solar energy and where does it come from? What are the two different ways solar energy can be collected?
2. Why do the grasshoppers stop hopping when you cover the PV panel with your hand?
3. Why is solar energy an example of renewable energy?