Electrical Energy Potential Methods

Electrical energy can be generated by several methods.
They are: **Chemical, Mechanical, Thermal, Light, Pressure, and Friction.**

Electrical Energy from Chemical Reactions
When two different metals, such as Zinc and Copper are placed in a suitable solution, a chemical reaction develops. This chemical reaction causes one metal to lose electrons, which the other gains. Thus a potential difference is developed between the two metals. The terminals (metal pieces) are called ***Electrodes***, and the solution that reacts with the electrodes is called ***Electrolyte***. The negative electrode is called the ***Anode***, while the positive electrode is called the ***Cathode***. Examples: ***Wet and Dry Cell Batteries***.

Electrical Energy from Mechanical Motion
Generators convert rotating motion (mechanical energy) to electrical energy through ***Electromagnetic Induction***. This device creates differences in potential between two electrical poles. It moves electrons from one terminal and deposits them on the other terminal.

Direct Electricity from Heat
When different metals, such as iron and copper, are joined together and heated, an electrical potential is produced. This is known as a ***Thermocouple***. It is widely used for temperature control and monitoring.

Electrical Energy from Light Sources
The ***Solar Cell*** was developed to utilize energy from the sun. The solar cell consists of a multi-layered junction of semiconductive materials. When light rays strike this junction, an electric potential is developed. The solar cells convert the incident heat and light from the sun's rays to electrical power.

Electricity from Mechanical Pressure
Certain crystalline materials, such as quartz and tourmaline, develop an electric potential on their surfaces when subject to mechanical pressure. This effect is called the ***Piezo-Electric Effect***. The electric potential is developed because mechanical pressure on such crystals brings about a redistribution of electric charges in such a way as to make one surface more positively charged with respect to the other. Example: ***Hi-Fi phonographs***.

Electricity by Friction
Everyone has experienced electricity by friction. Walking across a carpet in a home and attempting to touch a metal object will draw an electric ***Arc***. This is the generation of electricity by friction, which is commonly known as ***Static Electricity***.