

## main points

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- Energy from the Sun, so-called “solar power,” is an excellent and underutilized energy source.
- There are a number of energy sources, such as wind and geothermal energy, that have been used successfully throughout the world. We call these “alternative energy sources” because they help meet energy needs without many of the disadvantages that conventional sources have.
- Electromagnetic energy travels in waves.
- Energy, wavelength, and frequency of electromagnetic radiation are mathematically related.
- The range of wavelengths that electromagnetic radiation can exhibit is described by the electromagnetic spectrum.
- Photosynthesis is a model process for using the Sun’s energy to power chemical processes.
- Electron exchange occurs in many chemical reactions.
- The electron exchange that occurs in spontaneous chemical reactions can be used to power devices.
- Different types of electrochemical cells have a common structure; an anode part, a cathode part, and an electrolyte.
- “Photovoltaics” is concerned with the generation of an electric current from solar power interacting with a material.
- Photovoltaic materials are semiconductors, most often made by combining “electron-rich” and “electron-deficient” materials with silicon.