
Understanding Balance of System (BOS) Components in a Photovoltaic (PV) System.

A typical PV system is composed of one or more solar panels combined with an inverter and other electrical and mechanical hardware that use energy from the sun to generate electricity. It is composed of several subsystems such as Power Generation, Energy Inversion & Conditioning, Energy Storage and Energy Distribution. BOS components play a role in practically every subsystem making the process of converting sunlight into electricity possible.

Power Generation

Sunlight is made up of tiny packets of energy called photons. When sunlight reaches solar panels, the photons collide with semiconductors built into the panels. Their energy frees electrons in the semiconductor material creating direct current (DC) electricity.

Energy Inversion & Conditioning

Inverters and conditioners play a very important role in the process of converting sunlight into usable energy. At this stage, the DC electricity that is initially captured is turned into alternating current (AC) electricity so that it can more easily be transmitted and stored.

Energy Storage

While some AC electricity may be immediately transmitted, there is often a need to store this energy for use during peak hours or at night when solar energy cannot be collected. Batteries and other electromechanical storage units are among the most common devices used.

Energy Distribution

Naturally, a solar operation's income is derived from its ability to effectively and efficiently deliver electricity to the grid. In addition to the systems and components that enable distribution, metering and measuring devices also play an important role in this final stage of the process.