

Photovoltaic solar energy

Solar energy can be harnessed in two primary ways. First, photovoltaics (PVs) are semiconductors that generate electricity directly from sunlight. Second, solar thermal technologies utilize sunlight to heat water for domestic uses, warm building spaces, or heat fluids to drive electricity-generating turbines. Solar technologies generated 3.9% of U.S. electricity in 2023¹, with two-thirds from utility scale solar².

Photovoltaics (PV) is the conversion of light into electricity using semiconducting materials that exhibit the photovoltaic effect, a phenomenon studied in physics, photochemistry, and electrochemistry. The photovoltaic effect is commercially used for electricity generation and as photosensors.

A photovoltaic system employs solar modules, each comprising a number of solar cells, which generate electrical power. PV installations may be ground-mounted, rooftop-mounted, wall-mounted or floating. The mount may be fixed or use a solar tracker to follow the sun across the sky.

The term "photovoltaic" comes from the Greek φῶς (phōs) meaning "light", and from "volt", the unit of electromotive force, the volt, which in turn comes from the last name of the Italian physicist Alessandro Volta, inventor of the battery (electrochemical cell). The term "photovoltaic" has been in use in English since 1849.^[12]

In 1989, the German Research Ministry initiated the first ever program to finance PV roofs (2200 roofs). A program led by Walter Sandtner in Bonn, Germany.^[13]

In 1994, Japan followed in their footsteps and conducted a similar program with 539 residential PV systems installed.^[14] Since, many countries have continued to produce and finance PV systems in an exponential speed.

Photovoltaics are best known as a method for generating electric power by using solar cells to convert energy from the sun into a flow of electrons by the photovoltaic effect.^{[15][16]}

Photovoltaic module power is measured under standard test conditions (STC) in "Wp" (watts peak).^[21] The actual power output at a particular place may be less than or greater than this rated value, depending on geographical location, time of day, weather conditions, and other factors.^[22] Solar photovoltaic array capacity factors are typically under 25% when not coupled with storage, which is lower than many other industrial sources of electricity.^[23]

Contact us for free full report

Web: <https://www.sumthingtasty.co.za/contact-us/>

Email: energystorage2000@gmail.com

WhatsApp: 8613816583346

