

Solar Facts & Figures

Photo-Voltaic (PV) Panels

- When individual Photo-Voltaic cells, most commonly made of Silicon, are exposed to sunlight, they convert the solar energy into electric current.
- Silicon is the second-most abundant element in the Earth's crust (after Oxygen). However, to be useful as a semiconductor material in solar cells, Silicon must be refined to a purity of 99.9999%. [\[1\]](#)
- These solar cells are linked in series to make up modules or panels of a specified power output, which are in turn connected to make up arrays that are combined with other components to form a PV system.
- The cells in a PV panel produce DC voltage. Inverters are then used to convert the DC power produced by the panels to the more common AC power typically used in our daily lives for lighting, heating and cooling and many other applications.
- Solar cells have no moving parts, so they are highly reliable and long-lasting devices. PV solar panels **make no pollution and use no water**.
- Panels facing south are best for total output. East or West-facing panels can work but give 10% less energy. [\[2\]](#)
- Conversion Efficiency measures the percentage of solar energy that a PV cell or panel converts to electrical energy, or usable electricity. At present, this typically ranges from as low as 9% to almost 20% in commercially-available panels.
- The three most common types of Silicon-based PV panels are: [\[3\]](#)

Mono-Crystalline



[\[4\]](#)

**Poly-Crystalline
or Multi-Crystalline**



[\[5\]](#)

**Amorphous
or Thin-Film**



[\[6\]](#)

- Other types of non-Silicon thin-film solar cells are made of Copper Indium Diselenide (CIS), Cadmium Telluride (CdTe), and high-efficiency Gallium Arsenide (GaAs). [\[7\]](#)