

# How high is the conversion efficiency of photovoltaic panels



## Overview

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A panel with 20% efficiency converts one-fifth of incoming solar energy into electrical power. Improving this conversion efficiency is a key goal of research and helps make PV technologies cost-competitive with. NLR maintains a chart of the highest confirmed conversion efficiencies for research cells for a range of photovoltaic technologies, plotted from 1976 to the present. This is an interactive version of that chart. Due to the many advances in photovoltaic technology over the last decade, the average panel conversion efficiency has increased from 15% to over 24%. Solar energy can be harnessed two primary ways: photovoltaics (PVs) are semiconductors that generate electricity directly from sunlight, while solar thermal technologies use sunlight to heat water for domestic uses, to warm buildings, or heat fluids to drive electricity-generating turbines.

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### Solar Panel Efficiency Explained: What It Is and Why It ...

Learn what solar panel efficiency means, why it matters in 2025, and how to choose the best panels for your home.

### Interactive Best Research-Cell Efficiency Chart , Photovoltaic ...

A chart of the highest confirmed conversion efficiencies for research cells for a range of photovoltaic technologies, plotted from 1976 to the present. The chart displays record research cell ...



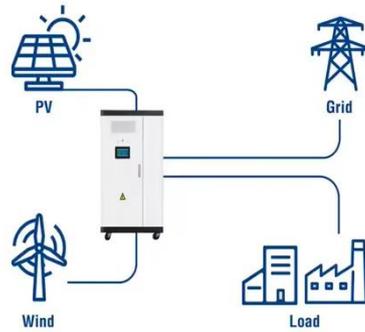
### Solar Performance and Efficiency

The conversion efficiency of a photovoltaic (PV) cell, or solar cell, is the percentage of the solar energy shining on a PV device that is converted into usable electricity. Improving this conversion efficiency is ...

## Solar Panel Efficiency Explained: How to Choose High-Performance ...

Solar panel efficiency measures the percentage of sunlight that converts to electricity. A panel with 20% efficiency converts one-fifth of incoming solar energy into electrical power. The remaining 80% ...

### Utility-Scale ESS solutions



## Solar-cell efficiency

As of 2024, the world record for solar cell efficiency is 47.6%, set in May 2022 by Fraunhofer ISE, with a III-V four-junction concentrating photovoltaic (CPV) cell. [7][8] This beat the previous record of ...

## Solar Panel Efficiency and PV Conversion Efficiency

Solar panel efficiency for a photovoltaic panel is an indication of its performance in converting sunlight into electricity. The efficiency of solar panels has improved dramatically in recent years, increasing ...



## The most efficient solar panels in 2026

Today, most panels are at least 20%



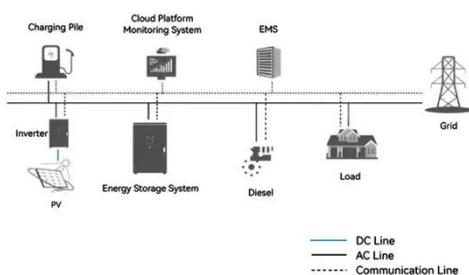
efficient, but the best ones convert over 22% of the sun's energy into electricity. After reviewing hundreds of solar panel models, we found five brands ...

## Solar PV Energy Factsheet

PV conversion efficiency measures the percentage of solar energy converted to electricity. 7 While most available solar panels achieve ~20% efficiency, 8 researchers have developed modules approaching ...



### System Topology



## Most efficient solar panels 2025

Solar panel efficiency is the amount of sunlight (solar irradiance) that falls on the surface of a solar panel and is converted into electricity. Due to the many advances in photovoltaic ...

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