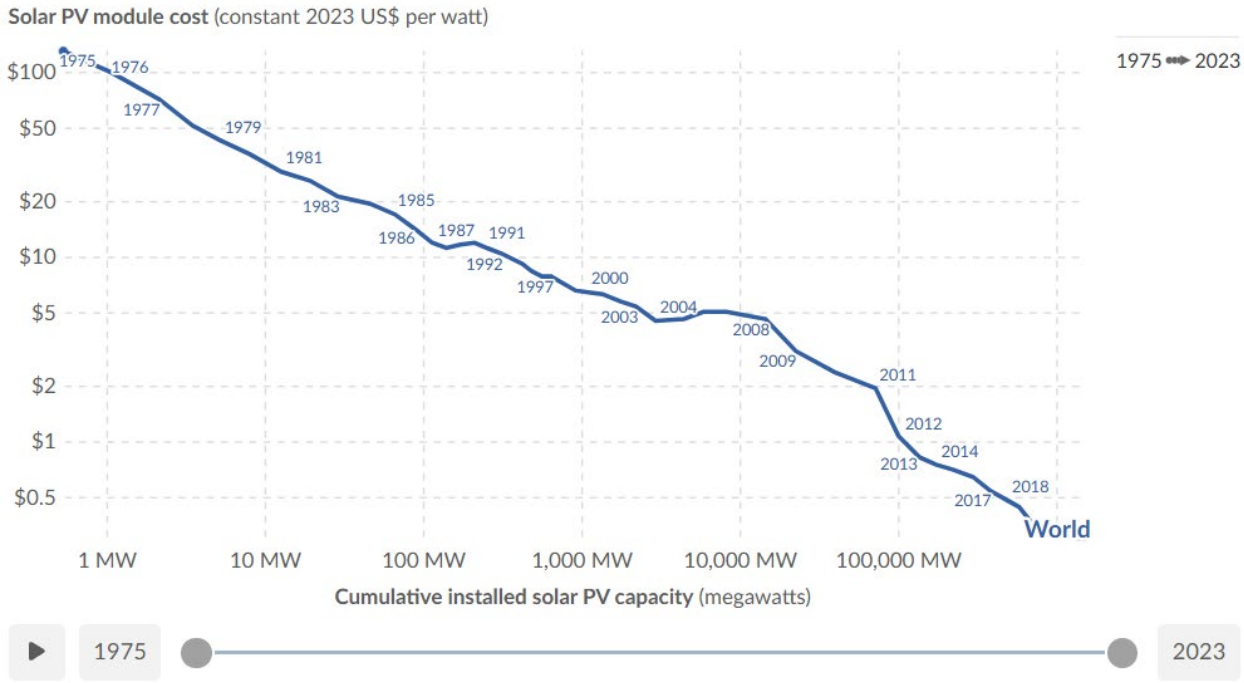
Projections for Solar Energy Development in the United States

Solar energy is poised for significant growth in the United States over the coming decades. Driven by technological advancements, decreasing costs, and supportive policies, solar power is expected to become an increasingly dominant source of renewable energy. According to the U.S. Department of Energy, solar energy could supply up to 40% of the nation's electricity by 2035 if current trends continue.

One of the primary factors behind this growth is the declining cost of photovoltaic (PV) panels and solar energy storage systems. Over the past decade, the cost of solar power has dropped by more than 80%, making it one of the most affordable energy sources available. Additionally, improvements in battery technology and grid integration are enhancing the reliability and efficiency of solar power, addressing one of its traditional limitations—intermittency.



Government policies and incentives are also playing a critical role in driving solar energy expansion. The Inflation Reduction Act (IRA) of 2022, for instance, extended tax credits for solar installations and provided funding for research and development in renewable energy. However, many of these subsidies are expected to expire or be withdrawn over the next few years. Many states have also implemented renewable portfolio standards (RPS) that mandate a certain percentage of electricity generation from renewable sources, further encouraging solar adoption.

Key Facts

- The world currently has a cumulative solar energy capacity of 850.2 GW (gigawatts).
- 4.4% of our global energy comes from solar power.
- China generates more solar energy than any other country, with a current capacity of 308.5 GW.
- The US relies on solar for 3.9% of its energy, although this share is increasing rapidly every year.
- 3.2 million US homes have solar panels installed.
- 3,975,096 people are employed in the solar industry worldwide, and 263,883 of these are in the United States.
- The solar energy industry created more new jobs in the US than any other energy subsector last year.
- It would take around 18.5 billion solar panels to produce enough energy to power the entire US.

Utility-scale solar projects are expected to lead the expansion, with large solar farms being constructed across the country. The U.S. Energy Information Administration (EIA) projects that solar capacity additions will outpace those of other energy sources, contributing significantly to the national energy grid. Residential and commercial solar installations are also expected to grow, driven by incentives, net metering policies, and increasing consumer awareness.

Despite its promising outlook, challenges remain for solar energy development. Land use concerns, supply chain disruptions, and the need for grid modernization must be addressed to sustain long-term growth. However, with continued innovation and policy support, solar energy is expected to play a key role in the U.S. transition to a clean and sustainable energy future.