

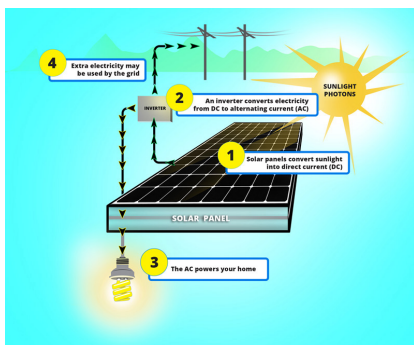
Solar Energy



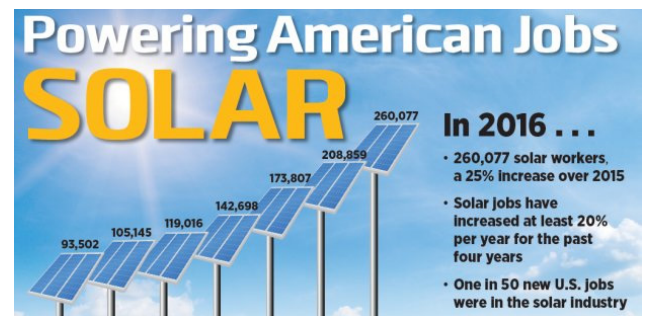
Solar energy has long been the poster child of the renewable energy movement. Yet for decades, solar power was an idea confined to drawing boards: clunky, expensive, and uncompetitive against fossil fuels. However, the solar market has recently exploded due to technological innovation, becoming more efficient and less expensive. America's solar industry has a bright future ahead

Overview

- Solar panels have **two main components**: photovoltaic cells, which capture the sun's energy and turn it into direct current (DC) energy, and a solar inverter which turns that DC energy into alternative current (AC) energy used in households.



- After tax credits, average home solar installations cost \$11,144 to \$14,696. However, over 20 years, homeowners could see **over \$15,000 in energy cost savings** from solar panels.
- Installation of residential solar panels has **increased 35-fold** since 2008.



- A big advantage of solar is **versatility**. Solar power can be converted into both electricity and heat, and can supply power to off-grid rural homes.

The Economics

- Jobs in manufacturing, installation, and maintenance of solar panels have increased by 160% since 2010, which is **9 times the national job growth rate**.
- From 2008 to 2018, the cost of residential solar energy **dropped from \$8/watt to below \$2/watt**.
- If solar energy continues its current economic trend, the cost could further **decrease by 65% by 2050**, reducing emissions by 6 billion metric tons worldwide.

Current Standing in the U.S.

- Solar energy has increased from below 0.1% of U.S. energy generation in 2010 to **more than 3% today**.

Challenges

- Solar panels only produce energy during sunlight hours. Batteries are expensive and unable to store much energy (only 10kWh).
- Location determines **how effective solar energy for a home will be**. Hours of daylight, roof space, and high installation costs are all impediments.
- Chemicals which make up the photovoltaic cells of solar panels are highly toxic, and **responsible disposal** of dated solar panels presents a separate environmental challenge.

What's Next for Solar?

- Solar is an abundant, clean energy source that will play an important role in energy's future. We expect more innovation to emerge from the market, such as battery storage improvements and less toxic panels. **Targeted investment and regulatory streamlining** can achieve this. Ultimately, if solar continues its growth, it will provide clean energy to **millions of U.S. homes and businesses**.