

Solar panel efficiency chart over time





Overview

NREL maintains a chart of the highest confirmed conversion efficiencies for research cells for a range of photovoltaic technologies, plotted from 1976 to the present. Learn how NREL can help your team with certified efficiency measurements. Access our research-cell efficiency data. [DOWNLOAD CHART](#) When did solar panels become more efficient?

Hoffman continued to improve upon the solar efficiency of their commercial solar cell each year until 1960, when they were finally able to achieve 14% efficiency. Since then, the average efficiency of solar panels has slowly increased, with new types of solar cells being introduced along the way. What is the efficiency of solar panels today?

.

How efficient are solar panels?

2015: SunPower hits an efficiency of 22.8% with their commercial solar cells made from silicon. 2016: SunPower breaks their previous record with a commercial silicon solar panel that has 24.1% efficiency. 2019: Solar Frontier achieves an efficiency of 23.35% in their thin-film solar cell technology.

What does 'solar panel efficiency' mean?

What does 'solar panel efficiency' mean?

'Solar panel efficiency' refers to the amount of naturally occurring light a solar panel can convert into electricity in standard test conditions, which is a set of environmental factors used across the industry to measure efficiency.

How have solar panels cost and efficiency changed over time?

Let's take a look at how solar panel cost and efficiency have changed over time. Solar panels are about 60% cheaper and 40% more efficient than they were in 2010. Solar panels in 2010 cost about \$8.70 per watt and were about 15% efficient. Today, solar panels cost about \$3.00 per watt on average and



are between 19% and 22% efficient.

How long do solar panels last?

Yes, manufacturers give warranties that facilitate panels to retain at least 97.5% efficiency after one year and 85% approximately after 25 years.

However, the efficiency drop is different for every solar brand. To sum up, the gradual decline in efficiency or degradation impacts the long-term performance of solar panels.

How efficient are rooftop solar panels?

The first ever functioning rooftop solar panels were installed atop a New York City rooftop in 1883 – and had an energy conversion rate of a mere 1%. By 2010, solar panels had efficiency ratings of around 15%. Nowadays, most monocrystalline solar panels have efficiency ratings between 19% and 22%.



Solar panel efficiency chart over time



[The Evolution and Future of Solar Panel Efficiency](#)

Efficiency of Solar Panels Over Time: This chart shows the improvement in the efficiency of solar panels from 1954 to 2023. The data points represent significant milestones in solar panel technology, demonstrating the ...

[Solar Panel Lifespan and Degradation Curve](#)

Besides the warranty duration and its power output guarantee, there is one other important aspect of solar panel power warranty: the rate of power degradation, which is defined as the decline in power output over a ...



Efficiency of solar PV, then, now and future - Solar ...

The figure below presents data accumulated and published at the National Center for Photovoltaics under NREL and shows the efficiency for various solar PV technologies under development and research over time.

[How Has The Price And Efficiency Of Solar Panels](#)

The evolution of residential solar over the last decade has been astonishing, to say the least. In 2025, solar panels are cheaper and more



efficient than ever! Solar panels becoming more affordable will be a key player in the expansion of ...



[Top 10 Most Efficient Solar Panels of 2025 \(Ranked ...\)](#)

Solar panel efficiency refers to how effectively a panel converts sunlight into usable electricity. Higher efficiency means more power from less space, which is crucial for businesses aiming to maximise energy production ...



[The most efficient solar panels in 2025](#)

Most solar panels are at least 20% efficient, but the best ones are over 22% efficient. We reviewed the efficiency ratings of hundreds of home solar panel models and found that five brands stood out: Maxeon, Qcells, ...



[How quickly are solar panels improving? \[2025\]](#)

That's why it's a great idea to consider how rapidly solar panel and battery technology is developing, so you can buy the best products possible. In this guide, we'll run through the ways in which the efficiency, durability, ...





[The Increase in Solar Panel Efficiency Over Time](#)

Below, you'll find a timeline by Solar Power Guide of how solar panel efficiency over time has increased thanks to new emerging technologies and the tireless work of researchers and scientists in the field.



[Solar Panel Degradation Over 25 Years: Long-Term...](#)

Solar panel degradation refers to the gradual decline in performance and efficiency of solar panels over time. Understanding the degradation rates is crucial for assessing the long-term performance and ...

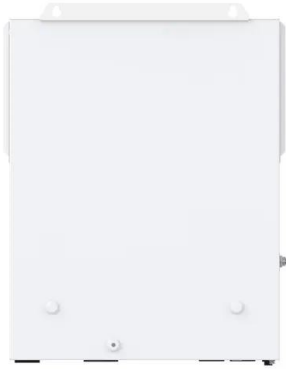
[How Temperature Affects Your Solar Panel Output ...](#)

Temperature plays a pivotal role in your solar panel's performance, directly impacting your energy savings and return on investment. While solar panels harness sunlight efficiently, their power output typically ...



[A Timeline of Solar Panel Efficiency Over Time](#)

Solar panel efficiency began at less than 1% with the invention of the first solar cell. According to this infographic by the team at Solar Power Guide, Charles Fritts created a solar cell in 1883 out of selenium and a thin ...



Contact Us

For catalog requests, pricing, or partnerships, please visit:
<https://solar360.co.za>