

Cost of solar over time





Overview

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IRENA presents solar photovoltaic module prices for a number of different technologies. Here we use the average yearly price for technologies 'Thin film a-Si/u-Si or Global Price Index (from Q4 2013)'. This data is expressed in US dollars per watt, adjusted for inflation. IRENA (2025); Nemet.

One of the most transformative changes in technology over the last few decades has been the massive drop in the cost of clean energy. Solar photovoltaic costs have fallen by 90% in the last decade, onshore wind by 70%, and batteries by more than 90%. These technologies have followed a “learning.

The cost of solar panels has dramatically decreased over the past few decades, making solar energy more accessible. In the early 1970s, solar panels cost around \$100 per watt, restricting their use to specialized applications. By the 2000s, advancements in technology and manufacturing reduced.

Data is now available through the .Stat Data Explorer, which also allows users to export data in Excel and CSV formats. IEA. Licence: CC BY 4.0 Evolution of solar PV module cost by data source, 1970-2020 - Chart and data by the International Energy Agency.

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.



The average cost of residential solar has decreased by about 69% since 2003. The Residential Clean Energy Credit is a 30% tax credit off the cost of a solar system through 2034. In 2004, solar panels cost \$10.28 per watt, compared to \$3.25 per watt in 2024. Ready to go solar?

Call 877-307-7668 to. How have solar panels cost and efficiency changed over time?

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How much does a solar panel cost?

Today's premium monocrystalline solar panels typically cost between 30 and 50 cents per Watt, putting the price of a single 400-watt solar panel between \$120 to \$200, depending on how you buy it. Less efficient polycrystalline panels are typically cheaper at \$0.25 per Watt. The cost of a solar panel also depends on how you buy it.

How much did solar panels cost in 2022?

The installed price of residential solar panel systems dropped by 26% over the last decade - from 5.7 \$/W in 2013 to 4.2 \$/W in 2022. Solar PV module prices dropped by 51% over the last decade - from 0.99 \$/W in 2013 to 0.49 \$/W in 2022. Since 2000 solar PV module prices have dropped by a massive 90%.

How has solar power changed over time?

Both are measured on logarithmic scales, and the trend follows a straight line. That means the fall in cost has been exponential. Costs have fallen by around 20% every time the global cumulative capacity doubles. Over four decades, solar power has transformed from one of the most expensive electricity sources to the cheapest in many countries.

How much does a solar panel cost in 2025?

We also consider these data points in our solar panel scoring criteria. In 2025, the average cost of a solar installation is about \$19,000, or \$3.00 per watt, before any incentives are factored in. The industry standard for efficiency is between 19% and 22%, but we're beginning to see more panels with



efficiency ratings above 22%.

Are solar panels cheaper?

Graph of solar panel prices over time (logarithmic scale) In many parts of the world, it is already cheaper to generate electricity using solar technologies than using traditional methods such as nuclear or thermal power plants fired by coal and natural gas. This can be considered an unqualified success.



Cost of solar over time



[Cost of Solar Panels Over Time - Power World Analysis](#)

The cost of solar has never been lower than it is right now. #1 Total installation cost Installing solar currently costs around \$3 to \$4 per watt before incentives. That before incentives bit is important, as all the federal and state tax credits ...

[The Cost of Going Solar , SaveOnEnergy](#)

According to Solar Energy Industry Association (SEIA) data, the cost of residential solar panels decreased by 68.4% from 2004 to 2024. This significant price decline makes solar panels more attainable for homeowners ...

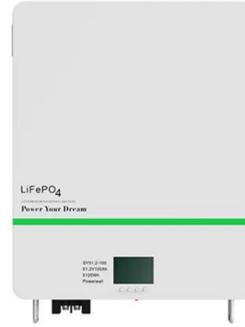


[Levelized cost of energy for renewables](#)

Solar (photovoltaic) panel prices Solar (photovoltaic) panel prices vs. cumulative capacity Solar (photovoltaic) panels cumulative capacity Solar and wind power generation Solar energy generation by region Solar energy generation vs. ...

The price of batteries has declined by 97% in the last ...

Large reductions in the cost of renewable technologies such as solar and wind have made them cost-competitive with fossil fuels. But to balance these intermittent sources and electrify our transport systems, we also need ...



[Why has Solar Energy Become Cheaper Over Time?](#)

The cost of solar energy has experienced a significant decline over the past few decades, making it an increasingly attractive option for homeowners, businesses, and governments alike. In the 1970s, solar panels ...



[Solar Panel Prices Over Time , Cladco](#)

In this article we examine solar panel prices over time. As well as looking at the installed cost of solar panels over time we also look at the trend in the price of solar PV modules - the biggest factor influencing installed costs.



[Utility-Scale Solar , Energy Markets & Policy](#)

PPA prices have largely followed the decline in solar's LCOE over time, but newly signed longer-term PPA prices have increased since 2021, to an average of \$35/MWh (levelized, in 2023 dollars). Solar's average energy and capacity ...





[Cost of Solar Panels Over Time: Trends and Insights](#)

Cost of Solar Panels Over Time: Trends and Insights As of 2025, the average cost of a 4kW solar panel system, suitable for most UK homes, ranges from £5,000 to £6,000. Discover how solar ...



[Solar Photovoltaic System Cost Benchmarks](#)

The U.S. Department of Energy's solar office and its national laboratory partners analyze cost data for U.S. solar photovoltaic systems to develop cost benchmarks to measure progress towards goals and guide research and development ...

[New report reveals the cost of solar panels has ...](#)

EnergySage has released its 20th semiannual report, showing that residential solar panel prices hit an all-time low in 2024. Analyzing millions of transaction-level data points from homeowners on EnergySage, it highlighted ...



[Latest Solar Price Chart and Dashboardo Carbon Credits](#)

LCOE (Levelized Cost of Electricity) is a key metric used to compare the cost of generating electricity from different energy sources, including solar PV, wind, fossil fuels, and nuclear power. It represents the total lifetime cost of a power ...



[Documenting a Decade of Cost Declines for PV Systems](#)

As in previous years, soft costs remain a large and persistent portion of installation costs, for both solar and storage systems, and especially for commercial and residential systems. "A significant portion of the cost declines ...

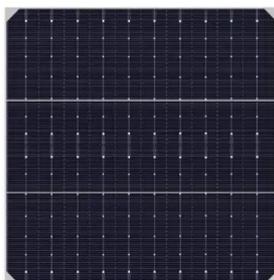


History of solar energy prices

How did solar become so cheap? In 1975, the first solar panels cost about \$115.3 per watt. By 2010, this price was already \$2.15 per watt, and by 2021 it will be only \$0.27 per watt. We are witnessing a significant reduction in ...

[How Solar Panel Cost and Efficiency Changed Over ...](#)

How Solar Panel Cost and Efficiency Changed Over Time Contrary to popular belief, solar power technology has been around for a while. It has had several upgrades throughout time, making it more economical and effective for both ...



How Has The Price And Efficiency Of Solar Panels Changed ...

First, you can use an online solar cost calculator, like this one powered by solar . Simply punch in your address and your average monthly electricity bill, and the calculator will give you a side-by-side comparison of the ...



[Learning curves: What does it mean for a technology ...](#)

Solar technology: an example of a technology that follows Wright's Law The time series in the chart shows the deployment of solar panels on the horizontal axis and the price of solar panels on the vertical axis. The ...



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