

# Cost of solar over time kwh





## Overview

---

Recent market data reveals that solar PV economics have shifted dramatically, with average costs dropping from \$0.30/kWh in 2010 to \$0.05-0.15/kWh in 2023, depending on location, system size, and installation parameters.

Recent market data reveals that solar PV economics have shifted dramatically, with average costs dropping from \$0.30/kWh in 2010 to \$0.05-0.15/kWh in 2023, depending on location, system size, and installation parameters.

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.

Each year, the U.S. Department of Energy (DOE) Solar Energy Technologies Office (SETO) and its national laboratory partners analyze cost data for U.S. solar photovoltaic (PV) systems to develop cost benchmarks. These benchmarks help measure progress toward goals for reducing solar electricity costs.

Evolution of solar PV module cost by data source, 1970-2020 - Chart and data by the International Energy Agency.

As of 2025, the average cost of residential solar panels in the U.S. is between \$15,000 and \$25,000 before incentives. This typically translates to about \$2.50 to \$3.50 per watt of installed capacity (more on price per watt below). The total price depends on your system size, location, roof type.

This dashboard provides an overview on the latest Solar PV costs.

NREL analyzes the total costs associated with installing photovoltaic (PV) systems for residential rooftop, commercial rooftop, and utility-scale ground-mount systems. This work has grown to include cost models for solar-plus-storage systems. NREL's PV cost benchmarking work uses a bottom-up. How



much does solar cost per watt?

The price per watt for larger and relatively straightforward projects are often within the \$3-\$4 range. Claiming incentives like tax credits and rebates can bring the PPW even lower. However, the following factors may push your solar price per watt into the \$4 to \$5 range.

Is home solar more affordable than paying for utility electricity?

Although home solar is already more affordable than paying for utility electricity, there are a few ways to reduce the cost of your system and maximize your energy cost savings. First, there are solar incentives offered by federal, state, and local governments, in addition to utility providers.

How much does home solar cost?

The average pre-incentive cost of home solar is \$29,161 for a three-bedroom house, or \$20,412 after claiming the 30% tax credit. However, as shown in the chart below, the number of bedrooms isn't a great indicator of the size and cost of a solar system – and neither is living space, for that matter.

How much does a 5000 watt solar system cost?

A fully installed solar system typically costs \$3 to \$5 per watt before factoring in incentives like the 30% tax credit. Using this measurement, 5,000 Watt solar system (5 kW) would have a gross cost between \$15,00 and \$25,000. The price per watt for larger and relatively straightforward projects are often within the \$3-\$4 range.

How much does solar installation cost?

Installation labor accounts for around 5.5% of the total cost of a residential solar project, according to a report from the National Renewable Energy Laboratory. That amounts to \$1,375 for a \$25,000 solar project.

How much do solar panels cost per square foot?

However, the cost per square foot varies based on the size of the home and unique variables found in every installation. For example, the post-tax credit cost of solar panels for a 2,500-square-foot home is around \$20,000 for a rate of \$7.96 per square foot. But how much do solar panels cost for a 1,500-square-foot home?



## Cost of solar over time kwh

---

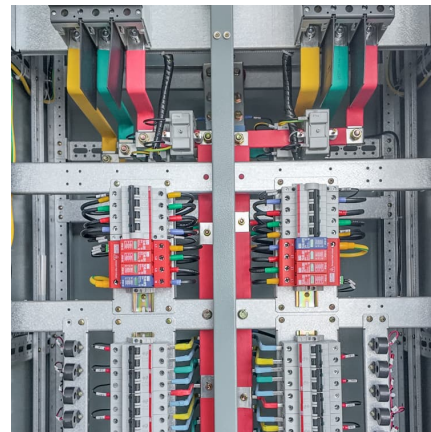


### [Solar Photovoltaic System Cost Benchmarks](#)

These benchmarks help measure progress toward goals for reducing solar electricity costs and guide SETO research and development programs. Read more to find out how these cost ...

### [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 ...



### [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 ...

### **Solar costs: a breakdown over time?**

Solar costs: a breakdown over time? Solar costs have deflated by 70% in the past decade to \$800/kW in 2025. 60% has been the scale-up to mass manufacturing, and 40% has been rising



efficiency of solar modules.



### Solar costs: a breakdown over time?

Solar costs: a breakdown over time? Solar costs have deflated by 70% in the past decade to \$800/kW in 2025. 60% has been the scale-up to mass manufacturing, and 40% has been ...

### [Solar Installed System Cost Analysis , Solar Market ...](#)

NREL analyzes the total costs associated with installing photovoltaic (PV) systems for residential rooftop, commercial rooftop, and utility-scale ground-mount systems.



### Solar PV Cost Per kWh: Real Numbers That Drive ROI in 2024

The cost of solar PV per kWh varies significantly across different regions due to multiple geographic and environmental factors. Solar irradiance levels play a primary role, with ...



### **How much does solar power cost per kilowatt-hour? , NenPower**

Several elements influence the cost of solar energy per kilowatt-hour. These include the type of installation (residential vs. commercial), geographical location, equipment ...



### **Solar (photovoltaic) panel prices**

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)'.

### **Solar Installed System Cost Analysis , Solar Market Research**

NREL analyzes the total costs associated with installing photovoltaic (PV) systems for residential rooftop, commercial rooftop, and utility-scale ground-mount systems.



### **2025 Solar Panel Costs: Ultimate Guide to Pricing and Savings**

Another measure of the relative cost of solar energy is its price per kilowatt-hour (kWh). Whereas the price per watt considers the solar system's size, the price per kWh shows ...



### Solar (photovoltaic) panel prices

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 ...



### [Solar Photovoltaic System Cost Benchmarks](#)

These benchmarks help measure progress toward goals for reducing solar electricity costs and guide SETO research and development programs. Read more to find out how these cost benchmarks are modeled and download the ...

### 2025 Solar Panel Costs: Ultimate Guide to Pricing and Savings

Costs Global Trends Global LCOE and Auction values Wind Costs Energy Transition WETO Energy Supply WETO Energy Demand WETO Power Generation and ...





## Contact Us

---

For catalog requests, pricing, or partnerships, please visit:  
<https://conrad.edu.pl>