

Construction cost per kilowatt of wind solar and energy storage





Overview

How much does it cost to build a solar power plant?

The agency found that natural gas-fired utility construction costs were \$820 per kilowatt in 2022, while solar power construction costs were \$1,588 per kilowatt and wind power construction costs were \$1,451 per kilowatt.

Are wind and solar construction costs higher than gas-fired construction costs?

As seen below, wind and solar construction costs have been much higher than gas-fired construction costs for the entire timeline shown: 2013 through 2022. The gas-fired power costs are a combination of combined cycle, internal combustion engine, and turbine technology.

Are national gas plants more expensive than wind and solar?

On average, construction costs for national gas plants have been lower than for wind or solar from 2013 through 2022. The increase in wind and solar construction costs in 2022 reverses the trend of declining costs for those sources.

How much does solar cost per kilowatt (kW)?

Discussion of additional cost information and trends is available in our Short-Term Energy Outlook. Solar Average U.S. solar construction costs across all solar panel types increased 1.7% to \$1,588 per kilowatt (kW) in 2022.

How much does it cost to build a wind farm?

Average construction costs for wind farms with 1 MW to 100 MW of capacity decreased by 22% to \$1,949/kW in 2021. The average construction cost for natural gas-fired generators fell 18% between 2020 and 2021. The decrease in average cost for natural gas-fired generators was driven primarily by decreases in the cost for combustion turbines.

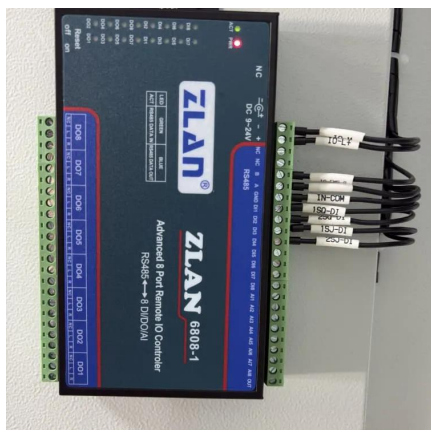
How much did solar cost in 2020?



Average solar construction costs were the only one of the three dominant resources to fall in 2020, decreasing nearly 8 percent to \$1,655 per kilowatt (kW) of capacity. Natural gas-fired CCGT construction costs, meanwhile, increased 22 percent



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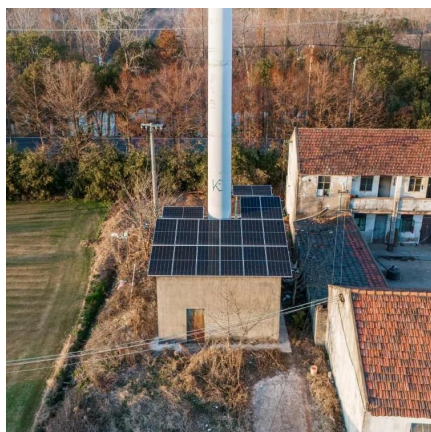


[US wind and solar construction costs rise, natural gas drops.](#)

These changes in construction costs for solar, wind, and natural gas projects in the U.S. are significant for the energy industry. The slight increases in solar and wind construction ...

[Cost and Performance Characteristics of New Generating ...](#)

The input value used for onshore wind in AEO2023 was \$1,566 per kilowatt (kW), and for solar PV with tracking, it was \$1,443/kW, which represents the cost of building a plant excluding ...



EIA: Construction Costs for Gas-fired Power Stay Well Below Solar, Wind

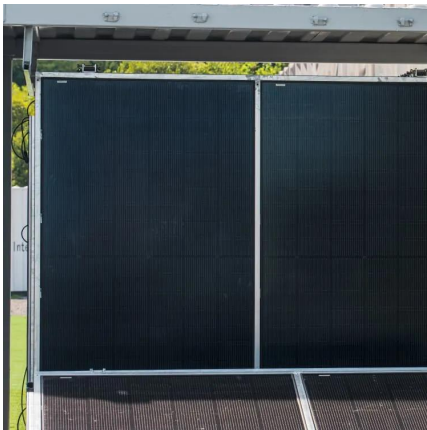
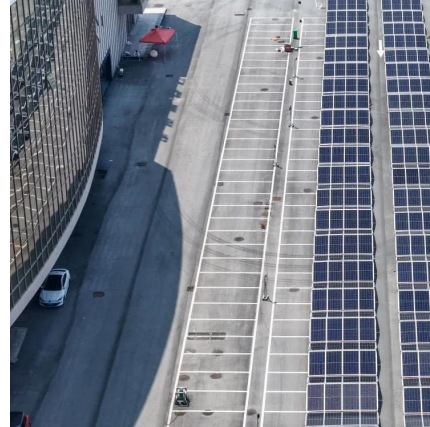
Gas-fired utility construction cost \$820 per kilowatt-hour (kWh) produced in 2022. Solar and wind construction cost \$1,588 and \$1,451 per kWh for the same year. A further EIA ...

[EIA: U.S. wind and solar construction costs rose slightly in 2022](#)

Average construction costs for solar generators increased by 1.7% in 2022, and for wind turbines they increased by 1.6%. These three



technologies -- solar, wind and natural gas ...



[Morning Mull: Relative Construction Costs and Land use of Solar, Wind](#)

By comparison, there is a range of only \$500 per kW construction cost difference between the three resources. Of course, over a 100-MW project that might be a total \$500 million more ...

[U.S. construction costs rose slightly for solar and wind, dropped ...](#)

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