

How much electricity can be provided by covering the roof with solar panels





Overview

If the world covered every suitable roof with solar panels, it could supply 2/3 of humanity's total electricity consumption – allowing the globe to transition completely off of fossil electricity generation, according to a new study out of the University of Sussex. How much electricity does rooftop solar provide?

It took into account roof slope, shading from other buildings, and so on. It found that rooftop solar could provide a total of 19,483TWh of electricity, which is about 2/3 of global electricity use (which was 29,664TWh in 2023).

Should solar panels cover all roofs?

This means if the world covered every roof with sun-tracking panels, it couldn't just cover 2/3 of electricity production, but all of it. It also doesn't cover the potential of large grid-tied solar projects, just rooftops.

Can solar power be installed on a new roof?

If even a small fraction of these new roofs had solar installations, it could have a significant impact on U.S. solar power generation. For individual rooftops, national laboratories and private companies have developed a number of tools to estimate the amount of solar that could be installed on a given rooftop.

Could solar conversion efficiency improve the rooftop potential?

With improvements in solar conversion efficiency, the rooftop potential in the country could be even greater. Residential and other small rooftops represent about 65% of the national rooftop potential, and 42% of residential rooftops are households with low-to-moderate income.



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