



This is the print version of the [Skeptical Science](#) article '[Solar panels don't work in cold or cloudy climates](#)', which can be found at <http://sks.to/solarclouds>.

Do solar panels work in cold or cloudy climates?

What The Science Says:

[here](#) Solar panels generate energy even in cloudy or cold conditions, with cold temperatures actually increasing solar panel efficiency by increasing voltage.

Climate Myth: Solar panels don't work in cold or cloudy climates

"A cloud goes over and solar plummets" ([Atomic Insights](#))

Solar panels generate energy even in cloudy or cold conditions¹ (also Ramli et al. 2016). Although cloudy weather may reduce power generation by as much as 45%, substantial energy can still be generated during those conditions (Ramli et al. 2016 and Makrides et al. 2012).

Furthermore, in most instances, cold temperatures do not reduce electricity output at all—and actually increase solar panel efficiency by increasing voltage² (also Sarmah et al. 2023). Crystalline silicon cells, which comprise approximately 84% of the U.S. market, and cadmium telluride cells, which comprise approximately 16% of the U.S. market, actually perform better in colder weather². Only amorphous silicon cells, which represent a negligible percentage of the U.S market, experience decreased performance in colder temperatures.

Footnotes:

[1] [What happens to solar panels when it's cloudy or raining?](#) Solar Energy Industries Association (last visited March 25, 2024)

[2] [Solar Photovoltaics: Supply Chain Deep Dive Assessment](#), U.S. Dep't of Energy, Feb. 24, 2022, at iii

This rebuttal is based on the report "[Rebutting 33 False Claims About Solar, Wind, and Electric Vehicles](#)" written by Matthew Eisenson, Jacob Elkin, Andy Fitch, Matthew Ard, Kaya Sittinger & Samuel Lavine and published by the [Sabin Center for Climate Change Law](#) at Columbia Law School in 2024. Skeptical Science sincerely appreciates Sabin Center's generosity in collaborating with us to make this information available as widely as possible.

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