

# Natural gas usage will have little effect on CO2 emissions, research finds

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Credit: Alfred Palmer/Wikipedia

Abundant supplies of natural gas will do little to reduce harmful U.S. emissions causing climate change, according to researchers at UC Irvine, Stanford University, and the nonprofit organization Near Zero. They found that inexpensive gas boosts electricity consumption and hinders

expansion of cleaner energy sources, such as wind and solar.

The study results, which appear Sept. 24 in the journal *Environmental Research Letters*, are based on modeling the effect of high and low gas supplies on the U.S. power sector. Coal-fired plants, the nation's largest source of power, also produce vast quantities of carbon dioxide, the main greenhouse gas polluting the Earth's atmosphere. Recently proposed rules by the U.S. Environmental Protection Agency rely heavily on the substitution of [natural gas](#) for coal to lower [carbon emissions](#) by 2030.

"In our results, abundant natural gas does not significantly lower [greenhouse gas emissions](#). This is true even if no methane leaks during production and shipping," said lead author Christine Shearer, a postdoctoral scholar in Earth system science at UC Irvine.

Previous studies have focused on the risk of natural gas – composed primarily of methane – leaking into the atmosphere from wells and pipelines. But the new work shows that even if no methane escapes, the overall climate benefits of gas are likely to be small because its use delays the widespread construction of low-carbon energy facilities, such as solar arrays. Analyzing a range of climate policies, the researchers found that high gas usage could actually boost cumulative emissions between 2013 and 2055 by 5 percent – and, at most, trim them by 9 percent.

"Natural gas has been presented as a bridge to a low-carbon future, but what we see is that it's actually a major detour. We find that the only effective paths to reducing greenhouse gases are a regulatory cap or a carbon tax," Shearer said.

She and her co-authors conclude that greater use of gas is a poor strategy for clearing the atmosphere.

"Cutting [greenhouse gas](#) emissions by burning natural gas is like dieting by eating reduced-fat cookies," said Steven Davis, assistant professor of Earth system science at UC Irvine and the study's principal investigator. "It may be better than eating full-fat cookies, but if you really want to lose weight, you probably need to avoid cookies altogether."

Provided by University of California, Irvine

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