

The Natural Gas Industry Has a Leak Problem



A technician searching for methane leaks with an infrared camera in Damascus, Ark.
Andrea Morales for The New York Times

The new study, [published Thursday in the journal Science](#), puts the rate of methane emissions from domestic oil and gas operations at 2.3 percent of total production per year, which is 60 percent higher than the current estimate from the Environmental Protection Agency. That might seem like a small fraction of the total, but it represents an estimated 13 million metric tons lost each year, or enough natural gas to fuel 10 million homes.

Thanks to a boom in hydraulic fracturing in states like Texas and Pennsylvania, natural gas [has quickly replaced coal](#) as the leading fuel used by America's power plants. It has also helped, to some extent, in the fight against climate change: When burned for electricity, natural gas produces about half the carbon dioxide that coal does. The shift from coal to gas has helped lower CO₂ emissions from America's power plants by [27 percent since 2005](#).

But methane, the main component of natural gas, [can warm the planet more than 80 times as much](#) as the same amount of carbon dioxide over a 20-year period if it escapes into the atmosphere before being burned. A [recent study](#) found that natural gas power plants could actually be worse for climate change than coal plants if their leakage rate rose above 4 percent.

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Neither the E.P.A.'s estimates of leakage rates nor the higher estimates in the new study suggest that gas has crossed that threshold. Still, experts said that curbing methane emissions from oil and gas operations could prove an important climate policy.

If there is good news in the report, it is that much of the leakage is fixable at relatively low cost. The lost methane is worth an estimated \$2 billion a year.

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“Those emissions are avoidable, not inherent,” said Steven Hamburg, chief scientist of the Environmental Defense Fund and an author of the paper. He cited estimates from the International Energy Agency that industry could reduce its methane emissions by 75 percent and that two-thirds of those reductions would pay for themselves because of the value of the saved gas.



Bubbles from soapy water poured over a pipe to detect methane seepage. The methane lost in leaks is worth \$2 billion a year, a new report says. Andrea Morales for The New York Times

Some oil and gas firms already use infrared cameras to detect methane leaks and are exploring the use of drones and satellites for the task as well. Exxon Mobil, the nation's biggest gas producer, recently [announced a plan](#) to replace older, leaky equipment and reduce its methane emissions 15 percent by 2020.

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Environmental groups have argued that voluntary measures are not always sufficient, and they have urged federal regulators to step in and mandate more sweeping reductions. Former President Barack Obama proposed regulations to limit leaks, but over the past year, the Trump administration [has moved to rescind most Obama-era methane policies](#). Some of these [rollbacks are now tied up in court](#).

The new study is the culmination of five years of research to determine the extent of methane leakage and its effect on climate. Led by the Environmental Defense Fund, the scientific papers produced in that time involved the work of more than 140 researchers from more than 40 institutions, with cooperation and funding from the industry to support the research.

The main reason that total methane leakage is so much higher than the E.P.A. estimate, the report says, is the degree to which large leaks — so-called super-emitters — contribute to the problem.

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A representative of the gas industry argued that the new estimate, in trying to add the outlier leaks, missed the mark. Richard Meyer, managing director of energy analysis for the American Gas Association, called the new estimates “speculation” and said, “I have questions about their method and worry that

some alternative hypotheses were too readily dismissed.”

Dr. Hamburg said he expected the new estimate to be questioned. “The industry is going to say it’s too high and other people will say it’s too low,” he said. “You can cherry-pick either way.”

An E.P.A. spokeswoman said the agency was “looking forward to reviewing this study.”

Leaks can occur at many places along the natural gas supply chain, including poorly maintained pipes, seals and storage tanks, and even some equipment that emits gas by design, including outmoded pneumatic devices.

Industry accounts for about a third of domestic methane emissions. The gas is also produced in large amounts by sources like belching livestock, algae-choked lakes fed by fertilizer runoff, rice paddies, landfills and [defrosting tundra](#), said Amy Townsend-Small, director of the environmental studies program at the University of Cincinnati and one of the researchers involved with the latest paper.

Shutting down leaks from oil and gas operations is important, Dr. Townsend-Small said, because industry is such a large source of methane emissions. But “it’s one of many,” so there is more work to be done, she added.

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