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Satellites find highest U.S. methane emissions ever recorded

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Oil and gas operations in the Permian Basin. Mason Cummings/Wilderness Society

The Permian Basin is producing the largest methane emissions ever reported over a U.S. oil-producing region, according to a new study based on data from satellites.

The research, published yesterday in the journal *Science Advances*, found that wasted methane from oil and gas operations across the shale formation in West Texas and New Mexico provides enough gas to supply 7 million U.S. households. The region is losing methane at a rate equivalent to 3.7% of gas production — 60% higher than the national average leak rate.

"These are the highest emissions ever measured from a major U.S. oil and gas basin," said Steven Hamburg, chief scientist at the Environmental Defense Fund and paper co-author, in a statement. "There's so much methane escaping from Permian oil and gas operations that it nearly triples the 20-year climate impact of burning the gas they're producing."

Although flaring has decreased in the Permian amid the current economic downturn, according to some research firms, methane — a potent greenhouse gas — has long plagued the region. EDF **said** it sees slashing methane emitted from the oil and gas sector as "the fastest, most cost-effective way" to slow down the rate of global warming.

The research team used 11 months of satellite measurements — from May 2018 to March 2019 — and found that 2.7 million metric tons of the gas leak annually from Permian oil and

gas operations. Methane is escaping at twice the average emissions rate of 11 other major U.S. energy-producing regions, they said.

Todd Staples, president of the Texas Oil & Gas Association, said while the group had not fully analyzed the study, it appears to report methane loss rate as a percentage of natural gas produced instead of as a percentage of total hydrocarbon production. The latter would show a lower loss rate, according to TXOGA.

Regardless, he said, the state oil and gas industry is committed to producing energy in "cleaner and more efficient ways."

"Efforts like the industry-led Texas Methane and Flaring Coalition, the Environmental Partnership and the Oil and Gas Climate Initiative are making great strides in minimizing methane emissions and flaring and mitigating environmental impacts," Staples said in a statement. "Through these industry-led programs, industry is developing innovations, pioneering technologies, and achieving efficiencies that are successfully reducing emissions."

The EDF study, which was also worked on by scholars at Harvard University, the Georgia Institute of Technology and the SRON Netherlands Institute for Space Research, built on earlier research focusing on the most active part of the Permian.

That research by the group's PermianMAP initiative said methane was being released from oil and gas operations at a rate of 3.5% (***Energywire***, April 7).
The Texas Methane and Flaring Coalition — which was launched last month — put out a **rebuttal** to PermianMAP's initial findings earlier this week, calling the 3.5% methane loss rate "deceptive when compared to previous research."

Nicole Jacobs, a spokeswoman for Energy In Depth — a project of the Independent Petroleum Association of America — echoed that statement and said EDF is using "misleading calculations" to arrive at exaggerated leakage numbers.

"Buried in this study was some good news too that didn't make it into EDF's press release," Jacobs said in an email. "Importantly, satellite observations did not see increasing methane emissions trends, despite increased natural gas production. Further, as EDF acknowledges in the study, as more pipelines come online in the near future, leakage rates will decrease."

In the new EDF study, researchers said that although there are a number of factors that incentivize operators to vent and flare their product, they said the above-average leak rate "implies an opportunity" to reduce methane emissions in the region through better design, effective management, regulation and infrastructure development.

Mark Brownstein, EDF's senior vice president for energy, said it's the organization's goal to use their findings to help companies and countries "find, measure and reduce methane emissions further and faster, and enable the public to both track and compare progress."