

The New York Times

Shale Gas Isn't Cleaner Than Coal, Cornell Researchers Say

By MIKE SORAGHAN Published: April 11, 2011

Cornell University researchers say that natural gas pried from shale formations is dirtier than coal in the short term, rather than cleaner, and "comparable" in the long term.

That finding -- fiercely disputed by the gas industry -- undermines the widely stated belief that gas is twice as "clean" as coal in terms of greenhouse gas emissions. The gas industry has promoted that concept as a way for electric utilities to prepare for climate change regulations by switching from coal-fired plants to gas.

But if both gas and coal are considered plentiful and cheap, utilities would have little incentive to switch.

The lead author of the study, Robert Howarth, had previously stated the idea that shale gas production emits more greenhouse gases than coal production ([ClimateWire](#), April 2, 2010). But now it is being published in a peer-reviewed scientific journal.

"Compared to coal, the footprint of shale gas is at least 20 percent greater and perhaps more than twice as great on the 20-year horizon and is comparable when compared over 100 years," states a pre-publication [copy](#) (pdf) of the study, which is slated to be published in the journal *Climatic Science* and originally obtained by *The Hill* newspaper.

Howarth and his fellow Cornell professors, Renee Santoro and Anthony Ingraffea, found the process of "hydraulic fracturing," which is required to extract gas from shale, emits enough methane to make it dirtier than coal. Methane is a greenhouse gas that is more potent than carbon dioxide but does not last as long in the atmosphere.

But industry representatives disputed numerous points in the study, saying the researchers used unconventional methodologies to reach their conclusion.

"These guys weren't about to let a silly thing like data get in the way of a good story," said Chris Tucker, spokesman for the industry group Energy in Depth, which was founded by drillers to fight federal regulation of fracturing.

"Reading the paper, it's tough not to get the impression that the fix was in from the start, that they set out with a series of conclusions and then just worked backward from there, moving the parameters in and out as needed to get where they wanted to go."

Howarth said that the findings were not predetermined and said the study's credibility has been bolstered by peer review.

"In fact, we came up with two things that surprised me. First, I expected the indirect CO₂ emissions from trucks moving frac water, the compressors, the drills, etc., to be greater than we found. They are actually pretty small, when you add up all the numbers. And second, the influence of methane is greater than I expected," Howarth said in a response to *Greenwire*. "The data tell the story. Unfortunately for Mr. Tucker, the statements that industry has liked to make have never been based on data."

In hydraulic fracturing, drillers inject chemical-laced water and sand underground under extremely high pressure to break apart rock formations and release gas. The method has been used for years to coax more oil and gas from wells. But it is essential to obtaining any gas from dense shale formations.

And a great deal of methane escapes during the process, according to the Cornell study. The professors said it escapes from flow-back return fluids and during drill-out following the fracturing.

Industry has criticized Howarth before. Energy in Depth's parent group, the Independent Petroleum Association of America, wrote to U.S. EPA in September seeking to prevent him from being selected as a peer reviewer for an agency study of fracturing ([E&ENews PM](#), Sept. 29, 2010).

The Cornell trio are not the only ones questioning the climate change reductions from natural gas and fracturing. In January, the news organization ProPublica reported that new research released by EPA shows that natural gas production could be 25 percent cleaner than coal, or less, rather than twice as clean ([Greenwire](#), Jan. 25). The report gave similar reasons as the Cornell study -- methane emissions from the full life cycle of gas production are taken into account.