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ENERGY & ENVIRONMENT

Future of Natural Gas Hinges on Stanching Methane Leaks

By CLIFFORD KRAUSS JULY 11, 2016

DAMASCUS, Ark. — In the energy business, natural gas is supposed to be one of the good guys — the cleaner-burning fossil fuel that can help wean the world from dirty coal during the transition to a low-carbon future.

But when natural gas escapes unburned, as it often does during production and distribution, it is a big troublemaker. Its essential component, methane, is particularly pernicious — a greenhouse gas that is more than 80 times as potent as carbon dioxide over 20 years as it dissipates.

That is why, on a recent sweltering day, a team of Southwestern Energy technicians went hunting for leaky pipes and wells on the rolling cow pastures of northern Arkansas. They rode in pickup trucks, outfitted with infrared cameras and laser-beam scanners.

Wearing hot, fire-retardant suits, they pulled up to a compressor station called Yogi 1, and, enduring the station's deafening noise, spent 90 minutes with their high-tech detection gear looking for leaks. Finally finding one, on a gas line connector, they made a quick repair.

Then one team member performed a decidedly low-tech test, pouring a bottle of soapy water over the patch. Although popping bubbles indicated methane was still seeping, one more turn of the wrench made the bubbles disappear.

"In the war against methane emissions," Eric Davis, a member of the Southwestern team said, smiling, "we won this battle."

But the war is far from won, and the reputation of natural gas — not to mention a big part of the global effort against climate change — may hang in the balance.

Methane has many sources, including flatulent cows and decomposing landfills. But the oil and gas industry may be the nation's biggest emitter of leaked methane, gas that might otherwise stay underground for eons.

While coal still predominates in many parts of the world, especially in emerging economies, natural gas has already replaced coal as the United States' leading fuel for power plants. But the American energy industry lets enough natural gas escape each year to meet the heating and cooking needs of about seven million homes annually.

That runaway gas also creates about the same short-term climate impact as 240 coal-fired power plants, according to the Environmental Defense Fund.

So federal regulators have begun cracking down, especially since the climate conference in Paris last December, when the United States and most other nations committed to controlling global warming.

In May, the Environmental Protection Agency announced the first federal regulations aimed at curbing the escape of methane from new wells and equipment by requiring emissions-control devices and regular monitoring.

The Bureau of Land Management plans to write rules this year to reduce methane leaks from oil and gas wells on federal and tribal lands.

Even more sweeping could be an E.P.A. data collection program underway on the country's tens of thousands of oil and gas operations, an effort that could lead to far broader regulations on the industry in the next few years.

The November election may determine the eventual potency of any new regulations. Hillary Clinton backs efforts to curb climate change, while Donald J. Trump disputes evidence of global warming.

Without explicitly endorsing new rules, Southwestern Energy — the No. 3 natural gas producer in the United States after Exxon Mobil and Chesapeake Energy — is among several prominent companies that agree that more methane controls are necessary.

Southwestern is helping to lead an industry group, One Future, which aims to reduce methane leakage to less than 1 percent of total national gas production. Some estimates put the current amount at nearly twice that level or more. Other members of the group include Apache, BHP Billiton, Hess, Kinder Morgan and AGL Resources.

“Natural gas is a natural bridge to a low-carbon future, but if it’s a rickety bridge that leaks methane, why would you take that bridge?” said Mark K. Boling, executive vice president of Southwestern, which is based in Houston. “The Paris climate accord tells us we have got to do something about this.”

Here in the giant Fayetteville shale field that spans northern Arkansas, Southwestern has upgraded pumps and compressors, and has deployed new tanks to capture surges of gas that belch out of wells after they are hydraulically fractured. It has even replaced leaky gas-powered control equipment with gear powered by solar panels and fuel cells.

Southwestern says the more than $14 million it has spent on equipment, studies and other efforts to stem gas leaks has nearly paid for itself with the methane captured and sold.

But some others in the industry are pushing back. They say new, more efficient extraction methods make additional oversight unnecessary — and too expensive, given the collapse of natural gas prices in recent years that has bankrupted scores of producers and saddled hundreds of others with debt.

Smaller companies say they simply do not have an extra $100,000 to spend on an infrared camera, or the personnel to do extra inspections and paperwork. They predict that operators will close thousands of wells rather than pay the extra costs. Each well that is closed means 12 fewer industry jobs, they say.

“It’s going to be extremely onerous, and it’s going to put a lot of people out of business,” said Patrick M. Montalban, chief executive of Mountainview Energy, which operates wells in Montana and North Dakota.

Environmentalists counter that many solutions are not expensive.

Replacing a control device on a gas storage tank that vents methane can cost as little as $3,000, for instance. And in cases where companies vent their gas wells, another big source of escaping methane, drillers can use the cheap and time-honored method of flaring — burning it off. That produces carbon dioxide, but it is less environmentally damaging than raw methane.

Meanwhile, service companies are cropping up around the country to do the inspection and repair work more cheaply than small drillers can do it themselves.

“If the industry doesn’t take this seriously, you are going to continue to have tighter and tighter regulations,” said Richard Hyde, managing director for federal and government affairs at one of the One Future members, AGL Resources.

Southwestern is participating in projects with the Environmental Defense Fund, General Electric, IBM and a Silicon Valley start-up called Acutect to test continuous methane detection systems around wells and equipment using lasers, sensors and even drones.

“We need to move more rapidly,” said Mr. Boling of Southwestern. “We better do everything we can to ensure that when a decision is made to close a coal-fired plant and replace it with a natural gas plant, we are actually getting the climate benefit we are saying you will get.”

Southwestern’s leak-hunting crews say they can attest to the company’s efforts.

In February, an inspection of the Yogi 1 compressor station revealed half a dozen leaks. The more recent visit, finding only one leak that was fixed to soap-bottle standards, was a sign of progress.

"We're going down paths others haven't," said Douglas Jordan, Southwestern's corporate environmental program director, as he watched the technicians work. "We're always chasing methane molecules."

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