Shale Gas Economics: Hope or Hype?

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There is absolutely no doubt that gas exists in shale, says Deborah Rogers, but not as much as previously claimed, and not as cheap as the industry would have us believe.

Rogers, whose family has a long history in oil and gas, spent a couple hours talking about shale gas economics at the Spencer Town Hall on Saturday, April 28. Though her great-great-grandfather was among the first of the U.S. wildcatters, Rogers went into finance. After a decade of consulting for major Wall Street firms, the Texan headed home to take up ranching. She owns Deborah's Farmstead, an artisanal goat-cheese operation.

When a gas company drilled 12 high-impact wells next to her pastures, Rogers got interested in the industry. When gas prices took a dive and drilling continued to expand, she began scrutinizing quarterly reports and financial records. Using data from the industry and her financial expertise, Rogers examined the economics of the shale gas rush.

The plays are heavily promoted and the jobs overstated, Rogers told the Spencer audience. Last summer, estimates of reserves in the Marcellus had climbed as high as 516 trillion cubic feet of gas, but in August the U.S. Geological Survey slashed their estimates by 80 percent, and four months later U.S. Energy Information Administration cut their estimates by 66 percent. Now we're looking at six years of energy (at current consumption) rather than 100 years, Rogers said.

Unconventional shale gas wells, at least those in the Barnett play, aren't producing at the rates predicted. Many see a drop in production within the first 18 months, and instead of lasting decades, many wells have a lifespan of 8 to 10 years. For this reason, Rogers says, companies continue drilling even though the price has bottomed out. Audits of gas revenues in Fort Worth, TX show that from 2008 to 2010 the number of wells more than quadrupled while the revenues from those wells declined. The University of Texas at Arlington documented the same pattern, Rogers said. "It's as though they're caught on a drilling treadmill."

That drilling boom has brought some additional problems to Fort Worth. A June 2011 study of well sites in the city found measurable amounts of benzene at 94 percent of all sites. Air sampling also found high levels of formaldehyde, an ozone precursor, and volatile organic compounds. Residents are worried about health impacts; 25 percent of the children living in Tarrant County, where Fort Worth is located, have asthma. That's just over twice the national average.

"Shale gas is extraordinarily land consumptive," Rogers said. "They'll tell you that it's one well on 640 acres," she said, "but they don't tell you about in-fill wells." The problem, she explained, is that the horizontal bores don't get all the gas. So the companies need to drill additional wells and now, in the Barnett shale, wells are spaced on 160-acre plots.

The problem is that most of those wells don't produce (less than six percent meet minimum economic thresholds) and end up being abandoned. The land, at least in Texas, isn't useful for other purposes, so the towns and cities don't get any economic benefit from those drilled and plugged wells.

As for the industries statements about home-grown fuel for a domestic market – don't believe it. These companies are out to make a profit, Rogers says, citing Shell's 2011 statement about exporting to the "rest of the world". Chesapeake, quick to climb on the "American gas for fuel independence" bandwagon is one of the first to commit its gas to export. If the export terminals opened today, they could drill it, produce it, and ship it to China for a cost of $9/mcf – and get back $16/mcf. Industry analysts calculate that exporting gas will drive up the price 54 percent, maybe even higher, Rogers said.

“Serious consideration must be given before turning over our land for industrial exploitation,” Rogers concluded.

Not everyone agreed with Rogers’ analysis; a handful of attendees disputed her figures. “Pennsylvania employs 81,000 in the gas industry,” said one man. He claimed that people in this area will have to depend on income from the gas industry to save their farms. Rogers responded that Penn State University and Ohio State have published lower job numbers (closer to the 40,000) than predicted by the industry and earlier economic estimates.

A couple of people raised questions about GasFrac, the company that the Tioga County Landowners Group is hoping to partner with. One person said fracking with gas would result in better gas yields because they use less water.

That’s true in some cases, Rogers agreed. But the results vary from one well to another. The problem is that in certain cases the water used in hydro-fracking a well actually interferes with gas recovery. There was some discussion about safety of gas fracking, as the company had experienced two major explosions on well sites in the past year. Now they have developed robotic technology that can be directed from a distance, which is safer for workers.

“But there are still some financial issues with this company,” Rogers asserted. And even though they are not using water to fracture, many of the same environmental concerns remain: there are still air quality issues and a potential for methane migration (and heavy metals) into the aquifer.

One person pointed out that only three chemicals would be used to fracture with gas-fracking. So what is there to come out but gas, he asked? Rogers clarified that what comes out of a well is more than what is pushed downhole. In the case of a gas-fracked well, there could still be benzene, toluene, ethylbenzene, xylene and a host of other aromatic volatile compounds. “Once they complete the drilling they could capture these things,” Rogers said, referring to green completion technologies that allow drillers to collect and process emissions that would otherwise go into the atmosphere.

After the talk she expressed concern about the business model that the Tioga County Landowners Group is pursuing. She warned that landowners should be very worried about taking on a “working interest”. It passes liability onto the landowner – liability for workplace safety, reclamation and any environmental damage.

The forum was sponsored by Residents of Spencer and Van Etten.

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