How Much Gas is in the Shale?

Figure May Be Much Higher than Originally Estimated
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One year ago Terry Engelder, professor of geosciences at Penn State, and Gary Lash, professor of geoscience at SUNY Fredonia, touched off a "gas rush" when they published their estimates of natural gas trapped in the Marcellus shale. They figured that the shale could contain anywhere from 168 to 516 trillion cubic feet of natural gas "in place".

Engelder told the press at that time that, using a conservative estimate, he figured only 10 percent would be available for extraction as an energy resource. With current technology Engelder estimated that energy companies could recover 50 trillion cubic feet of gas from the Marcellus.

This fall the geologists upped their estimates of gas reserves in the Marcellus shale. In November Engelder and Lash informed the press that they now believe the amount of natural gas trapped in the Marcellus shale is closer to 1,300 trillion cubic feet of natural gas, nearly triple their previous estimate. These figures are based on work Lash has done in collaboration with Dallas-based Chief Oil & Gas LLC, work he has been doing in an effort to determine the makeup of the various rock types that lie within the Marcellus Shale.

Given the larger reservoir of gas trapped within the rock, the geologists believe that the Marcellus Shale could yield seven times as much natural gas as they originally calculated. After punching in the numbers, Eglender's new calculations show that energy companies might be able to recover 363 trillion cubic feet of natural gas from the 31-million-acre core area of the Marcellus region (southern New York, Pennsylvania, West Virginia and eastern Ohio).

This amount of gas could meet the entire nation's natural gas needs for at least 14 years. In November 2008, Chesapeake told investors and analysts that each square mile in the Marcellus could contain 30 billion to 150 billion cubic feet of gas. That figure is much higher than the original 9 billion cubic feet per square mile Engelder and Lash estimated last January.

But the amount of gas trapped in the rock will differ from well to well. "It's all shale," Lash told the press, explaining that there are subtle variations in the nature of the rock as drillers move from one place to another. These differences have an impact on how companies will extract the gas from the rock.

What does this mean for local landowners? Although the gas rush slowed when Governor Paterson directed NY Department of Environmental Conservation (DEC) to study potential environmental impacts of horizontal drilling, the gas companies haven't disappeared.

As local geologist Don Zaengle recently noted, “The economic promise from this region will place a lot of pressure on landowners to lease their land to energy companies.”

Cornell Cooperative Extension forester Brett Chedzoy attended the Natural Gas summit held in Pennsylvania recently. The gas industry is here for the long haul, he told the Tioga County Landowners Group earlier this week. At the summit, gas industry speakers explained that their business plans called for spending lots of money to lease land in 2008, and invest their money in drilling this year [2009].

“It’s likely they’ll be conservative, but landowners who have patience and can afford to wait can reap better benefits,” Chedzoy said.

Pennsylvania is already feeling the boom. In 1999, the state’s Department of Environmental Protection (DEP) issued about 2,000 permits for natural gas wells. The number of permits issued last year is close to 8,000 and the head of DEP recently told reporters that he needs more staff to handle the influx of applications.