Gas Companies Secure Leases to Prepare for Drilling in the Marcellus Shale
By Sherrie Negrea

When New York State approves natural gas extraction using horizontal drilling and high-volume hydraulic fracturing, gas companies are expected to set up well pads in a swath of land across the state known as the Marcellus Shale Fairway.

While the Marcellus shale field stretches across 29 counties in New York, the fairway – where companies anticipate the greatest concentration of extractable natural gas – lies beneath a smaller 19-county area. As New York completes its environmental review of this new drilling technique, most of the leases secured by gas companies are in this region.

Although the fairway extends from the southeast corner of Allegany County to the eastern edge of Albany County, portions of this area are expected to yield higher volumes of natural gas than others, based on the geology of the formation. Places under which the Marcellus layer is deeper, thicker and more brittle are considered optimal for drilling in the Marcellus Shale. In addition, surface land that contains large, flat open tracts is also more conducive for gas extraction.

Within the fairway, industry experts and geologists predict that Broome County will be the target for gas companies because of the type of shale in the area. The county has the thickest shale within the fairway in New York – ranging up to 300 feet – and some of the deepest rock – ranging up to 5,000 feet, making it likely to contain a large quantity of extractable natural gas.

“Broome County is considered to be ground zero for the Marcellus in New York,” says Gary G. Lash, a professor of geosciences at the State University of New York College at Fredonia and a consultant for gas companies on drilling in the region.”All the characteristics of the rock are quite favorable – the thickness, depth, organic carbon content and thermal content.”

Twenty percent of the land in Broome County, which encompasses 707 square miles and lies completely in the fairway has been leased for oil and mineral rights as of June 2010 according to county planning department statistics. This is about 141 square miles in total. To the north, in Cortland County, which has 500 square miles and is nearly entirely in the fairway, 48 percent of the land, or 240 square miles, had been leased as of September 2010, according to a county planning report. And in Tompkins County, which has 476 square miles, less than half of which lies in the fairway, at least 39 percent of the county, 186 square miles has been leased, says a study by a citizens' coalition, the Marcellus Accountability Project for Tompkins County.

Leasing patterns have so far not corresponded with the best shale formation within the fairway. For example, while Tompkins County has shale that is thinner and shallower, it has a larger proportion of property leased than in Broome County. The reason less land has been leased in Broome County may relate to the fact that the county has a much larger urban core and more extensive suburban areas than in Tompkins, says Douglas C. English, Jr., the county's geographic information systems administrator. In addition, when Marcellus leasing took off in 2007, several landowner coalitions were formed in Broome County, and the majority of the property controlled by consortium members has not been leased, English says.

In the first half of 2008, gas leasing reached a frenzied level in Broome County as gas prices had hit a record high of more than $13 per thousand cubic feet, says Scott R. Kurkoski, a Binghamton attorney who represents the Joint Landowners Coalition of New York, which includes 38 separate groups covering 17 counties. The landowner coalitions formed when property owners discovered that the prices gas companies were offering to lease their land varied widely from parcel to parcel.

“Everybody began to realize that they needed to protect their interests and make sure that they were not signing leases for $100 an acre while others were going for $2,000,” Kurkoski says. Landowner coalitions can collectively negotiate a fair price, including future royalties when gas drilling starts, and insure there are no hidden clauses in the lease, Kurkoski says.

At the same time, gas companies began approaching property owners elsewhere in the Marcellus Fairway. In Tompkins County, the town of Caroline in the county's southeastern corner, was heavily targeted. By the fall of 2009, 55 percent of the land in the town was under a gas lease.

“The town of Caroline is not ready for this to happen so it works to our advantage to slow things down,” says Linda Adams, a town council member and chair of the Caroline Watershed Committee. In the summer of 2010, she helped organize the Tompkins Landowners Coalition to inform residents about the leases they were being asked to sign.

One issue residents may not be aware of is that many of the leases, which typically last for three or five years, allow the gas companies to renew the leases without securing permission from the property owners. “There's a secondary clause in most of the leases that is at the discretion of the developer,” Adams says. “So people may have signed something that's six to ten years long.”

By the summer of 2008, a confluence of events substantially slowed down leasing activity in New York: The recession threw the economy in a tailspin, gas prices dropped to $3 per thousand cubic feet, and in December 2010, Gov. David Paterson issued an executive order that requires the Department of Environmental Conservation to publish their final supplemental generic environmental impact statement in June 2011, effectively extending the moratorium on high volume horizontal hydrofracking until at least July of this year. Since taking office, Gov. Andrew Cuomo, has decided to keep Paterson's executive order in place.

Natural gas extraction that uses hydraulic fracturing has been standard procedure in New York for at least 60 years. Of the 13,000 active oil and gas wells in the state, more than half have used this method, says Yancey Roy, a spokesman for the DEC. Yet all but about 40 of these wells, drilled in various rock formations in the state, have been vertically drilled and have used about 80,000 gallons of water per well.

In the Marcellus Shale, the wells would use horizontal drilling so that gas could be extracted from larger areas surrounding each well pad. Since the shale is impermeable, millions of gallons of water combined with sand and chemicals would be blasted deep underground to fracture the rock and release the natural gas. Currently, the state is not issuing permits for horizontal drilling in the

Marcellus that would use more than 80,000 gallons of water per well until a final SGEIS is completed.

As the state's environmental review has proceeded during the past two years, leasing has continued throughout the Marcellus Fairway, but at a much slower pace. In Tompkins County, the level of activity dropped from 1,383 leases for mineral rights signed in 2007 to 46 in 2009, according to county property records. And in Broome County, the prices gas companies have offered property owners since 2008 have fallen sharply.

"Leasing has slowed because when you take an oil and gas lease, the clock is ticking on it," says Brad Gill, executive director of the Independent Oil and Gas Association of New York, based in Hamburg. "In this regulatory and legislative instability that we are facing here in New York, we have companies that want to come here and spend hundreds of billions of dollars, but can't do it. A number of companies have moved to Pennsylvania from New York because that's where they are allowed to drill."

Although high-volume, horizontal drilling in the Marcellus in New York has been on hold, gas companies have continued to secure leases for other formations that have produced natural gas in the state. One gas reservoir that contains active wells is the Trenton-Black River, a limestone and shale formation that has been producing natural gas for at least 15 years. Adams, of the Tompkins Landowners Coalition, says gas companies that have sought leases in Caroline have stated they were interested in constructing vertical drills for the Trenton-Black River formation.

Yet that reservoir is composed primarily of pockets of natural gas, which makes it difficult to pinpoint prime locations to drill. "The Trenton and Black River is either hit or miss. You're either dead on it or off it. There is no in between," says Nicole Gwardyak, president of Empire Energy Consultants, a Tioga County company that works with landowner coalitions for marketing and lease development."The Marcellus is like dipping a fishnet that has two million fish in it. You're probably going to come up with something. It's not as much hit or miss."

Another formation that may become the focus of gas exploration in New York is the Utica Shale, which lies beneath the Marcellus and extends a bit farther north into counties such as Oneida and Schenectady. While some test wells have been developed in the Utica, the outcome of gas production in this formation remains uncertain.

For now, gas deposits in the Marcellus remain the focus of interest in leasing mineral rights in New York. Research by Lash, of SUNY Fredonia, and Terry Englander, a geoscientist at Pennsylvania State University, shows that the Marcellus could hold up to 500 trillion cubic feet (TCF) of natural gas. Of that amount, an estimated 50 TCF of natural gas from the Marcellus is considered recoverable.

"It's what's referred to as a natural gas super giant," Lash says. "It has the potential of being the largest gas field in the country and one of the largest in the world."