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Times In-Depth: What can Erie expect from the Marcellus shale boom?

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WELLSBORO – For years, her husband steered the cultivator around the single thick black pipe jutting from the hilltop field.

For Jackie Root, the old gas well raised a question that stuck in the back of her mind for decades as she and her husband eked out a living on their rural mountain dairy farm.

Would the natural gas companies ever come back to Tioga County, in north-central Pennsylvania?

When the lines of flags started cropping up in local fields, Root took it to be part of the mapping for the new 911 system.

Then came the landmen, agents who arrange leases between landowners and the companies that want to tap their natural resources. Root came to realize those flags had nothing to do with 911: They plotted seismic tests of the



A natural-gas drilling rig operates near a dairy farm in central Tioga county, near Wellsboro, on Jan. 20. Dairy farmers who have struggled economically are getting a boost in income by leasing land to drilling companies. Once the wells are drilled, the large rig will move to another location, leaving smaller equipment at the site. GREG WOHLFORD/ERIE TIMES-NEWS

riches below.

Their appearance years ago quietly heralded the Marcellus shale natural gas boom set to sweep across the hills in this region, 175 miles east of Erie.

On a recent day, in a snow-covered field not far from that old gas pipe, Root, 52, met a man who was there to check the output of her farm's new cash crop – natural gas.

Drilled in March 2008, Root's deep well went far below the layers traditionally tapped for gas.

It was the first in Tioga County to employ a promising, controversial new horizontal drilling technique, a method that worked: It shattered the layered black Marcellus rock a mile under Root's farm and freed the natural gas trapped there.

"What's it doing?" Root asked the man about her well.

Four to five hundred thousand cubic feet, he told her.

Root laughed.

She has, she said, the fifth lousiest well in Tioga County.

And the other well on her land, she asked, what about that one?

"Four," he said.

"Four hundred thousand?" she said.

"No, 4 million," he replied.

Later in her home office, a stone's throw from the barn, Root tapped out the figures on a calculator.

Natural gas production from a single "lousy" well in Tioga County gets you \$2,000 to \$3,000 a month in natural gas royalties, paid by the company that captures the gas and sells it.

As for the other well, the one producing 4 million cubic feet, that would be about \$11,000 a month in royalties.

"They'll be back to drill other wells," Root said, as if these two, somehow, are a disappointment.

"I know people collecting six figures per month," she said.

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A new find

Jackie Root's 19th-century dairy farm on Tioga County's northern rim lies near the epicenter of a natural resource boom predicted to profoundly affect Pennsylvania's economy in the next decade. The boom has the potential to radically alter the fortunes of landowners and the landscape they own.

The rush for natural gas is made possible by the new drilling technology, which for the first time allows companies to release prodigious reserves of natural gas from the Marcellus shale, a layer of rock that covers much of Pennsylvania, as well as parts of New York, West Virginia, Maryland and Ohio.

Those caught in the maelstrom of Marcellus development in north-central Pennsylvania said whether similar activity reaches into northwestern Pennsylvania is not a matter of if, but when.

If developers in northwestern Pennsylvania don't tap the Marcellus shale, which is thinner and less predictable for exploration in the Erie region than in other parts of the state, they likely someday will plumb the Utica shale. It is another previously inaccessible layer of gas-laden rock that lies beneath the Marcellus.

Riches in Erie?

North-central Pennsylvania, home to Tioga County and its county seat, Wellsboro, lacked the history of mineral development of northwestern Pennsylvania.

This corner of the state witnessed a riotous oil boom after crude was first commercially drilled in Titusville at Drake's Well in 1865. In Erie County, shallow Devonian shale wells have produced natural gas for more than a century.

In much of northwestern Pennsylvania, a great deal of rural land is already tied up in oil and gas leases, leading some to predict the advent of Marcellus or Utica shale activity might be a quieter phenomenon here.

As the exploration of the shales spreads, the region might instead witness the transfer of leases from smaller companies to larger companies, said Jason Weigle, a former environmental regulator who leads the private nonprofit Marcellus Shale Community Education Team in Tioga County.

Regardless, the flowing gas, like the gushing oil that devastated the landscape and spawned fortunes in northwestern Pennsylvania more than a century ago, carries the promise of wealth and all the opportunities for prosperity and ruin that accompany it.

Spending by Marcellus producers in this year alone is projected to generate nearly \$1 billion in state and local tax revenues and more than 100,000 jobs, according to a Pennsylvania State University study.

The development is bestowing fat checks on landowners and pouring cash into the tills of local businesses. It is also dividing residents, some of whom have no interest in the industry's money. They worry, instead, about the destruction the massive industrial development could wreak on the scenic landscape.

They also call for more research on the hydraulic drilling technique that uses water mixed with sand and chemicals to fracture — the shorthand term is 'frac' or 'frack' — the Marcellus shale and free the gas.

Many in Tioga County, population 40,875, express disbelief at the change rapidly occurring around them. In 2010, drilling started on 261 Marcellus shale wells in the county, second in Pennsylvania only to the 355 wells drilled in Bradford County, Tioga County's next-door neighbor to the east.

Though the boom is new in Tioga County, it is an old story in Pennsylvania and other places rich with natural resources.

Past booms in western Pennsylvania spawned vast fortunes that funded charitable trusts, graced the landscape with extravagant Victorian architecture and spurred development of related industries.

The booms also left behind ghost towns like Pithole, the raucous boomtown near Titusville that is now an overgrown field; rusty red creeks poisoned by acid mine drainage; and deforestation that led to disastrous floods.

The question confronting those at the heart of the natural gas boom in Tioga County and elsewhere across the state is whether this generation will better manage the change fortune will bring.

"We want to help the community understand: A lot of people are coming in here with a lot of money and a lot of interest in the area," Weigle said. "By and large, the issues can be controlled at a local level if there is political will to do so."

Snapshot of the boom

Scenic Tioga County, created in 1804, has long been known as a pristine retreat. It's where dairy herds graze and tourists and retirees alike flock to fish, hunt, hike and bike in Pennsylvania's Grand Canyon or stroll gas-lamp-lit Wellsboro, laid out in 1806 and named for a prominent local family.

Now, the view along the winding back roads includes drilling rigs that tower over weathered gray barns and light up the mountain night like electronic billboards.

Almost all corners of Tioga County have been leased, with most of the land, approximately 290,000 acres, now controlled by Royal Dutch Shell.

In 2010 alone, 564 drilling permits were issued and the drilling of the 261 wells started in Tioga County, according to the state Department of Environmental Protection.

By the time the drilling is over, there could be a 3-acre well pad every square mile, each hosting six wells, said Earle Robbins, a former Penn State Cooperative Extension agent who is a consultant to landowners in Tioga and other counties.

Dump trucks and tankers, caravans of wide-load semis with flashing amber caution lights, crowd the narrow, curving mountain highways and slow traffic. At the local railroad depot, once near extinction, rail cars line the tracks far into the distance, bearing sand needed in the drilling process. Drillers will shoot the sand along with water and chemicals into



the shale to fracture it open.

Long-empty commercial properties in Wellsboro and nearby Mansfield are being snapped up. So are the rentals and hotel rooms, where gas workers and contractors from Texas and Oklahoma and Louisiana settle in.

Lessons in leasing

The landmen who triggered this boom came in waves to north-central Pennsylvania.

The first batch, five or six years ago, offered bids of around \$65 per acre a year for gas rights. It sounded generous in comparison with decades-old natural gas leases that had been \$5 or \$10 an acre or less, said Craig Williams, a Penn State Cooperative Extension agent in Wellsboro. The leasing activity in those early days seemed aimed at a different rock formation, the Trenton-Black River, which was being developed in New York state.

Many landowners signed up at those rates unaware. They did not know successful production from a new horizontally drilled Marcellus shale well in faraway Washington County in 2005, coupled with geologists' staggering 2008 predictions about the Marcellus shale's potential output, would soon trigger a land rush.

"I think a lot of people did not have a clue what they were signing. Some leases were signed in the barn door," said Robbins, the consultant.

The geologists whose predictions helped fuel the boom are Terry Engelder, of Pennsylvania State University, and Gary Lash, of the State University of New York at Fredonia. They calculated in 2008 that the formation contains 500 trillion cubic feet of natural gas -- more than 18 times the content of Texas' Barnett shale, the formation currently leading the nation in natural gas production. The geologists have since doubled their estimate of Marcellus shale gas, to 1,000 trillion cubic feet.

As the news about Marcellus sank in, bids for leases in Tioga County went up, to \$1,500, \$2,500, \$5,000 per acre. Jackie Root knows of one lease signed for \$6,500 an acre and royalties of 20 percent.

Those who signed early say they only wish they had known what was on the horizon. Some have had the opportunity to renegotiate those leases, now that the Marcellus shale is in play.

The advice to landowners from Root and others: Do not take the first offer, and work with a lawyer and your neighbors to wrangle the best deal.

Root, who owns 400 acres, combed county property records, studied seismic reports and banded together with neighbors who had not yet leased. The group in 2005 leased its parcel for \$195 per acre a year and 12.5 percent in royalties.

'Extremely excited'

Craig Hampson had always carried rubber barn boots in his two Tioga County Agway stores.

But these guys, from Texas, Oklahoma, and Louisiana, who started trickling in last summer, wanted steel-toed muck boots. They needed fireproof clothing and a special kind of grass seed to reseed development sites.

You could find none of that in Hampson's stores in Wellsboro and Mansfield. That was then.

Now Hampson, 47, devotes one corner of each store to outfitting gas workers with flame retardant Carharts that sell for \$68, more than the traditional jeans, hard hats, rain gear and safety glasses.

"If you had asked me a year ago if I sold hard hats, I would have laughed," he said.

His inventory of gas-field supplies "is the number one department in the whole store."

"By the summer," he said, "the Mansfield area is supposed to see another 1,000 people coming in to work."

You do not have to own land to make money off the Marcellus shale, though it seems most business owners, like Hampson, do.

The nearest of three drilling rigs within sight of Hampson's home is 650 yards away. At night, "it is like someone right outside shining their car lights in the window," he said.

He does not mind.

"It is nice to see some income come into Tioga County. It was so depressed for a long time."

Real estate broker Chris Gilbert said he does not know which part of the market to focus on -- commercial or residential. Everywhere, he said, he sees a chance to make money.

"I am extremely, extremely excited," he said.

"There is just an incredible amount of money being pumped into the economy," he said. "People say local people do not have the opportunity. You do, you do."

Tom Saveri is just entering the real estate business. He said he has no choice but to take advantage of the opportunities the Marcellus shale development offers.

"How do you stop a speeding train?" he said.

On a recent day, he was weighing the purchase of a home he plans to rent out. At \$120 a week, it would still be cheaper to a transient worker than a hotel room.

"We don't even handle rentals, and we are getting two to three calls a day," Saveri said.

Wellsboro for decades has cultivated the tourist trade, by capitalizing on one of the state's most scenic natural wonders, the Pennsylvania Grand Canyon, a 47-mile glacier-carved cleft through which runs the rushing mountain waters of Pine Creek.

Now those tourists sometimes find it hard to book a room because of the influx of out-of-state gas workers.

Two motels in Wellsboro are adding rooms to accommodate the demand.

As the sun falls in town, weary-looking men in trademark jumpsuits, hard hats in hand, can be seen climbing from pickups and heading to their motels.

"This is the coldest place I have ever been in my life," said one of the workers, Kelly Cloud, of the central Louisiana town of Glenmora.

This industry, with its highly specialized, technical requirements, brings much of its work force with it, at least in the drilling phase.

Cloud, a drilling rig safety consultant, said he might see contractors in the Pennsylvania Marcellus shale development that he met on a rig off the coast of Louisiana.

"To get it going right, you have to bring in people from other places," he said.

Cloud works 14 days, 12 hours a day, then gets seven days off. The company flies him to and from the work.

"It is a big boom for this area," Cloud said. "There is a lot of money and a lot of jobs."

Early signs are that locals are also finding work. Hampson said he has sold safety gear to men he knows are from the area.

Tioga County and Bradford County, where there is also heavy drilling activity, added 400 and 300 jobs, respectively, from November 2009 to November 2010, according to the state Department of Labor & Industry.

About 410 people working in 150 different occupations are needed to drill a single well, according to a 2009 study by the Marcellus Shale Education and Training Center in Williamsport.

The study predicted most jobs would be created in the drilling phase of development, as many as 3,281 to 5,468 in the state's northern tier by the year 2013, depending on the intensity of development.

Transient workers will fill many of the jobs, the study found. But it also said training local workers for long-term gas production offered the greatest opportunity to create a "sustained work force in the natural gas industry."

Environmental concerns

John Kesich, 56, did not come to Tioga County to work, and he does not want to lease his 55 acres, either.

He moved to the Appalachian Mountains to retire in natural beauty from a career at New York University. Now Kesich is thinking about leaving.

He said he did not worry when local officials told him that Marcellus well fracking was safe, "just a little water and sand." Then he started attending events across the state line in New York, where lawmakers have placed a moratorium on Marcellus shale development until more about its effects are known.

Kesich worries about water safety and air pollution kicked up by the traffic and the drilling.

On Jan. 17, workers lost control of a Marcellus shale drilling rig, which spewed fracking wastewater at a well site in the Tioga State Forest. Inspections conducted by the DEP determined the fluids had been contained to the lined well pad, the agency said.

In June, the state Department of Agriculture announced it had quarantined dairy cows that might have drunk contaminated drilling wastewater that leaked from a holding pit near Wellsboro.

Kesich belongs to a group called Citizens Concerned About Natural Gas Drilling. The group's concerns are echoed across the Web, where activists, using any number of plays on the word "frack," protest the development.

"They keep saying it brings jobs," Kesich said. "They don't mention that bodies come with those jobs."

He and even those who support the shale development expressed concern that the booming real estate market fueled by visiting workers has priced out many low-income residents.

Kesich wants local politicians to be accountable for the harm he believes the industry could wreak.

"They are saying they want to turn 10,000 square miles of Pennsylvania into an industrial site, and the people who live there can live in the middle of an industrial site," he said.

After the drilling?

Jason Weigle, who heads the private nonprofit focused on Marcellus shale development in Tioga County, wants to navigate the gray area between those who oppose Marcellus drilling and those who embrace it.

"We have some of the largest gas-producing companies in the world here in the county," he said. "These guys are here to stay. There is a good way to do it and a bad way to do it."

"We have lessons from Pennsylvania history we can learn from. The standard mode of operation is not going to cut it."

He wants local residents and municipalities to craft guidelines for smart development -- in areas such as road maintenance and housing -- that will leave the county better off than before the first well was tapped.

Jackie Root is trying to do that for her family and her farm.

Using money they have received at lease signings and from royalties and right-of-way negotiations, the Roots have paid off farm debts; supported their children's educations; bought a new truck and a barn full of Morgan horses, Jackie Root's favorite breed; and remodeled their farmhouse.

The Roots are out of the dairy business and instead plan to manage a herd of beef cattle. Jackie Root's husband, Clifford, who rose early to tend to the dairy cows for 33 years, has been able to take a few vacations.

Jackie Root is not resting now that the first wells have been drilled on her land.

She uses what she's learned to help other landowners confronting leasing decisions. With her daughter, Katie Root, and Earle Robbins, the former Penn State Cooperative Extension agent, Jackie Root has formed R&R Energy Consulting. It so far has helped 19 landowner groups lease more than 200,000 acres.

Jackie Root has become a director in the National Association of Royalty Owners. She attends highly technical seminars in Texas to track the industry's movements, plans and research, so that landowners can sit down at the negotiating table fully prepared.

"You have to keep track of what they are doing," Root said of the gas companies. "If you don't, they are going to have all the information, and you'll get nothing."

Root said she is just as concerned about the environment as anyone else, maybe more, because she is a farmer.

Before Marcellus shale development, she said, struggling farmers ended up subdividing their land and selling off building lots.


"I would rather look at a gas well than houses here, there and everywhere," she said.

Long ago, while reminiscing about that old gas pipe sticking out of her hilltop field, Root thought the return of the gas companies to Tioga County would be a boon. Now that she is living the Marcellus shale boom, she is grateful for both the security and opportunity it affords.

"It has really been our salvation," she said.

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