Game changing nature of Marcellus Shale dominates discussion at symposium

Everything Energy

Regional shale gas development and the major impact it has made globally dominated the discussion during Energy Symposium 2014 at Butler County Community College.

About 70 residents, municipal officials and business representatives spent the morning of March 13 in Founders Hall listening and learning from a handful of experts, including Marcellus Shale Coalition president and Cranberry Township resident Dave Spigelmyer.

The Butler County Chamber of Commerce, in conjunction with the coalition, BC3, the Butler County Tourism and Convention Bureau, the Community Development Corporation of Butler County, EdgeMarc Energy and Northwest Savings Bank presented the event, which in years past had been held in three separate sessions.

Spigelmyer, who has worked in the energy industry for about 30 years, said the past five years have been an "economic game changer."

He explained that as the technology and processes to drill for gas horizontally have improved, so has production — drastically, in fact.

In 2008, which he referred to as the turning point for development in Pennsylvania, producers drilled about 4,000 wells in the state that yielded about 182 billion cubic feet of gas — or about one-quarter of the 850 billion cubic feet burned in Pennsylvania.

Today, 182 billion cubic feet of gas is produced per day in the entire Marcellus Shale region. That translates to about 5 trillion cubic feet of gas per year, which is about 20 percent of the national supply.

"We're the second-largest energy-producing region in the world now," he said. "It's a pretty incredible place we've gone in a pretty quick period of time."

Spigelmyer stressed the energy market is global and most of the money being invested here to harvest gas is coming from around the world.

Keynote speaker David Spigelmyer, president of the Marcellus Shale Coalition, gives his presentation March 13 during Energy Symposium 2014 at Butler County Community College.

He also said by producing energy domestically, the United States can become more energy independent.

"So this is a historic opportunity for Pennsylvania and for our nation to be able to produce a product here at home, to not have to have folks wearing helmets abroad to protect the free flow supply of oil. (They) can wear helmets or hard hats at home to produce a domestic energy," he said.

In 2008, he said the U.S. was 57 percent dependent on foreign oil.

"Today, we're at 42 percent and dropping rapidly as a result of shale gas development across this country," he said.

"The average well in Pennsylvania produces enough gas to fuel 28,000 homes annually," he added.

The coalition, based in North Fayette Township, Allegheny County, formed in 2008 to represent companies active in shale gas development throughout the Appalachian region and to establish and promote safety guidelines.

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Spigelmyer said the group is accomplishing its goals in that respect.

Along with generating tax revenue, the industry has worked with the Pennsylvania Department of Environmental Protection to raise well permit fees from $100 to $5,000.

This has allowed the DEP to expand its compliance and inspection staff from about 60 people in 2008 to a little more than 200 today. That makes Pennsylvania second only to Texas in the number of oversight officials regularly visiting well sites.

Spigelmyer also said the industry has worked with the state to establish impact fees through Act 13 of 2012, which has resulted in about $406 million in additional revenue for the state, counties and individual municipalities.

While other portions of Act 13 were struck down by the state Supreme Court in December, he said the state "got it right" with the impact fees because the revenue is distributed to the areas in which the most development is taking place.

How does horizontal drilling work?

Callum Streeter, a petroleum engineer and EdgeMarc's operations manager, provided a detailed presentation on how technology and tools make extracting gas from shale rock formations possible.

EdgeMarc, a two-year-old exploration and production company headquartered in Washington County, has all of its Marcellus Shale operations concentrated in Butler County, with additional leased acreage in the Utica Shale in Ohio. It currently has one drilling rig in the county, and Streeter said a second would start up in April. EdgeMarc also is building a 22-mile pipeline from the northeastern corner of the county to the Evans City area to a facility that separates other recoverable substances from the extracted gas.

Streeter used graphics, charts and a makeshift model of a "bottom hole assembly" to show how drillers are able turn the bit and bend drill pipe over thousands of feet.

The bottom hole assembly is about 30 feet long and comprised of three components: the drill bit, a positive displacement motor that can turn the bit about 10 to 15 degrees per 100 feet, and a measurement-while-drilling, or MWD, device that communicates with the workers on the surface through electromagnetic signals.

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The entire process is monitored closely and compared to a predetermined drill plan, and surveys are taken for every 30 feet drilled, he said.

He explained that horizontal drilling, also referred to as unconventional drilling, has drastically reduced the industry's surface impact.

For example, he said an average well site that occupies about 6 acres while active can harvest gas from more than 600 acres of shale rock thousands of feet beneath the surface. In the past, it would take many more conventional wells to harvest the same amount of gas from the same area.

Better technology and methods also are increasing the length of the multiple horizontal "laterals" drilled through the shale from each well pad.

"The limit keeps getting pushed," Streeter said. "The longer you can stay in that reservoir contact area, the better you can be."

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> — Callum Streeter, EdgeMarc's operations manager

"One of the amazing things about these wells is that if you took the length and diameter of a well, the actual ratio of the diameter to the length is finer than a human hair," he said.

"We're doing these very precise movements and orienting down these wells that are 10,000 to 15,000 feet away."

Streeter and Spigelmyer both addressed concerns about the industry's impact on water, both in possible contamination and overall use.

Streeter said multiple layers of steel pipe and cement casing extend far below any groundwater sources.

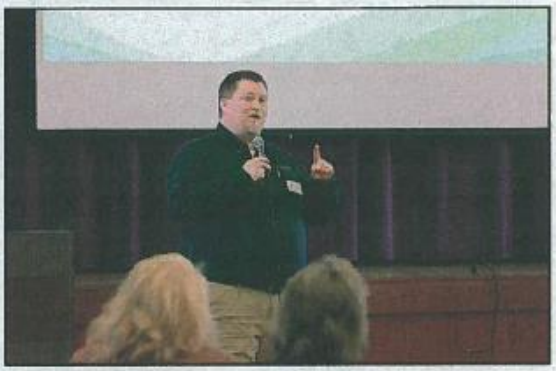
He also said the work companies like EdgeMarc do is transparent, with their reports posted to the DEP's website.

There also is a website, www.fracfocus.org, in which companies voluntarily disclose the composition of the fluid they use during the hydraulic fracturing, or "fracking," process.

Spigelmyer added about 99.5 percent of the fluid used to "frack," a well is comprised of water and sand, with the remaining 0.5 percent being agents that are commonly used in cleaning and lubrication.

He said about 3 million to 5 million gallons of water are used to frack a well.

About 20 percent to 25 percent of that comes back up the well to be recycled, with the remaining water absorbed by the shale.



Bud Shufstall of Northwest Savings Bank addresses the crowd March 13 during Energy Symposium 2014 at Butler County Community College's Founders Hall.

Opportunities for businesses

Stacey Lucas, who is responsible for EdgeMarc's health, safety and environmental department, spoke about what businesses need to know to work with the energy industry.

While there are opportunities during all phases of development, from exploration to reclamation, she said there is an intensive prequalification process to ensure safety and quality.

"What it takes to work for EdgeMarc is pretty much applicable to any oil and gas operator in the industry," she said.

"We (the industry) continue to raise the bar with respect to expectations."

Because oil and gas operators like EdgeMarc mostly conduct the engineering behind the development, they function more like general contractors who seek the "cream of the crop."

One of the ways they do that is by using third-party database auditing services.

Lucas said EdgeMarc uses PICS, but another popular global database is ISNetworld.

"The people who we pick to work with us — we cannot be too careful about who they are," she said, adding operators are not only responsible for their own people, but also for all the people who are involved with that work site.

Opportunities for individuals

Karen Zapp of BC3 shared the success stories of residents who have taken career training courses at the school to work in the energy industry and related fields.

Zapp manages BC3's Trade Adjustment Assistance Community College and Career Training, or TAACCCT, grant funds.

That program, combined with funding from the federal ShaleNET program, has paid for the training of close to 200 people at BC3 since early 2012, she said. About 30 of those trainees have been military veterans.

BC3 offers roustabout, or general gas laborer, training through ShaleNET. TAACCCT funds pay for training related to energy and manufacturing.

Also, with the backing of XTO Energy, BC3 has developed an energy production technician certificate program intended to put people to work in facilities that process or transmit gas.

That three-part program builds on roustabout and safety training already available, and this fall, Zapp said BC3 hopes to establish a related degree program called Energy Production Technology.

Act 13 update

Joy Ruff, community outreach manager for the Marcellus Shale Coalition, addressed Act 13, including changes resulting from the portions of the law that were struck down.

The key result is that municipalities regained local control over gas development.

However, this has created much uncertainty for operators, she said.

Spigelmyer equated each municipality being allowed to set its own rules to a person having to carry a different driver's license for each municipality.

As a result, Ruff said companies will go to where the business environment is most hospitable.

Both she and Spigelmyer stressed the importance of working with and communicating better with local governments and taxing bodies.

However, Ruff said Act 13 has been largely successful for local governments.

In Butler County alone, about $4.8 million in impact fee revenue has been distributed during the first two years of collection.

Economics of energy and looking ahead

Bud Shufstall, an attorney who heads up Northwest Savings Bank's oil, gas and mineral rights division, spoke about the wealth created through gas production.

The Warren County-based bank formed the division a couple years ago because the gas industry had impacted the way it does business.

The division helps residents and municipalities manage and track lease bonuses and royalty payments. In regards to commercial business, the bank has been able to be more supportive when lending to those working with the gas industry.

Shufstall said moving forward, there is going to be significant value in owning royalties because more wells will be going into production as gas lines are built to carry the product to market.

He also said residents and businesses will start adopting more gas-based technologies.

Spigelmyer said the most potential is in electric generation, fleet transportation, feeding other industries and exporting gas.

The ongoing talks to get Royal Dutch Shell to build an ethane cracker plant in Beaver County also represent a potential boost because the plant would form the raw materials used in plastics manufacturing. ❖