



The PIOGA press

The monthly newsletter of the Pennsylvania Independent Oil & Gas Association

May 2017 • Issue 85

And the beat goes on: Municipal ordinances continue to face legal challenges

The oil and gas industry has enjoyed recent successes in two types of ordinance challenges in Pennsylvania. The first victory came in another in a growing line of zoning ordinance validity challenges, this one in Mount Pleasant Township, Washington County. The second victory came in a challenge to Grant Township, Indiana County's prohibition on underground injection wells.



Time again for our summer events to begin! To find out about the June 28-29 PIOGA Pig Roast, Product & Equipment Roundup and Operators Forum & Leadership Summit, turn to page 5. Details of the June 5 Ted Cranmer Memorial Golf Outing and Summer Picnic are on page 23.

Mount Pleasant Township

As we reported last year for *The PIOGA Press*, five municipalities faced zoning ordinance validity challenges in 2015 and 2016. The cases were inspired largely by the Pennsylvania Supreme Court's plurality opinion in *Robinson Township v. Commonwealth*, and essentially argued that the ordinances did not regulate oil and gas development stringently enough, that zoning ordinances cannot permit oil and gas uses in agricultural or residential districts, and that municipalities

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must engage in extensive environmental assessments when enacting regulations.¹ The zoning hearing boards in Allegheny Township, Westmoreland County, Middlesex Township, Butler County, and Pulaski Township, Lawrence County, each rejected these arguments and upheld the ordinances. The remaining two challenges, in Robinson Township and New Sewickley Township, did not proceed to the merits.²

In May 2016, while the Allegheny and Middlesex cases were pending on appeal before the Commonwealth Court and the Pulaski case was pending before the Lawrence County Court of Common Pleas, Citizens for Pennsylvania's Future (PennFuture), with assistance from Fair Shake Environmental Legal Services (Fair Shake), challenged the Mount Pleasant Township, Washington County, zoning ordinance on similar *Robinson Township*-based grounds.

Range Resources-Appalachia, LLC, MarkWest Energy Partners, L.P., and owners of a proposed well site intervened in the case. The Mount Pleasant Township Zoning Hearing Board took testimony through nine nights of hearings and ultimately decided, as did the zoning hearing boards in the previous challenges, to uphold the targeted ordinance.

Critically, in the Mount Pleasant Township validity challenge, PennFuture offered a variety of witnesses as experts on the alleged health, property value, and environmental impacts of oil and gas development. The board universally

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Municipal ordinance challenges: *Continued from page 1*

rejected this testimony:

- Ned Ketyer, M.D., a Washington County pediatrician, testified to his belief that oil and gas development can pose health risks for children. He also testified that he assumed gas development results in harmful exposures to air emissions based on what he had seen and smelled, but that he had not reviewed air emission data or monitoring studies. The board did not find his testimony to be “credible to the extent necessary to consider in this matter.”

- Dr. Thomas Daniels, a professor of city and regional planning at the University of Pennsylvania, opined that oil and gas development is an “industrial” use that should not be placed in residential and commercial districts. However, the board noted that Dr. Daniels had never observed oil and gas development, was not familiar with Mount Pleasant Township and was unaware of well setbacks imposed by state law. The board rejected Dr. Daniels’ characterization of unconventional natural gas development as an “industrial” use, his opinion that the challenged ordinance was inconsistent with the township’s comprehensive plan and his opinion that the ordinance violates basic zoning principles.

- Dr. Christopher Timmins, an economist from Duke University, described his Pennsylvania-wide regression analysis study. That study concluded that a gas well can negatively impact the value of groundwater-dependent homes within a kilometer. However, Dr. Timmins also testified that his study did not take into account the timing of a well (i.e., whether it was in the development or production phase) at the time of a sale or

whether mineral rights were conveyed with the property. The board rejected the conclusions of his study.

Range presented several experts in defense of the ordinance:

- Anthony Gaudlip, Range’s director of civil/environmental engineering and construction, testified about the mandatory state and local permitting procedures related to the development of an oil and gas well. The board found this testimony to be credible and directly relevant, concluding it demonstrated “that outside of the control of the Township, there are in place considerable protections of the residents of the Township relative to unconventional gas developments.”

- Ross H. Pifer, director of the Center for Agricultural and Shale Law at Penn State Law, testified to the historic compatibility of oil and gas development and agriculture, and the reflection of that compatibility in various state laws. The board recognized Professor Pifer as an expert and accepted his findings and opinions.

- Dr. Christopher Long, an environmental and health consultant with Gradient, based his testimony on his review of materials including peer-reviewed published studies on air impact analysis in the Marcellus Shale region, various governmental reports and datasets, and commissioned studies in the Marcellus Shale region. He concluded that there exists a sizeable body of ambient air monitoring studies that can be used to assess the health risks associated with oil and gas development and that these studies do not support claims of widespread air exposures of public health concern. The board found that Dr. Long is “an expert with respect to toxicology, air exposures, and human risk assessment” and accepted his opinions and findings.

- Jerry Dent, managing director with Alvarez & Marsal, tes-

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tified as an expert on the impact of environmental issues on property values. Based on his analysis of local market-based sales data and related information, he concluded there was no evidence that unconventional natural gas development caused a systematic diminution of residential property values in the township. The board found Mr. Dent to be an expert on the subject matter and concluded that his opinions and findings were credible.

PennFuture presented Dr. Seth Shonkoff, executive director of PSE (Physicians, Scientists and Engineers) - Healthy Energy, in rebuttal to Dr. Long's testimony. Dr. Shonkoff did not find error in the basic information included in Dr. Long's report, but did criticize various aspects of Dr. Long's testimony. However, the board noted inconsistencies among some of the studies Dr. Shonkoff relied upon, that the epidemiological studies Dr. Shonkoff referenced were not based on actual air monitoring data, and that his criticism of Dr. Long's testimony was inconsistent with the data and evidence presented. The board concluded that Dr. Shonkoff's testimony was "equivocal, not properly founded, and not credible" and thus disregarded it.

PennFuture did not appeal the board's decision.

In addition to filing the Mount Pleasant Township challenge while the Allegheny Township and Middlesex Township cases were pending before the Commonwealth Court, PennFuture pursued the case while the Pennsylvania Supreme Court was considering two relevant cases, namely *Pennsylvania Environmental Defense Foundation v. Commonwealth* (argued in March 2016) and *Gorsline v. Board of Supervisors of Fairfield Township* (argued in March 2017). Both cases include *Robinson Township* arguments like those raised in Mount Pleasant Township, and, once decided, may have direct bearing on the viability of this line of validity arguments.

Despite the pendency of these appeals, Fair Shake filed another challenge—this one to the Penn Township, Westmoreland County, zoning ordinance—in April. The zoning ordinance in Upper Burrell, Westmoreland County, was also challenged in February. These new cases are substantially similar to the challenges that have already been decided.

Grant Township

Pennsylvania General Energy, L.L.C. (PGE) recently succeeded in its challenge to Grant Township, Indiana County's underground injection well ban. In 2014, the township worked with the Community Environmental Legal Defense Fund, an anti-industry, anti-corporation Pennsylvania-based community rights organization, to enact a self-styled "Community Bill of Rights"

ordinance. The ordinance specifically banned underground injection wells and purported to supersede any state or federal injection well permit. PGE, which obtained an EPA underground injection well permit in 2014 and had applied for a Pennsylvania Department of Environmental Protection (DEP) permit, filed a complaint in United States District Court for the Western District of Pennsylvania in October 2015 challenging the constitutionality, validity and enforceability of the ordinance.

The District Court initially invalidated six provisions of the ordinance on state law grounds in 2015³, and went on to grant three of PGE's six motions for summary judgment on the remaining federal claims in March 2017. The court found that Grant Township's ordinance violated the Equal Protection Clause of the Fourteenth Amendment because it discriminated against corporations, the Petition Clause of the First Amendment because it attempted to limit PGE's access to the courts and the Due Process Clause of the Fourteenth Amendment because it demonstrated "irrational and arbitrary behavior, which acknowledges language contrary to existing law and takes the purpose outside of the original point of the Ordinance." The court rejected Grant Township's motion for summary judgment on its counterclaim, which claimed that PGE is violating the rights of Grant Township's residents to "local community self-government." PGE's requests for damages, and injunctive and declaratory relief, remain viable after this ruling.

On the heels of the court decision invalidating Grant Township's ordinance ban, DEP reissued⁴ PGE's underground injection well permit. DEP then filed actions against Grant Township and Highland Township, Elk County, asking the Commonwealth Court to invalidate and enjoin enforcement of similar provisions that both townships had added to a home rule charter. In April 2017, the Commonwealth Court issued orders in both cases, temporarily enjoining the townships from enforcing their charters, pending a final determination on the merits. ■

The law firm of Babst Calland in Pittsburgh represented Range and PGE in these cases. For more about Grant Township and Highland Township, see April's PIOGA Press, page 6. If you would like additional information about developments in this article, contact Krista-Ann Staley at 412-394-5406 or kstaley@babstcalland.com, or Blaine Lucas at 412-394-5657 or blucas@babstcalland.com.

¹ The *Robinson* case and its relationship to the validity challenges are summarized in our May 2016 *PIOGA Press* article entitled "*Robinson Township* arguments continue to reverberate."

² Objectors in New Sewickley Township, Beaver County, withdrew their case after presenting their witnesses and before ordinance proponents presented their cases. A validity challenge filed in Robinson Township, Washington County, is pending in the Court of Common Pleas, on appeal from the Robinson Township Zoning Hearing Board's dismissal of the case on standing and ripeness grounds.

³ See the November 2015 article in *The PIOGA Press* entitled "Federal court invalidates portions of a local ordinance that banned the use of underground injection wells" by Babst Calland attorneys Kevin J. Garber, James V. Corbelli and Alana E. Fortna for additional case background.

⁴ The DEP previously issued a permit for the projects, but suspended it while the PGE case was pending. PGE has appealed the permit conditions, and the East Run Hellbenders Society and two residents have challenged the issuance of the permit.

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1 p.m.	Product & Equipment Roundup Opens
2-3:30 p.m.	Lunch for Pig Roast Ticket Holders
3-4:30 p.m.	PIOGA-PAC Reception
6-8:30 p.m.	Pig Roast Dinner
9 p.m.	Fireworks by Little Big Shots



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John Davies, Davies Public Affairs
- **What if...America's Energy Renaissance Never Actually Happened?**
Bob Garland, Silver Creek Services
- **Company Culture... Be Here for Life, Finding People's Why**
Joe Kopko, HUB International
- **OIL Forum: Operating, Innovation and Logistics**, featuring representatives of Rice Energy, Inc. and Huntley & Huntley Energy Exploration, LLC as well as a service company's perspective
- **Lunchon Speaker: Craig Wolfley, NFL Veteran**
Team Building and Pulling Toward a Unifying Goal
- **Panel Discussion: Economic Developments and Community Challenges Around the State**
Jeff Kotula, Washington County Chamber of Commerce
Vincent Matteo, Williamsport /Lycoming Chamber of Commerce
Jack Manning, Beaver County Chamber of Commerce
- **Blueprint to Success**
Jim Shorkey, Shorkey Auto Group and Results from Thinking

For agenda updates, registration and lodging information, visit the PIOGA Events section at www.pioga.org



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A misguided political response to ‘stripper well’ decision

By Kevin Moody,
PIOGA General Counsel

The March 29 Commonwealth Court decision that settled the meaning of the “stripper well” definition in Act 13, and the exemption of those wells from Pennsylvania’s impact fee (*April PIOGA Press, page 1*), has opened another can of worms—namely, a flurry of administrative and legislative maneuvering that ignores the legislative intent in the 2012 law. That frenzy of action also fails to recognize the most common-sense way to increase collections of the fee.

In a recent communication to the governor, the Public Utility Commission (PUC) suggested that the legislature “clarify” the definition as an end run around the court’s decision, and Representative Pam Snyder (D-Greene) introduced House Bill 1283 to accomplish that.

Let’s be clear: this political action would not clarify the language in Act 13. It would change it—based on irrational reactions.

The PUC’s response that the decision “has significantly jeopardized the current and future collection” of impact fees reflects a fundamental misunderstanding of the court’s function, as well as the definition by the agency tasked with its enforcement, which should concern the legislature rather than the decision itself.

The governor’s support of the PUC’s suggestion “to ensure that municipalities receive all the revenue they are entitled to from the state’s impact fee on gas drilling” is a blatant attempt to use the court’s decision for political purposes. The decision ensures exactly what the governor wants—but based on the rule of law, not politics.

The PUC’s continued reliance on the “restimulated” well provisions in Act 13 demonstrates its fundamental misunderstanding of the stripper well exemption. During the original legislative debate on Act 13, a member inquired whether restimulated wells would be paying the fee “in all instances.” The inquiring member asked because of the stripper well definition, to quote: “So in other words, *in some instances the communities will be subject to the refracking, the moving of trucks, the moving of water, but they may not receive any fee* [from refracked wells that qualify as stripper wells].”

Act 13’s sponsor responded: “Stripper wells were never considered—I mean, *they have been exempt regardless if they are refracked or not.*” Section 2302(d)(1) of Act 13 unambiguously states the General Assembly’s understanding: “An unconventional gas well which after restimulation qualifies as a stripper well shall not be subject to this subsection.”

Consequently, the current legislature should not operate under the mistaken understanding that changing the word “any” to “every” in 2017 is “clarifying” what the General Assembly meant in 2012.

Our appellate courts have consistently determined legislative intent without regard to adverse revenue impact, which is the sole basis for the PUC’s suggested end run.

In 2002, Commonwealth Court held that the plain language of the “natural gas supplier” definition excluded suppliers from “public utility” status, even though that meant suppliers could not be assessed for the PUC’s costs of regulating them. In 2003, Commonwealth Court rejected the Department of Revenue’s reg-

Stripper well impact fee legislation introduced

With the Public Utility Commission (PUC) claiming—echoed by the governor—that the Commonwealth Court’s March 29 decision in the Snyder Brothers/PIOGA case will cost the state and local governments \$16 million in lost impact fee payments, Representative Pam Snyder (D-Greene) was quick to introduce House Bill 1283. The legislation would change a single word the definition of a stripper well under Act 13 to coincide with the PUC’s incorrect interpretation of the oil and gas law.

The PUC is also appealing the Commonwealth Court’s decision to the state Supreme Court. By playing on fears of lost revenue, the commission and the governor office are hedging their bets against the Supreme Court agreeing that the PUC is wrong in its interpretation. At least one commentator has observed that the PUC is very likely overestimating the \$16-million loss in impact fee collections.

“As a result of the recent court decision, counties and municipalities across the state which receive impact fee revenues to address critical infrastructure needs and impacts of natural gas development will receive millions less this year and in future years,” an April 12 statement from the governor’s office said. “The governor believes that the language should be fixed to ensure that counties and municipalities receive the funding they depend on.”

A “stripper well” is defined in Act 13 as an unconventional gas well incapable of producing more than 90,000 cubic feet of gas per day during *any* calendar month. The Commonwealth Court decided that the common meaning of “any” is “one.” HB 1283, however, would change “any” to “every.”

The amended definition would apply retroactively under HB 1283 to production occurring after December 31, 2014—although it is not clear why this date was chosen. The bill was referred on April 25 to the House Environmental Resources and Energy Committee.

There is also concern that the stripper well debate could provide fuel to efforts to impose a natural gas severance tax. PIOGA will remain vigilant to both initiatives, particularly as budget negotiations heat up in the coming month.

ulation interpreting the statutory phrase “within this State” even though that meant reduced Corporate Net Income Tax collections and refunds.

In 2004, Commonwealth Court held (affirmed by the Supreme Court in 2005) that the phrase “electric cooperative corporation furnishing public utility service” excluded electric cooperatives providing electric service only to their members from the Public Utility Realty Tax Act, even though that meant substantial refunds.

In 2014, the Supreme Court interpreted the phrase “as a result of playing a slot machine” to allow the costs of cash and non-cash promotional awards to be subtracted before calculation of a gaming facility’s tax base of “gross terminal revenue,” even though that meant reduced slot machine tax collections and refunds.

These decisions show why the court was correct to ignore the

PUC's claims of reduced impact fee collections.

The moves to amend the stripper well definition also miss the point that any reduced collections resulting from the court's simple, straightforward statutory interpretation would not be "lost." They would be available for reinvestment—if available after paying for the increased costs imposed by the new Chapter 78a regulations.

EPA reconsidering methane rules as part of Trump directives

The U.S. Environmental Protection Agency (EPA) is reconsidering certain regulations governing new and modified sources of methane emissions from the oil and gas industry, promulgated at 40 C.F.R. Part 60, Subpart OOOOa. As part of an April 18 announcement, the agency said it would delay the leak detection and repair (LDAR) compliance deadline of June 3 by three months.

An executive order (EO) issued March 28 by President Trump included a directive to the EPA to review the EPA's Subpart OOOOa New Source Performance Standard (NSPS) for methane emissions from the oil and gas industry (*April PIOGA Press, page 4*).

"EPA is continuing to follow through with President Trump's Energy Independence EO," said EPA Administrator Scott Pruitt. "American businesses should have the opportunity to review new requirements, assess economic impacts and report back, before those new requirements are finalized."

In addition to the 90-day delay of the June 3 compliance date, EPA is accepting comments on the LDAR requirements and

Let's also not marginalize the fact that there were 1,370 shale gas wells drilled in Pennsylvania in 2014, but only 503 in 2016. Enabling additional natural gas production—not imposing additional taxation—is the most effective commonsense solution to increasing impact fee collections. ■

other limited aspects of the rule, including the low production well exemption.

In an April 18 letter to organizations including PIOGA that formally objected to the rules, Pruitt said the petitioners "raised at least one objection to the fugitive emissions monitoring requirements included in the final rule that arose after the comment period or was impracticable to raise during the comment period, and that is of central relevance" under the Clean Air Act.

Pruitt wrote that among the issues raised "are objections regarding the provisions for requesting and receiving alternative means of emissions limitations and the inclusion of low-production wells. These provisions, or certain aspects of these provisions, were not included in the proposed rule so the public could not have raised objections to these provisions during the public comment period."

Under the executive order, the agency has 45 days to submit a review plan to the Office of Management and Budget. A draft report on the EPA's actions is due within 120 days of the president's March 28 order, with a final report due within 180 days.

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The rules were written to implement the Obama administration's goal of cutting methane emissions from oil and gas by 40-45 percent by 2025. The regulations built on 2012 New Source Performance Standards that focused entirely on emissions of volatile organic compounds (VOCs) from new and modified oil and gas wells, pulling in additional sources and regulating methane directly for the first time.

On April 7, the Trump administration requested a federal court delay a series of lawsuits over three final rules updating NSPS that the EPA announced in May 2016. The court was asked to hold the case in abeyance until 30 days after the EPA completed the review called for under the executive order.

The court is likely to grant the motion. The effort will then shift to working with EPA review, revise or rescind the regulations. PIOGA is coordinating efforts with the Independent Petroleum Association of America and the other trade associations that challenged the methane NSPS to participate in the reconsideration rule making and related efforts with EPA. ■

Pennsylvania, Ohio increased natural gas production more than other states in 2016

The U.S. Energy Information Administration (EIA) published a *Today in Energy* article on April 25 that looks at how Pennsylvania and Ohio had the largest increases natural gas production among all states during 2016 as productivity increased in the Marcellus and Utica shale plays.

Key points in the article include:

- Pennsylvania and Ohio had the two largest annual natural gas production increases from 2015 to 2016, up 1.2 billion cubic feet per day each, reflecting higher production from the Utica and Marcellus shale plays, which have accounted for 85 percent of the U.S. shale gas production growth since 2012.

- The increased productivity of natural gas wells in the Marcellus and Utica is a result of ongoing improvements in precision and efficiency of horizontal drilling and hydraulic fracturing occurring in these regions.

- Production in Pennsylvania and Ohio has accounted for an increasing share of total U.S. natural gas production in recent years, growing from less than 2 percent in 2006 to 24 percent in 2016.

- EIA's Short-Term Energy Outlook projects that total U.S. natural gas production will increase in both 2017 and 2018 as natural gas prices rise, resulting in higher rig activity.

Read the article at www.eia.gov/todayinenergy/detail.php?id=30932. ■

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PIOGA Water and Waste Management Training a big success

Our April 20 PIOGATech Water and Waste Management Training won rave reviews from participants. Here's what one said: "Great program today. I learned a lot of useful information and met many new friends! Very well organized and executed."

PIOGA thanks the Environmental Committee and our industry partners Aquatech International Corporation, Fluid Recovery Services, LLC and Babst Calland for making the event a big success. Thanks too to our speakers and everyone who attended the program.

The committee's next training opportunity will occur on July 27 and address aboveground storage tanks and respirable silica compliance. Watch your email or check the PIOGA Events section of our website for further details.



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Thanks and good luck, Tracy!

It is with mixed feelings that we report April 28 was Tracy Zink's last day on the PIOGA staff. On the one hand, we are excited for her chance to pursue a new career opportunity. On the other, we will miss her upbeat personality in the office as well as the many things she has capably done for the association.



Tracy joined PIOGA in November 2012 and most recently held the title of Committee Liaison and Senior Administrative Assistant. As administrative assistant, Tracy did everything from greeting people who walked into the office to ordering supplies to maintaining the association database—the latter seemingly a full-time task in and of itself.

Some of Tracy's most important work involved our committees. She coordinated with committee chairs and PIOGA staff members to schedule and organize meetings and to make sure committee members received updates and meeting materials in a timely manner. A huge task for her was taking care of the logistics for our popular PIOGATech technical training series.

That just scratches the surface of what Tracy did on behalf of your association over the last four and a half years. We will truly miss her and wish her the best as she takes this next step in her career. ■

Board member changes

“Thanks for your service” go out to two individuals leaving the Board of Directors.

Bob Esch is retiring from American Refining Group and will be replaced by ARG's vice president of crude oil acquisition, Bill Murray. Bob was on the board of the Pennsylvania Oil & Gas Association when the merger with the Independent Oil & Gas Association of Pennsylvania created PIOGA in April 2010, and his many years of industry experience will be missed on the PIOGA board.

Matt Tripoli with IMG Midstream is taking a position in another industry and is replaced by Ron Kiecana, chief business development officer.

Welcome aboard, Bill and Ron! ■

New PIOGA member — welcome!

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Producer

Significant challenges remain for Pennsylvania pipeline construction

Permitting for pipeline construction continues to be a challenge across Pennsylvania. The need for additional pipelines and infrastructure is very real and immediate as evidenced by Braskem's decision in the fall of 2016 to build a \$500-million plastics plant in Texas, not in Marcus Hook near downtown Philadelphia. The reason for choosing Texas over Pennsylvania: our lack of infrastructure. The Braskem project would have created 6,000 jobs over three years, 600 permanent plant jobs and additional higher-income jobs throughout the supply chain.

However, the news is not all bad. The Pennsylvania Department of Environmental Protection recently issued the green light for the Mariner East Pipeline to continue moving forward. This pipeline will bring natural gas liquids from southeastern Ohio to southeastern Pennsylvania. The project benefits from solid business and labor support displayed at public hearings throughout the review/approval process.

Other pipeline projects continue to be delayed by environmental permitting and litigation initiated by environmental groups. They include the PennEast and Constitution pipelines. Completion of these pipelines is essential for our industry to achieve maximum economic growth and quality career opportunities.

The Federal Energy Regulatory Commission (FERC) regulates pipelines across the United States. FERC is responsible for pipeline approval, permitting and site selection for new facilities. FERC has responsibility for setting transmission rates pipelines may charge for interstate shipments.

FERC's power to regulate interstate pipelines comes from the Natural Gas Act of 1938. When reviewing interstate pipeline construction, FERC must approve all routes and promulgates requisite conditions for permit approval.

Other laws and regulations affect pipeline construction. The Clean Air Act, Endangered Species Act, Clean Water Act and the Coastal Zone Management Act are among the many federal laws pipeline developers must abide by.

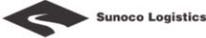
But new challenges are being initiated at the local and state level. Pennsylvania State Senator Andrew Dinniman (D-Chester) recently introduced Senate Bill 574. If adopted, this legislation would make all Pennsylvania natural gas transmission pipelines subject to local property taxes, including those levied by school districts. During a period in which we need to strongly encourage pipeline construction, this bill would create another financial barrier affecting long-term costs of operating natural gas pipelines.

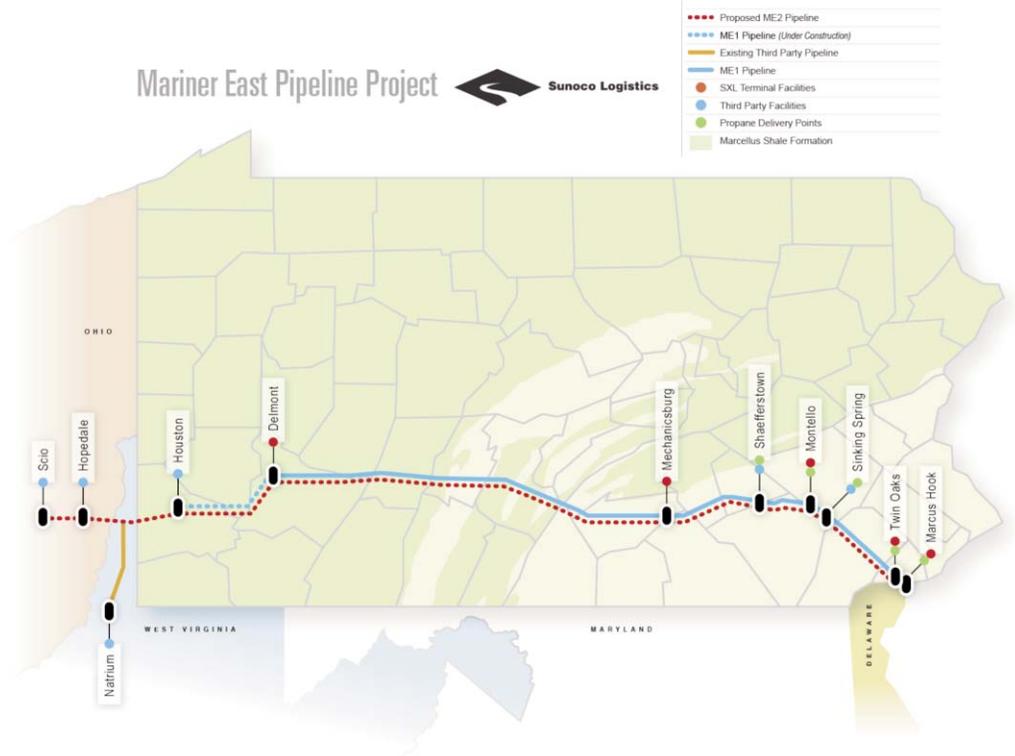
At the local level, some Pennsylvania municipalities seek to enact pipeline ordinances adding additional fees and regulations and thus create more barriers to important pipeline construction. For example, Elizabeth Township in Allegheny County is reviewing a pipeline ordinance that includes a \$50,000 fee for all new pipelines constructed in the municipality. These fees may include homeowners installing a line from their house to the utility meter!

The PIOGA Pipeline and Gas Market Development Com-

mittee (PGMD) reviews pipeline regulations at the local and state level. Our goal is to develop best practices for local governments and provide valuable information about the role of FERC and DEP in regulating pipeline development across the Commonwealth. These “Best Practices” will be able to be viewed publicly on PIOGA’s website and studied by municipalities considering new pipeline ordinances. PIOGA members are encouraged to follow pipeline and drilling issues in their communities. We must educate state and local officials about pipeline regulations and the powers granted to municipalities for industry oversight.

More importantly, we will be promoting the further advancement of pipeline development in Pennsylvania, leading to a better economy and more energy jobs. ■

Mariner East Pipeline Project 



For more information, contact PGMD Public Relations Subcommittee co-chairs Steve Franckhauser at sfranckhauser@hbkcpa.com or Robert Johnson at rjohnson@adkl.org.




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Retiring Engelder's expertise helped fuel natural gas boom across nation

Geoscientist calculated vast amounts of accessible resources within the Marcellus Shale

By David Kubarek

Fifty-eight years ago, Terry Engelder wasn't yet a world-renowned geoscientist. He was a kid with a keen interest in science, a passion ignited by the space race and fueled by the funds that flowed into schools as the nation sought the next generation of discovery.

Using a posterboard and markers, Engelder sketched "Faulting in Western New York" for the junior high science fair. Among the layers Engelder shaped below his hometown was the Marcellus Shale, which decades later Engelder would make famous after successfully projecting it as the second-largest extractable natural gas field in the world.

But even a grown-up Engelder, now a geosciences professor at Penn State, couldn't predict how that one estimate would dominate and redefine his decades-long career, which draws to a close in June.

The magic number

During a webinar in 2007, Engelder was asked how much accessible natural gas rested in the Marcellus Shale. He was stumped, so after the event he did what any scientist would do; he grabbed the first piece of scrap paper he could find and did a quick calculation. The result? That 50 trillion cubic feet of gas—more than 25 times the U.S. Geological Survey estimate—could be extracted from the enormous expanse of rock that spans six states.

That piqued the interests of natural gas companies, and, when more data from testing wells started funneling in, Engelder improved his estimate for technically recoverable gas to 489 trillion cubic feet, about 18 years' worth of total U.S. gas consumption.

"The calculation that I did was based on very little data and a whole heck of a lot of insight. And maybe you could argue that bubble gum and some rubber bands held it together but it worked," said Engelder. "That was the firm number that allowed a lot of people who spent money on this to move forward. That particular calculation was by far the highlight of my career."

Engelder said people recognized that vast reserves of gas were in the Marcellus Shale, but most thought they were inaccessible. But when fundamental changes in technology, through hydrofracturing, or fracking, showed promise in areas such as Texas, Engelder applied that technology to his calculation.

The result led to a natural gas boom that—for the first time in decades—allowed the nation to extract more natural gas than it used. It also led to a boom in jobs for the region and hundreds of millions of dollars in lease bonuses flowed into the region.

"In terms of satisfaction, very few scientists can say that they did something that affected a lot of people in the state and the nation in such a palpable way," said Engelder. "The amount of money that was spent in Pennsylvania, particularly off of the excitement generated by that initial projection, was rather remarkable."

That projection thrust Engelder into the spotlight, as well. He's been interviewed by nearly 600 reporters worldwide. He's been cited by Foreign Policy magazine's "Top 100 Global

Thinkers," alongside Barack Obama, Bill Gates and Mark Zuckerberg. He's served on commissions advocating for the safe extraction of natural gas for former Pennsylvania Governor Tom Corbett and current Governor Tom Wolf.

Engelder said despite losing valuable research time during those years of intense public interest in his expertise, he doesn't regret the countless hours he's spent educating the public and advocating for U.S. energy sustainability.

"There are a number of ways that science manifests itself," said Engelder. "One way is writing peer-reviewed papers. Another is serving as a liaison between science and the public,



Terry Engelder, a world-renowned geoscientist who first predicted there were vast amounts of accessible natural gas within the Marcellus Shale, sparking a natural gas boom in the region, is retiring from a decades-long career at Penn State. Here, he holds a piece of the Marcellus Shale rock. (Penn State photo)

and very few scientists have the opportunity for such intense interaction with the public."

He does have one regret.

Mid-boom, he was two hours into an interview when Time magazine's Bryan Walsh asked if he could take a picture of a piece of Engelder's Marcellus Shale. Rushed for class, Engelder shooed the reporter away.

A few months later, after touching down in Houston, something in the newsstand caught his eye.

"I saw someone else's shale on the cover of Time magazine and realized that I just really blew it because I had a chance to have a piece of my shale grace the cover of Time magazine," said Engelder.

Jack of all trades, master of none

Engelder said his eclectic mix of expertise has been both a blessing and a curse. He said scientists with a more narrow focus tend to garner more accolades. Yet he's been all over the geological map.

After earning a master's degree at Yale, he studied fault gouge, rocks formed by tectonic forces, and earthquake generation while earning his doctorate at Texas A&M University. For his postdoctoral work at Columbia University, he branched out into other areas of geophysics including the measurement of stress in the earth. By the time he became a member of Penn State faculty, returning to where he received his undergraduate

degree (1968) while running track and cross country, his research had shifted to understanding rocks of the Appalachian Basin that are involved in the accumulation of oil and gas deposits.

That pogo-stick approach to research, he said, led to collaboration with scientists featured in three unique projects that were cover stories in Time magazine.

He researched friction with Chris Scholz, who was quoted in a 1975 cover story "Earthquake Prediction." His time in the field with Walter Alvarez, who discovered that a massive meteor was behind the demise of dinosaurs, led to "Dinosaur Extinction" in 1985. And his Marcellus Shale prediction led to the 2011 cover story "This Rock Could Power the World."

Keeping busy

Retirement will afford Engelder time to dive deeper into some of his hobbies. He's working on a book on the fracking industry and the pushback surrounding the boom. He'll also invest more time on an art interest that surprisingly ties back to his expertise: craquelure, or the study of how painted works, including famous masterpieces in museums from the Louvre to the National Gallery, crack due to time, materials and paint.

Engelder has become somewhat of an expert on craquelure, giving talks on the topic at Palmer Museum of Art at Penn State. It all started during a trip to the Louvre in France.

"You can look at an outcrop of the Marcellus Shale that has some fractures in it and the geometry of those fractures are nearly identical to the fractures in the Mona Lisa's face," said Engelder. "The cracks just jumped right out at me. I immediately recognized that these were patterns I was familiar with from studying rocks, so off I went."

Engelder said craquelure can be used to identify counterfeit

paintings because it's impossible to recreate the exact patterns of the world's masterpieces. It's also an important tool, he said, in understanding the materials used at the time and the artist's method of paint application.

He'll also have more time to spend with his wife, Janice, whom he met on a blind date in 1968. She was a math education major at Penn State ('69). After the family, including children, Zoe, Stacey, and Todd, returned to Happy Valley in 1985, she taught math classes at Bald Eagle Area High School, including statistics, calculus, geometry and a couple levels of algebra.

'The thing I'll miss the most'

Engelder said he's been honored to mentor and nurture so many young people in their quest to become experts in the field.

"The thing I'll miss the most is the excitement that I find in dealing with young people," said Engelder. "I still get excited when walking into a classroom. I still get a kick out of seeing all these eager faces. Some are there just ready to listen and soak it in. Others are there challenging me to pique their interest in the subject. I think that anyone who has taught for any length of time will tell you that sense of the classroom is something you will always miss."

He's also going to miss his colleagues.

"We have one of the finest geosciences departments in the world," said Engelder. "They're an amazing group of people to work with and to be around. I'm going to miss being a part of this group of people." ■

This article was published April 27 at Penn State News (news.psu.edu). The article and photo are used here with permission.



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OSHA resources for the oil and gas industry

At their April meeting, members of PIOGA's Safety Committee heard a presentation by David Rhodes, assistant area director for safety at the Pittsburgh office of the Occupational Health and Safety Administration. In addition to briefing the committee on recent OSHA rule changes and enforcement initiatives, he encouraged companies in the oil and gas industry to take advantage of a wide range of resources available on the agency's website.

The starting point is www.osha.gov/SLTC/oilgaswelldrilling. The main body of the page contains links to the safety standards that cover the oil and gas extraction industry. Links to the various OSHA regions (we are in Region III) show Local Emphasis Programs that are intended to address hazards or industries that the agency says pose a particular risk to workers in that office's jurisdiction.

A navigation bar near the top of the main oil and gas page takes you to other pages dedicated to safety hazards, health hazards, standards and enforcement, and additional resources specific to oil and gas extraction. Each of the pages provides comprehensive information on those topics.

For instance, OSHA points out that the primary hazards to workers in our industry include:

- Vehicle accidents
- Struck by / caught in / caught between
- Explosions and fires
- Falls

Safety Committee Corner

- Confined spaces
- Chemical exposures

The Safety Hazards page addresses each of these topics with a description of the hazard, and links to documents that can help employers and workers identify and deal with each danger.

Oil and Gas eTool

Back on the main oil and gas webpage, the "Highlights" column on the right side of the page includes new regulatory and enforcement initiatives such as the update to the respirable silica rules. Also highlighted are hazards that OSHA wants to bring special attention to, including health hazards posed to workers involved in manual tank gauging.

OSHA's Rhodes noted in particular the Oil and Gas Well Drilling and Servicing eTool. The tool is divided into site preparation, drilling, well completion, servicing, plugging and abandoning a well, and general safety and health.

Choosing any of the topics highlights several stages in each process and provides resources aimed at helping do the job safely. Rhodes indicated the eTool is a work in progress that industry is helping fine tune. ■

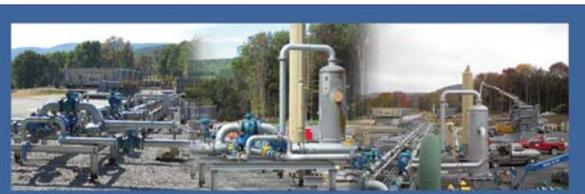
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Where in the World is the PIOGA outreach team?

Using natural gas to produce ethanol

By Joyce Turkaly,
Director of Natural Gas Market Development

Pennsylvania Grain Processing, LLC (PGP), located in Clearfield, hosted PIOGA members for a tour of its ethanol facility on April 13. Driving to the plant from Route 322, the first noticeable signs of the facility are the silos; half store the corn and the other half store the dried distillers grains (DDGS). The distillers grains are one of the co-products, the non-starch parts of the corn kernel, which when dried turn into a yellow sand-like material. The distillers grains are a high-protein, high-fiber animal feed that are not used in making ethanol.

It would be impossible to get all the corn the facility needs without the railroad. Adjacent to the West Branch of the Susquehanna River is a Norfolk Southern line. Approximately half of the corn used to make ethanol is delivered to the plant on trucks from western Pennsylvania and northeast Ohio; the other half is sourced farther west. A rail car holds 3,900 bushels, or about four truckloads. The nameplate capacity of the plant is 110,000 bushels per day. With the main corn states being mainly the "I" states, we were told that Pennsylvania growers don't impact the U.S. price of corn. Once you get to mid-July, and if there is no adverse weather or insect issues, the price of corn stabilizes. The average yield per acre in Pennsylvania is 150



bushels. As in most feedstock applications, proximity to the plant also matters in pricing to the farmer.

In addition to an ideal site with access to both rail and water, the PGP business model is sustained by owning the natural gas pipeline from Columbia Transmission to the plant, which in turn saves PGP a local distribution company charge.

Brian Kelly, corn originator, kicked off the plant tour with a company slide presentation. From one bushel of corn, PGP makes 2.8 gallons of ethanol; 16 pounds of DDGS, of which a half-pound is used to make corn oil; and they produce 17 pounds of CO₂. Also available to answer questions on logistics was Gary Lyons, freight coordinator. Gary told us the facility operates 20 hopper-bottom trailers designed to be ultra-light, allowing for approximately 1,000 bushels of corn per load. PGP offers prompt pickup service should a farmer not wish to contract for trucking himself. PIOGA members were able to visit the offloading building, where we witnessed three trucks unload roughly 3,000 bushels of corn in a matter of about 15 minutes. In addition to the corn they bring in, they also haul out DDGS on these same hopper trailers. The DDGS is then shipped to major poultry producers in Pennsylvania, West Virginia, Virginia and Maryland; tanker trailers deliver the corn oil to some of these same producers, where it is blended into the feed.

The water treatment or cleaning and cooling process uses 3 million gallons of water via a system loop design. Currently 800,000 gallons of water are pulled from the Susquehanna River and 100,000 gallons are returned on a daily basis. The PGP plant utilizes approximately 9,000 Mcf of gas daily in the processing of ethanol as well as 100,000 gallons/week of wellhead condensate or natural gasoline used as a denaturant. The energy center, where most of the natural gas demand is consumed, is comprised of two natural gas fired boilers and four natural gas dryers. Construction is underway at an adjoining facility, where roughly 50 percent of the CO₂ offtake will become another co-product from the plant, converting the CO₂ to dried ice and liquefied CO₂ instead of merely venting into the atmosphere.

In total, the energy used at this facility produces around 360,000 gallons of ethanol, 1300 tons of dried distiller grains and 72,000 pounds of corn oil daily. In addition to providing the ethanol that is sold to retailers such as Sheetz, PGP is also feeding over 22 million chickens a day with its byproducts. The new owners purchased the plant in first quarter 2012 and it has been operational since July 2012. ■



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Westmoreland County forum

More than 80 Westmoreland County leaders came together on March 30 at the Westmoreland County Community College's Advanced Technology Center in Youngwood to learn more about the broad economic benefits and opportunities being realized in the county thanks to natural gas development. The Shale Summit, hosted by the Keystone Energy Forum and Consumer Energy Alliance, was attended by government officials, educators, economic development representatives, labor unions, business people and others interested in energy and manufacturing issues in the county.

The three-hour program included panel discussions on production, pipelines and safety; education and workforce development; and manufacturing. Panelists focused on their organization's role in developing, transporting, using and benefiting from natural gas production, or in educating and training individuals to meet the growing demand for jobs in the energy and manufacturing fields.

Infrastructure development remains a key element in the process of getting natural gas from the wellhead to the burner tip, as discussed among the production and pipeline panelists. Huntley & Huntley Executive Vice President Mike Hillebrand, a PIOGA board member, discussed his company's plan to drill wells in a number of Westmoreland County townships in the near future, and Chris Koop, Sunoco Logistics' Community Liaison, detailed his company's plans to construct the Mariner East 2 pipeline through the county.

The coordination taking place among high schools, the community college and labor unions such as Local 66 of the Operating Engineers to train potential workers of all ages was a highlight of the education and opportunities panel. The organizations work together to maximize their resources and personnel to prepare the next generation of skilled workers needed by the energy industry and Westmoreland County's manufacturers.

Those manufacturers and service companies in the county have experienced growth and development in the past several years. Reserve Environmental Services' flowback water recycling facility initiated operation at the former Sony manufacturing plant in Youngwood, and the company has added additional treatment plants near Butler and Ashtabula, Ohio, to manage water from both Marcellus and Utica producers.

Export-based Dura-Bond Industries, which coats and supplies pipe of all sizes to natural gas producers and transporters, has grown to four manufacturing locations, including the redevelopment of former steel production facilities in McKeesport and Steelton, Dauphin County, previously operated by US Steel and Bethlehem Steel. The company has steadily increased its production and workforce with the establishment of the Marcellus and Utica shale plays.

The construction of Royal Dutch Shell's ethane cracker will benefit another important Westmoreland County manufacturer, as explained by Michael Storms of the Elliott Group. The company employs more than 1,200 people at its Jeannette headquarters and manufacturing location, and has contracts to build six compressors, three steam turbines, two oil systems and six dry gas seal packages for Shell's Beaver County facility. Storms estimated employees at the Jeannette facility will dedicate 40,000 manufacturing hours and 35,000 engineering hours to complete these large-scale projects.

The forum presented a bright future ahead for manufacturing, employment, and natural gas production and transportation in Westmoreland County. Equally important, it highlighted the need for policies that encourage that development at all levels of government in order to maximize the broad economic benefits that each segment of the county's economy can realize. ■

PIOGA member steps out with energy forum

Guttman Energy hosted an afternoon energy forum for the benefit of their clients and consumers of transportation fuels last month. Guttman Energy is one of three business units that comprise the larger Guttman Group, delivering fuel supply via pipelines, barge and truck to end-users. The forum was less about Guttman the company and more about a host of other relative topics and speakers who provided updates in areas of economic and political viewpoints: U.S. and world



growth under the new administration, border adjustment taxes leading to inflation here abroad, projections on economic growth and federal interest rate adjustments, and finally modest GDP growth at 2 percent while global growth would appear stuck at 3 percent.

The supply side of the equation was good news for the customers in the room. With inventories up for both oil and natural gas and an oil cap range bound prediction at \$50-\$60 Bbl, according to Stuart Hoffman, Chief Economist for PNC, and confidence in Saudi Arabia taking on the role swing producer somewhere between \$45-\$49 Bbl. Jeff Quigley, Stratias Advisors held hope for strong economic indicators tied to consumer spending and confidence; he also noted that the OPEC cut extension may ride out through the end of 2017. Former Department of Environmental Protection Secretary Mike Krancer was on hand with his colleague Keith Norton promoting their new company, Silent Majority Strategies, LLC, and Alex Epstein author of *The Moral Case for Fossil Fuels* closed out the program, tying the conversation around the societal benefits calling the moral issue, a "pro-human" one; advising industry to take the conversation to another level and not to debate with facts; to find common ground on why we wish to promote the energy policy and the conversation that ensues that is best for human flourishing versus where it is often times most concentrated on human impact. ■

PIOGA Member News

Cawley named ARG global business development manager

Adding a wealth of worldwide industry experience, Todd Cawley has joined the American Refining Group Inc. (ARG) sales team as its Global Business Development Manager.

Neal Zuzik, ARG Senior Vice President – Sales, Marketing and Business Development, announcing the move said, “We are really excited to have Todd join the ARG family. Todd’s high energy and proven track record of growing businesses both domestically and around the world is an exciting addition to our team. Todd will play a leadership role in our ongoing efforts as a specialty refining company committed to being the trusted partner of choice to our customers.”

Cawley has more than 20 years of experience in the oil industry, the bulk spent in sales with Sinclair Oil Corp. At ARG, he is responsible for growing strategic sales and cultivating a strong sales team to drive growth and profitability.

ARG’s refinery sits on approximately 131 acres in McKean County. The refinery has a rated capacity of 11,000 barrels per day and processes light, sweet, paraffinic crude. ARG stocks are converted into high-quality waxes, lubricant base oils, gasoline

and fuels, as well as a wide variety of specialty products.

Chesapeake Utilities subsidiary expands propane fueling facilities

Sharp Energy, Inc., the largest propane retailer on the Delmarva Peninsula and a subsidiary of Chesapeake Utilities Corporation, has constructed and placed into service an AutoGas propane fueling station for fleet vehicles located near the Baltimore/Washington International (BWI) Airport. Airport shuttles, school bus companies, and commercial fleets can use this new fueling station to power their fleets with propane, a preferred alternative fuel option that reduces emissions and yields savings.

MBG Enterprise, a Baltimore area school bus company that has already begun using the new AutoGas station to power 10 school buses, will be displacing more than 30,000 gallons of diesel a year. The company has recently added eight additional propane AutoGas-fueled buses for the start of the 2017-2018 school year.

Propane reduces carbon monoxide emissions up to 60 percent compared to diesel on a lifecycle basis while reducing smog-producing hydrocarbons by an estimated 80 percent. Substantial economic savings are achieved through fuel and maintenance cost savings. Historically, customers that have converted vehicles to propane AutoGas have saved \$1.00 or more on each gallon of propane as compared to gasoline. Sharp Energy has a dozen AutoGas stations operating in Delaware, Maryland.

Akujeze joins LDG as Vice President of Finance

Larson Design Group (LDG) announces that Adanma Akujeze has joined its corporate leadership team as VP of Finance. In her role, Akujeze will oversee LDG’s accounting department. She will be responsible for mentoring staff, executing analyses of various business initiatives and implementing long-range planning tools such as forecasts.

Prior to joining LDG, Akujeze served in finance leadership roles at Weis Markets, Inc., first as Chief Internal Auditor and then as Director of Corporate Accounting and Compliance. She is a graduate of Michigan State University, where she earned both her bachelor’s and master’s degrees in accounting. ■

PIOGA Member Profiles

Introduce your company

Introduce your company and tell other members what you offer to Pennsylvania’s oil and gas industry. The guidelines for making a PIOGA Member Profile submission are:

- Include a brief history of your company. When and where was it founded, and by whom? Is the company new to the oil and gas industry in general or to Pennsylvania?
- Describe the products and services you offer specifically for the oil and gas industry. Do you have a product in particular that sets your company apart from the competition?
- If applicable, tell how the business been positively impacted by Pennsylvania’s oil and gas industry. Have you expanded, added employees or opened new locations?
- Include a website address and/or phone number.
- Your submission may be a maximum of 400-450 words and should be provided as a Word document. Use minimal formatting—bold and italic fonts are OK, as are bulleted or numbered lists. Your submission is subject to editing for length, clarity and appropriateness.
- Include your company logo or a photo. Images must be high-resolution (300 dots/pixels per inch or higher) and in any common graphics format. Please include identifications for any people or products in a photo. Send image files separately, not embedded in your document.

Email material to Matt Benson at matt@pioga.org. This is a free service to our member companies and publishing dates are at the discretion of PIOGA. If you have questions, email Matt or call 814-778-2291.

Guidelines for member news submissions

We are happy to accept submissions of news items by PIOGA member companies regarding new products or services, new facilities, expansions, open houses, promotions and hirings, and similar developments. The news must apply specifically to the company’s Pennsylvania operations and products/services for use in the oil and gas industry. Personnel items must be for Pennsylvania-based employees or whose territory includes Pennsylvania, except in the case of top company officers.

All such items will be used in the newsletter on a space-available basis and are subject to editing for length, clarity and appropriateness. Submissions should be e-mailed to Matt Benson (matt@pioga.org) and the subject line should clearly state that it is PIOGA member news. Material is due by the first of the month to be considered for that month’s issue.

If you have an idea for a more in-depth article, particularly on technical issues, or would like to submit a PIOGA Member Profile, please e-mail Benson at the address above.



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Oil & Gas Trends

Pennsylvania Rig Count



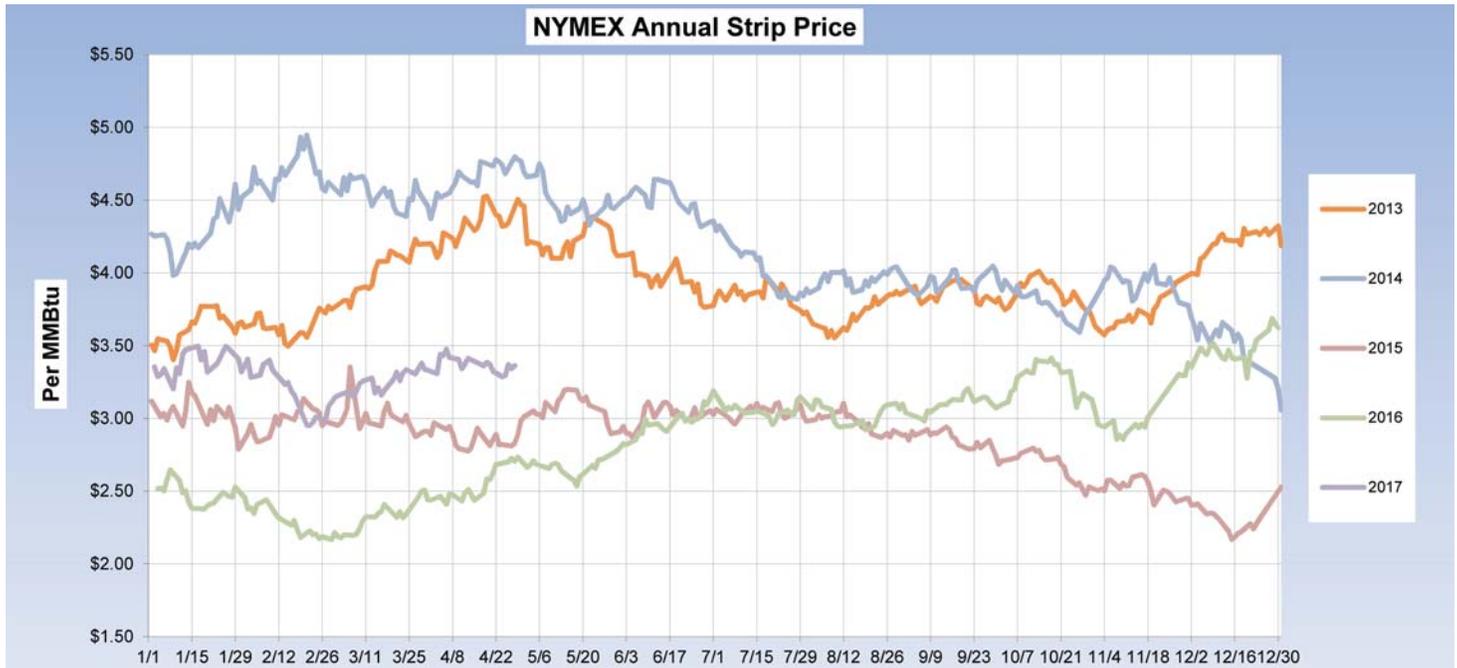
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Have industry colleagues or vendors you think should be PIOGA members? Encourage them to click on "Join PIOGA" at the top of our homepage, www.pioga.org. Or, let us know and we'll contact them. There's strength in numbers!



Natural Gas Futures Closing Prices

Month	Price
June 2017	\$3.266
July	3.350
August	3.382
September	3.369
October	3.389
November	3.441
December	3.559
January 2018	3.631
February	3.595
March	3.505
April	2.949
May	2.887

Prices as of May 5



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In our latest move to connect Pennsylvania's energy producers with the OCTG requirements they need, Sooner Pipe L.L.C. purchased McJunkin Corp. Tubular Division effective February 2016. The collective sales force is well prepared to provide you with the best selection of OCTG products and services.

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Spud Report: April



The data show below comes from the Department of Environmental Protection. A variety of interactive reports are

OPERATOR	WELLS	SPUD	API #	COUNTY	MUNICIPALITY
Apex Energy (PA) LLC	2	4/20/17	129-28941*	Westmoreland	Hempfield Twp
		4/20/17	129-28942*	Westmoreland	Hempfield Twp
Branch John D	1	4/4/17	123-47973*	Warren	Mead Twp
Cabot Oil & Gas Corp	6	4/2/17	115-22190*	Susquehanna	Brooklyn Twp
		4/2/17	115-22191*	Susquehanna	Brooklyn Twp
		4/2/17	115-22192*	Susquehanna	Brooklyn Twp
		4/2/17	115-22193*	Susquehanna	Brooklyn Twp
		4/2/17	115-22194*	Susquehanna	Brooklyn Twp
Chief Oil & Gas LLC	6	4/2/17	115-22189*	Susquehanna	Brooklyn Twp
		4/28/17	015-23305*	Bradford	Leroy Twp
		4/28/17	015-23306*	Bradford	Leroy Twp
		4/26/17	015-23296*	Bradford	Wilmot Twp
		4/26/17	015-23297*	Bradford	Wilmot Twp
EQT Production Co	25	4/2/17	113-20357*	Sullivan	Elkland Twp
		4/2/17	113-20364*	Sullivan	Elkland Twp
		4/17/17	059-27213*	Greene	Center Twp
		4/17/17	059-27216*	Greene	Center Twp
		4/17/17	059-27225*	Greene	Center Twp
		4/17/17	059-27226*	Greene	Center Twp
		4/17/17	059-27227*	Greene	Center Twp
		4/18/17	059-27223*	Greene	Center Twp
		4/18/17	059-27224*	Greene	Center Twp
		4/24/17	059-27228*	Greene	Center Twp
		4/19/17	059-27233*	Greene	Franklin Twp
		4/19/17	059-27234*	Greene	Franklin Twp
		4/19/17	059-27235*	Greene	Franklin Twp
		4/19/17	059-27236*	Greene	Franklin Twp
		4/19/17	059-27237*	Greene	Franklin Twp
	4/6/17	059-27256*	Greene	Morris Twp	
	4/6/17	059-27257*	Greene	Morris Twp	
	4/6/17	059-27259*	Greene	Morris Twp	
	4/6/17	059-27261*	Greene	Morris Twp	

available at www.dep.pa.gov/DataandTools/Reports/Oil and Gas Reports/Pages.

The table is sorted by operator and lists the total wells reported as drilled last month. **Spud** is the date drilling began at a well site. The **API number** is the drilling permit number issued to the well operator. An asterisk (*) after the API number indicates an unconventional well.

OPERATOR	WELLS	SPUD	API #	COUNTY	MUNICIPALITY	
MSL Oil & Gas Corp	1	4/17/17	083-56775	McKean	Lafayette Twp	
	Range Resources Appalachia	13	4/13/17	019-22598*	Butler	Buffalo Twp
			4/13/17	019-22457*	Butler	Buffalo Twp
			4/13/17	019-22599*	Butler	Buffalo Twp
			4/8/17	125-28163*	Washington	Buffalo Twp
			4/8/17	125-28164*	Washington	Buffalo Twp
			4/9/17	125-28165*	Washington	Buffalo Twp
			4/9/17	125-28166*	Washington	Buffalo Twp
			4/9/17	125-28124*	Washington	Buffalo Twp
			4/5/17	125-27990*	Washington	Robinson Twp
			4/5/17	125-27555*	Washington	Robinson Twp
			4/6/17	125-27554*	Washington	Robinson Twp
			4/7/17	125-27991*	Washington	Robinson Twp
Repsol Oil & Gas USA LLC	5	4/7/17	117-21895*	Tioga	Hamilton Twp	
		4/7/17	117-21896*	Tioga	Hamilton Twp	
		4/7/17	117-21897*	Tioga	Hamilton Twp	
		4/7/17	117-21898*	Tioga	Hamilton Twp	
		4/7/17	117-21899*	Tioga	Hamilton Twp	
	Rice Drilling B LLC	13	4/13/17	059-27197*	Greene	Aleppo Twp
			4/14/17	059-27198*	Greene	Aleppo Twp
		4/14/17	059-27199*	Greene	Aleppo Twp	
		4/14/17	059-27200*	Greene	Aleppo Twp	
		4/20/17	059-27273*	Greene	Aleppo Twp	
		4/20/17	059-27272*	Greene	Aleppo Twp	
		4/20/17	059-27267*	Greene	Aleppo Twp	
		4/1/17	125-28129*	Washington	Somerset Twp	
		4/1/17	125-28134*	Washington	Somerset Twp	
		4/1/17	125-28130*	Washington	Somerset Twp	
		4/1/17	125-28131*	Washington	Somerset Twp	
		4/3/17	125-28132*	Washington	Somerset Twp	
		4/3/17	125-28133*	Washington	Somerset Twp	
Seneca Resources Corp	3	4/1/17	081-21634*	Lycoming	Gamble Twp	
		4/1/17	081-21636*	Lycoming	Gamble Twp	
		4/2/17	081-21633*	Lycoming	Gamble Twp	
Snyder Bros Inc	5	4/24/17	005-31273*	Armstrong	East Franklin Twp	
		4/24/17	005-31274*	Armstrong	East Franklin Twp	
		4/24/17	005-31275*	Armstrong	East Franklin Twp	
		4/24/17	005-31272*	Armstrong	East Franklin Twp	
		4/28/17	005-31270*	Armstrong	East Franklin Twp	
SWEPI LP	3	4/5/17	117-21902*	Tioga	Deerfield Twp	
		4/6/17	117-21901*	Tioga	Deerfield Twp	
		4/7/17	117-21900*	Tioga	Deerfield Twp	
SWN Production Co LLC	9	4/19/17	115-22272*	Susquehanna	Franklin Twp	
		4/13/17	115-21846*	Susquehanna	Great Bend Twp	
		4/14/17	115-21847*	Susquehanna	Great Bend Twp	
		4/27/17	115-22235*	Susquehanna	Jackson Twp	
		4/28/17	115-22236*	Susquehanna	Jackson Twp	
		4/28/17	115-22234*	Susquehanna	Jackson Twp	
		4/25/17	115-22285*	Susquehanna	New Milford Twp	
		4/2/17	115-22240*	Susquehanna	Rush Twp	
		4/3/17	115-22241*	Susquehanna	Rush Twp	

	April	March	February	January	December	November
Total wells	92	85	64	58	65	63
Unconventional Gas	90	71	60	57	60	56
Conventional Gas	0	0	0	0	1	1
Oil	2	14	4	1	4	6

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PIOGA Events

Info: www.pioga.org/events

Ted Cranmer Memorial Summer Picnic and Golf Outing
June 5, Wanango Golf Club, Reno

Pig Roast, Product & Equipment Roundup and Operators Forum & Leadership Summit

June 28-29, Seven Springs Mountain Resort, Champion

20th Annual Divot Diggers Golf Outing

August 24, Tam O'Shanter Golf Club, Hermitage

Industry events

IPAA Midyear Meeting

June 21-23, The Ritz-Carlton, Laguna Niguel, CA

Info: www.ipaa.org/meetings-events

IOGANY Summer Meeting

July 12-13, Peak'n Peak Resort, Clymer, NY

Info: www.iogany.org/events

IOGA West Virginia Summer Meeting

August 6-8, The Greenbrier, White Sulphur Springs, WV

Info: iogawv.com/

Ohio Oil & Gas Association Summer Meeting

August 7-8, Zanesville (OH) Country Club

Info: www.ooga.org

IPAA Annual Meeting

November 8-10, The Ritz-Carlton, Naples, FL

Info: www.ipaa.org/meetings-events

More events: www.pioga.org

Join us for the Ted Cranmer Memorial Golf Outing and Summer Picnic

Monday, June 5
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