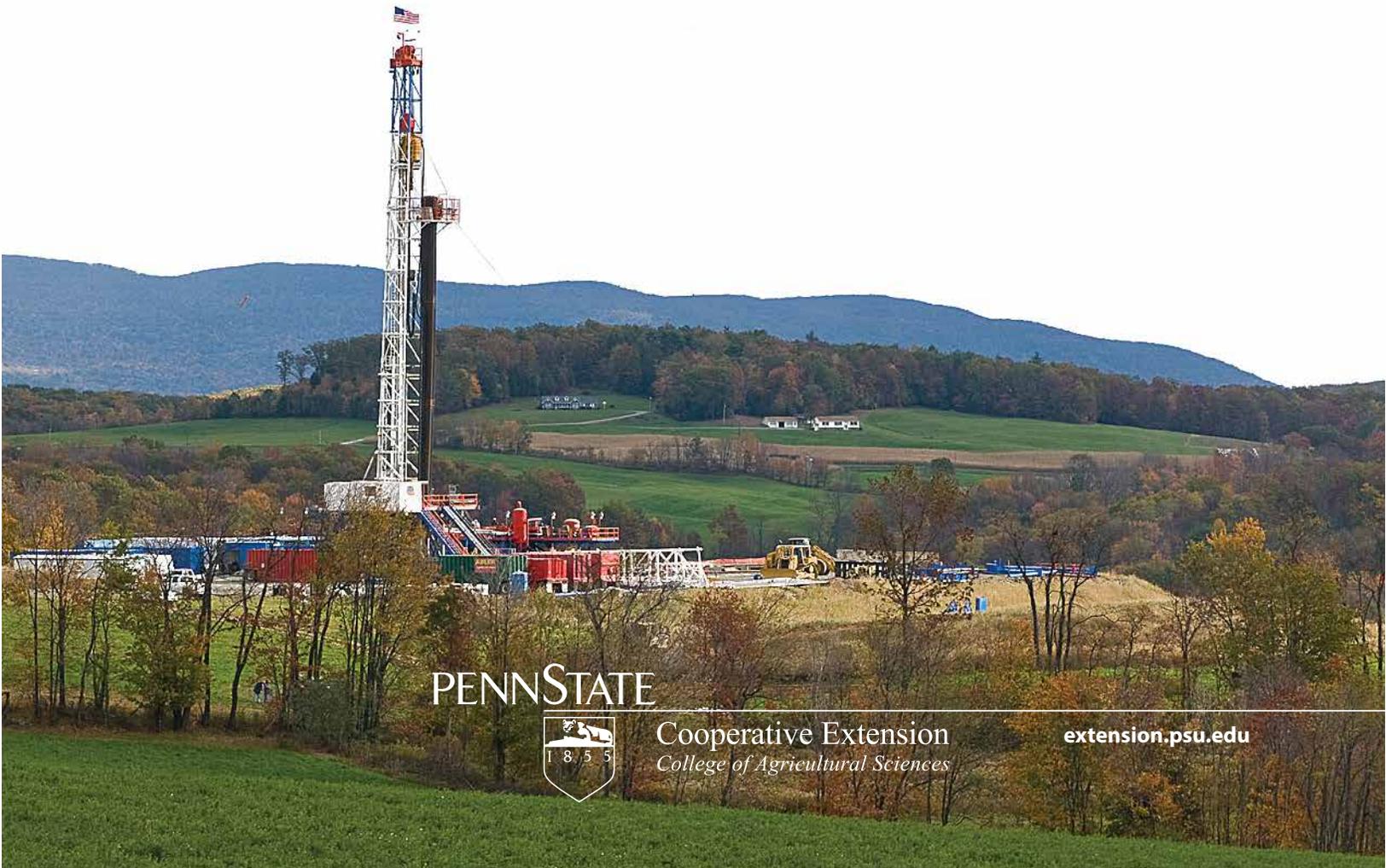


NATURAL GAS EXPLORATION

A Landowner's Guide to Leasing Land in Pennsylvania



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Cooperative Extension
College of Agricultural Sciences

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extension.psu.edu

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Natural gas development has intensified throughout Pennsylvania over the last several years, and “Marcellus shale” has become a household term.

Every day, news headlines bring us the latest developments on gas well drilling and all the topics surrounding it—economic, environmental, legal, and social. With some estimates of up to \$1 trillion in recoverable gas from Marcellus shale in Pennsylvania alone, clearly natural gas development isn’t going away anytime soon—and the industry will continue to have a major economic impact on individuals and communities in the Commonwealth and beyond for years to come.

Although natural gas has been extracted from underground in Pennsylvania since the mid-1800s, new technologies—in particular, horizontal drilling and hydraulic fracturing—are making gas extraction from deep reserves more economically feasible. Increasing demand for cleaner domestic energy will bring about continuing exploration. The gas industry is seeking access to high-volume reservoirs of natural gas, called “plays,” that lie far below the hills and valleys of Pennsylvania, Ohio, and West Virginia. Gas wells that tap the Marcellus, Utica, and other deep shales—as opposed to the

shallow wells that have been around for centuries—are known as unconventional wells.

Many landowners are realizing significant income by leasing their property to gas companies for exploration and drilling. Maybe a gas company representative or landman has knocked on your door, asking you to sign a lease that grants permission to explore or drill for natural gas on your land. How do you decide what to do? Only when you understand the gas exploration and leasing process can you make sound decisions for your land and your family. But, reliable, unbiased information



about gas deposits and leasing is hard to come by because it's usually carefully guarded to prevent competing businesses from interfering with one another's gas development plans.

This guide can be a useful tool for property owners who are faced with the decision to lease or not to lease. It covers the basics of gas leasing and answers some common questions about natural gas exploration in Pennsylvania. The guide outlines what the gas resource is, how and why landowners are likely to be contacted, how a gas lease works, and what to consider when making decisions about gas leasing. It isn't meant, however, to be an exhaustive treatment of all natural gas issues or to serve as legal advice. You should consult an attorney who specializes in gas leasing before making legally binding decisions.

For starters, you should understand the following basics about natural gas leasing:

Property owners generally have the right to explore and extract natural gas under their property unless this right has already been leased, sold, or otherwise transferred to another party. To check on the status of your rights, consult public records, deeds, and real estate titles—you might need the help of an attorney or abstractor to do this. If you own these natural gas rights you may lease the right to explore for gas to a company that has the equipment and expertise to recover or receive the gas for a period of time, and to accept payment for the lease and royalties for the value of the gas. Note: "mineral rights" and "natural gas rights" are not necessar-



ily the same thing, and you should be clear on what rights are legally yours. Check the deed to your property for this information.

Gas leases are legal and binding documents—they are contracts. They represent an official written agreement between two parties, usually between the gas company and the landowner. Because leases are binding contracts, to protect your rights as a landowner, you should have the proposed lease reviewed by a lawyer who is knowledgeable in Pennsylvania oil and gas law and experienced in gas leases before entering into any contract. Once you sign a lease, there's really no way you can get out of it until it expires, unless you can prove fraud on the part of the gas company.

Gas leases are negotiable. To save time, gas companies may offer a pre-printed gas lease. You can accept this lease, reject it, or use it as a starting point for negotiating. You can make changes to the lease by creating one

or more addenda that are approved by both parties.

Don't feel pressured to lease your land for natural gas exploration and drilling. There is no Pennsylvania law or industry regulation that states you have to lease if you have natural gas on your property. The decision is yours to make.

If you do decide to lease your land, stay involved in the process. Keep the lines of communication open with the gas company—it's in your best interest to have a good relationship with them, and for the most part they want to be good neighbors. Stay informed about what's happening on your land as well as in your community. Be an educated landowner!

WHERE IS THE GAS?

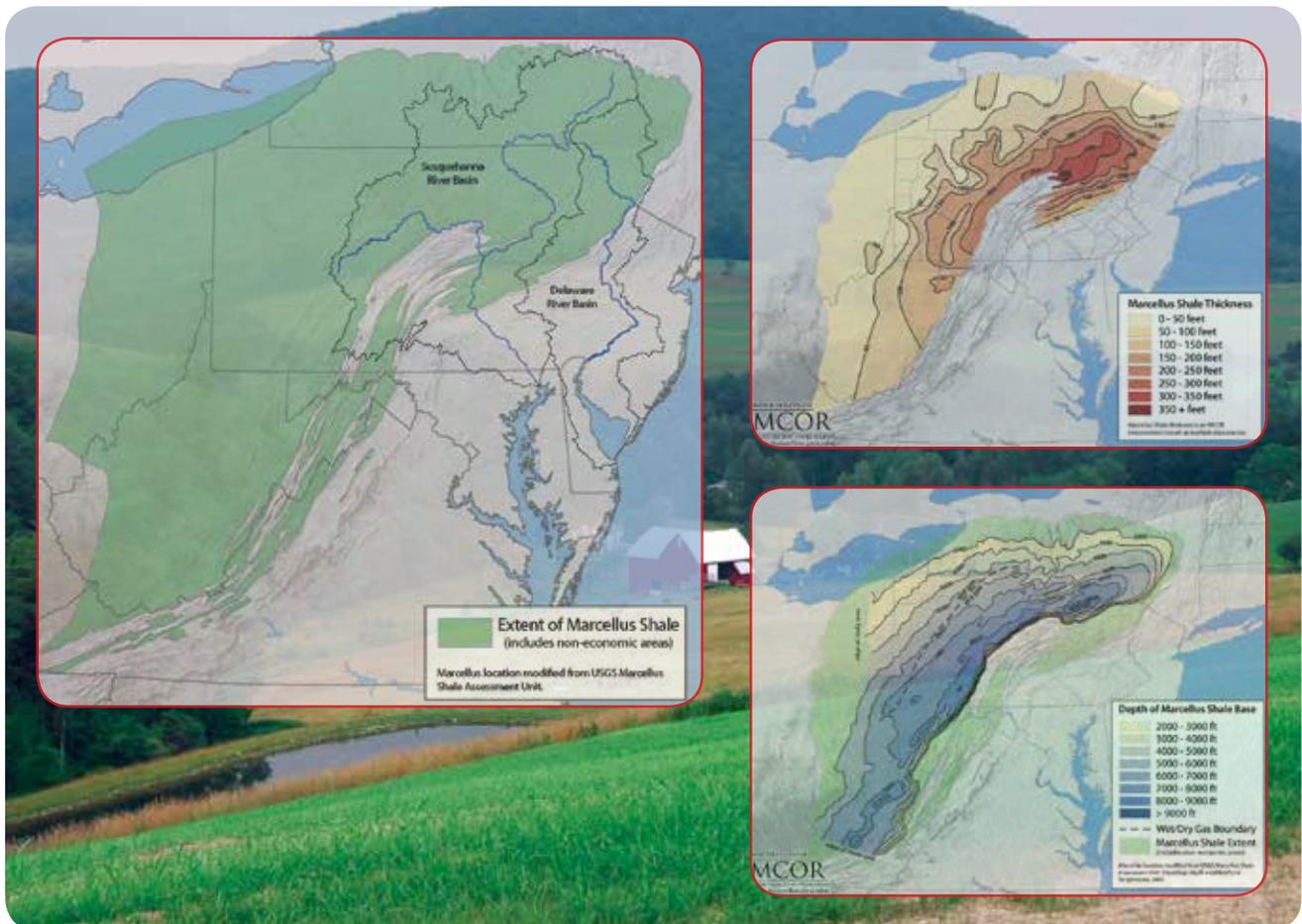
The Marcellus shale, a deep layer of rock that lies 5,000 to 9,000 feet underground, runs from the southern tier of New York through western Pennsylvania into the eastern half of Ohio and through West Virginia. In Pennsylvania, the formation extends from the Appalachian plateau into the western valley and ridge.

Horizontal drilling techniques make it possible to recover large amounts of gas from natural fractures in shale. As organic sediments were

laid down 380 million years ago, the black shale of the Marcellus formed. Methane and other natural gas components formed as that organic material decayed and degraded, and that natural gas is now trapped tightly in the dense shale. About 300 million years ago, the pressure of the gas created shale fractures that run as slices from northeast to southwest. While a vertical well may cross one of these fractures and other less productive fractures, new technology allows

horizontal drilling, which can cross a series of very productive fractures.

In certain locations, other dense black shales in Pennsylvania—such as the Utica shale, which lies at least 2,000 feet below the Marcellus—are also potentially rich in natural gas in its methane form as well as oil and what's known as “wet gas,” which includes propane, butane, and pentane. Shallower shales throughout the state also offer potential for natural gas extraction.



WHERE AND HOW DOES DRILLING TAKE PLACE?

As a landowner, you must give written permission for any natural gas exploration or drilling on your land. All proposed work should be clearly described in the lease or addendum, including compensation for any damages, before any activity begins. Gas wells are drilled where a gas company has obtained the right to explore for and develop natural gas. Wells are sited according to applicable mineral laws and regulations, with the goal of extracting gas efficiently with as few wells as possible. Geologists and geophysicists working for gas companies use seismic data to interpret underground rock layer formations. They

get this data through seismic testing.

Slow-moving trucks that contain seismic equipment are a familiar sight in Pennsylvania's gas-rich regions.

Seismic equipment generates two-dimensional images of subsurface rock patterns that help gas companies determine the extent of the shale, the direction of the shale layer for drilling purposes, and geological hazards to avoid, such as faulting.

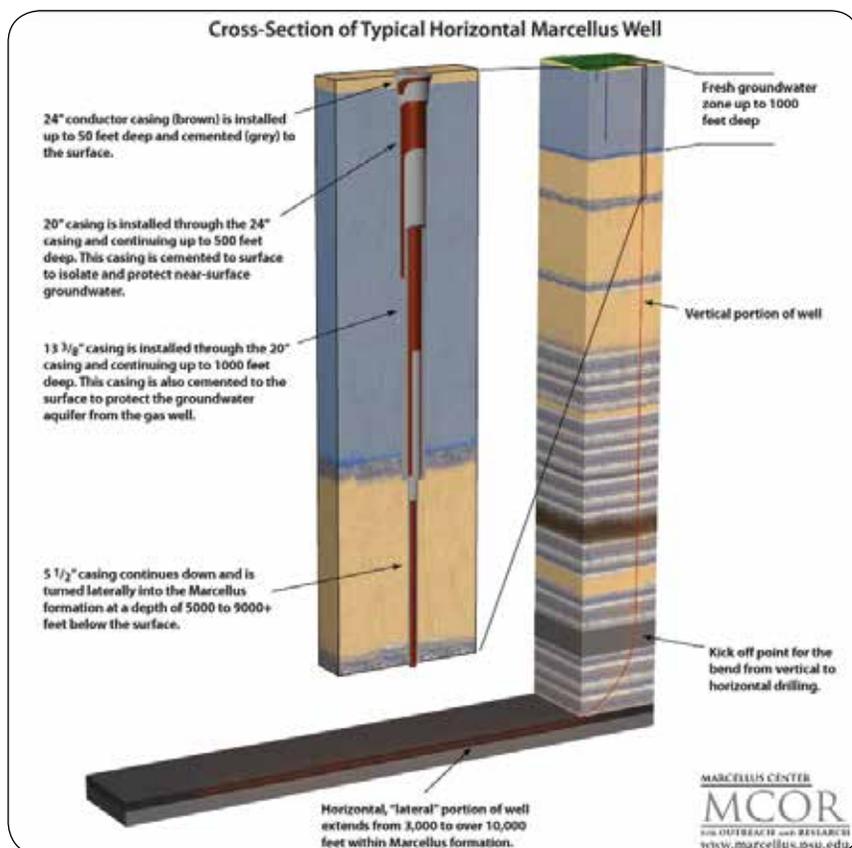
In much of the Marcellus region of Pennsylvania, a three-dimensional system of seismic testing is used to

clarify gas deposit geology. Extensive grids of cabling, small underground explosive charges, and geophones create and record new seismic data.

If seismic data suggest a reasonable possibility of efficient gas access at a specific location, a well will be drilled using long sections of drill pipe. Depending on the geology, the drill may travel vertically for several thousand feet, and then

gradually angle until it is drilling horizontally. Multiple layers of cement and steel casing are put into place to stabilize the well bore and protect groundwater. In many cases, multiple wells may be drilled side by side on the same well pad, radiating out in opposite directions.

Hydraulic fracturing is a standard practice in the gas industry and a necessary step in the natural gas extraction process. It involves using water, sand, and chemical additives to create, extend, and prop open formation fractures for the highest gas production.



MORE INFORMATION

For more detailed information on gas drilling and fracking, visit extension.psu.edu/water/marcellus-shale/hydrofracturing.

GAS LEASING PROCESS AND TERMS

Natural gas trapped underground has little or no value to landowners. It becomes a valuable resource only when companies with the proper equipment and technical ability begin to extract it and transport it to consumers. When natural gas is extracted from a leased property, the property owner is paid a royalty.

As gas companies and geologists determine where gas drilling might be worthwhile in Pennsylvania, they send contractors, called landmen, out to landowners to secure the natural gas exploration rights for a period of time as gas development begins. This practice helps prevent another company from tying up the natural gas exploration rights and making exploration more complicated and expensive. Landmen will usually visit owners of large parcels first, to lock up as much land as possible in a short time. For landowners, this visit is often the first experience they have with natural gas drilling.

Not all landmen are part of a gas company. Some represent independent brokers and others represent speculators. Each of these businesses will have a different motivation for securing a lease on a parcel of privately owned land. Depending on where seismic data suggest optimum gas production, different landowners will receive different offers regarding drilling, exploration, surface access, and payments.

In any scenario, you as a landowner should know that the lease will be the basis of negotiation and that the written terms of the contract will supersede anything that is said orally during contract negotiations. An effective gas lease should spell out clearly what each party is agreeing to during the gas exploration process. It should spell out the rights and responsibilities of each party in the agreement, how problems are to be handled, and how long the agreement lasts.

Gas companies must have sufficient acreage under lease before a well can be drilled. Companies determine the drilling unit they want to work in and designate the boundaries of the unit in a process called unitization. Commonly, unitization is based on an area's geology, and unit size can range from 100 to 1200 acres or more and is not mandated by state law. Landowners in the unit receive a pro-rated share of the royalty based on the acreage they have in the unit.

A word about landowner groups: You might have heard friends or neighbors talk about landowner groups in the context of gas leasing. There are different types of landowner groups. Some exist simply for sharing information about what companies are looking to lease in their particular area, current rates, and any special terms or conditions to the leases. Other groups are involved

*landowner
groups*

UNITIZATION

landmen

top leasing



in marketing their land—they seek out and maximize acres that share a border and make bid proposals to energy companies interested in leasing. Still other landowner groups engage in collective bargaining, in which all landowners sign off on leasing terms accepted by the majority. This saves energy companies many hours of individual negotiations and gives landowners a strong negotiating position with companies looking to lease land. If you're interested in possibly joining a landowner group, decide what type of group best suits your needs. Research groups in your area before committing to anything.

While the majority of gas leases in Pennsylvania deal with producing natural gas from deep underground shales, depending on where you live, you might be approached with an offer to sign other types of leases—such as for shallow wells or for wastewater deep injection wells. As always, it's best to consult an attorney with expertise in gas leasing if you're asked to sign such a lease.

You also might have heard of the term “top leasing.” A top lease is one that “lies on top” of a current lease and would take effect when the existing lease agreement ends. While a request for a top lease shows that a company is interested in your property, you should still approach such an offer with due diligence. Will a top lease maximize your benefits?

COMPONENTS OF A GAS LEASE

This section outlines some important components of gas leases. While it's not intended as a complete list of gas lease issues, it will help you understand the basics of what's involved in a gas lease.

Length of Lease

Your lease agreement will specify a primary term, usually five years, and many signed gas leases are accompanied by bonus and rental payments that last through the primary term of the lease. Depending on the terms of the lease, gas production on leased land and if you are in the drilling unit may lead to a secondary term that lasts as long as production is active, as defined in the lease. You and your attorney should carefully consider the language in the lease agreement because similar-sounding phrases, such as “so long as operations are conducted” and “so long as gas is produced in paying quantities,” can have very different impacts.

Gas Lease Payments

In any contract, you need to know what you're giving up and what you're getting. If you are offered a gas lease, what you'll be getting is, of course, payment. The original offer might include payments as a sign-

ing bonus, land rental fees, and/or royalty payments.

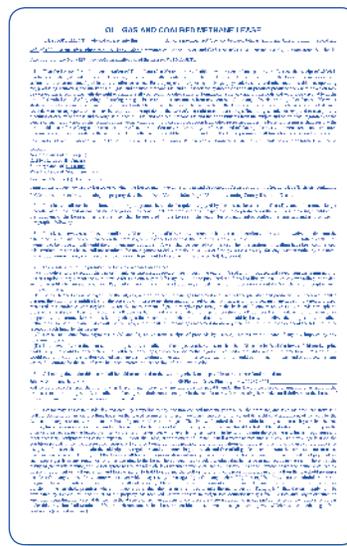
- A bonus payment is a one-time payment for signing the lease.
- Royalties are payments made to you, the landowner, by the energy company when natural gas is extracted from your land. Royalties, which are based on the terms agreed to in the lease, recognize the landowner's right to a portion of the value of the gas resulting from the lease of exploration rights.

- Rental payments are normally made annually. Sometimes, the bonus and rental are made in one payment for the stated term of the lease, and then the lease is referred to as a paid-up lease.

- A gas lease may also specify a delay rental in addition to the base rental. A

delay rental is made to compensate the landowner for delays in gas production or drilling.

There are no “going rates” or standard rental payments in gas leases in Pennsylvania. The amount offered will depend on many variables. Higher bonus and rental payments are usually offered based on a company's understanding of the area's geology and proximity to optimal drilling locations. Unfortu-



nately, the information about where the best concentrations of natural gas are located is hard to find and can be confusing for a nonscientist. Attending educational sessions offered by unbiased parties such as Penn State

Extension and talking with friends and neighbors are good ways to discover prices companies are offering in your area.

Before settling on a lease, consider what home or farm expenses might

relate directly to the lease. Legal fees, property tax increases, and other expenses may be necessary to enter into a lease, or during drilling, for the designated term(s). You should consider these expenses along with the company's offer so that you can see your net economic gain. The timing and method of rental and bonus payments should be clearly stated in the gas lease. Failure to make payments may cancel the lease, but only if it is so stated in the lease.

Pennsylvania law states that a gas lease is not valid unless it guarantees the landowner royalties of at least one-eighth, or 12.5 percent, minus any marketing deductions, which would be considerable, of all natural gas removed from the property. You may negotiate with the energy company for a royalty payment that exceeds this minimum.

Leases are usually written to stop rental payments when royalty payments begin. If gas is being produced on only a portion of the property, the lease should be clear as to whether the royalty and rental terms apply to the entire parcel or just the producing portion. A royalty may apply only to the producing portion of the property yet stop rental payments on the rest of the property. If applicable, you should determine how a royalty payment on a portion of your property might affect your overall rental payment expectations. Having your attorney include a Pugh clause in the addendum gives you the option of separating these residual acres from the lease and potentially re-leasing them in the future.

A shut-in royalty is paid where



These factors may increase potential bonus or rental payments:

- Property occupies a large portion of prime natural gas geology in your area
- Property is relatively near the prime gas geology
- Property owner is willing to allow less restricted exploration or drilling

These factors may decrease potential bonus or rental payments:

- Property comprises a small portion of acreage designated by companies as prime geology
- Property is unlikely to be near the best geology
- Lease restricts gas exploration on the surface (sometimes this makes only a small difference)

When considering gas leasing, you should understand the extent of rights you are granting to the energy company and seek to limit those rights if necessary.

one or more wells are fully developed but not producing marketable gas. This may be due to lack of pipeline connections, market timing to increase wellhead revenue, or other production and transmission circumstances. A private gas lease may state a period of time, such as six months, that the landowner would have to wait before the shut-in royalty starts. During that time, the gas company may reserve the right to change the well, drill a different well, or otherwise adjust its production. Again, you will need to read the lease carefully, with your attorney, and make sure you understand what payments will

come, how they will be made, and when they will stop. Royalties from gas and mineral properties are taxable as ordinary income.

Past practice for some older, shallow gas leases allowed for free gas for the landowner. The landowner would be responsible for the piping of the free gas from the wellhead to the residence. This is not commonly done now with unconventional wells, as it could add significant expense and liability for the landowner.

Surface or Subsurface Rights

When considering gas leasing, you should understand the extent of

rights you are granting to the energy company and seek to limit those rights if necessary. A standard lease will probably give the energy company very broad rights to the use of your property's surface. Surface exploration may include tracked or wheeled equipment in fields and forests to record geologic data, the use of small underground explosive charges to create sound waves that record seismic data, movement or construction of drilling rigs, land grading for the construction of a drilling pad and access road, equipment storage, and parking or worksite activity for personnel, among other things. If you sign a lease granting surface rights, you can limit those rights. You can state, for example, that you have the final say on where a well is sited or where access roads are built on your property. You should also make sure you are protected in the event that drilling activities cause damage to crops, livestock, buildings, or personal property.

Some landowners restrict any surface activity for gas exploration on their land. In many but not all of these cases, the parcel may be too small to conduct worthwhile surface explorations and the gas company

MORE INFORMATION

For information about financial management of natural gas profits, see *Natural Gas Exploration: A Landowner's Guide to Financial Management* at pubs.cas.psu.edu/FreePubs/pdfs/ui394.pdf.

For information about the tax implications of of natural gas leasing, see the Marcellus Education Fact Sheet "Tax Treatment of Natural Gas" at pubs.cas.psu.edu/FreePubs/pdfs/uh190.pdf.



will offer the landowner a gas lease that requires permission for surface access only if necessary. You could choose to negotiate terms that prohibit any surface activity whatsoever. Your contract addendum would state that the gas company has no surface rights but that you are granting sub-surface rights.

In shale areas of Pennsylvania, energy companies are interested in large blocks of land, and often they want groups of neighbors to agree to unitization. In this case, if you are part of the unit and the energy company would drill a well on your neighbor's property, you would still be paid a royalty based on your pro-rated share. If the well was drilled on your property in the unit and your lease provided for you to receive a well siting fee (often \$2,000 to \$15,000), you would receive that beyond the royalty payments.

Right of First Refusal

A right of first refusal is a term in the lease you could insist on instead of an option to automatically renew. The right of first refusal has to do with what happens after your lease expires. At that point, the right of first refusal gives the gas company the right to match any competitor's offer for renewing the lease. For your purposes, this could be preferable to the option to automatically renew, which allows the gas company to renew the lease for the primary term. As a landowner, you might not agree to the option to automatically renew because essentially it locks you into the original offer. The right of first refusal will assist you in getting the best offer possible if you want to renew your gas lease.

Storage of Gas

In certain cases, natural gas can be pumped back into a gas well after being extracted elsewhere. Gas is stored to take advantage of seasonal market changes. Gas is in higher demand in the winter, so gas extracted during the summer can be pumped down into the gas formations under pressure, anticipating release closer to winter. Gas storage makes use of depleted reservoirs. Although gas storage can increase wellhead revenue, it can also complicate the private gas lease. You should consider gas storage separately from the original exploration and drilling lease, and develop a separate gas storage lease, possibly for added income. Gas storage leases are often arranged with a different company, so if gas

storage is proposed in the exploration lease, it can often be easily negotiated out. Be alert to the ways in which gas storage will affect your lease payments. For example, a well might be shut in and not producing marketable gas. If that well is converted for storage, a storage fee similar to a rental payment would continue, but with no royalties. These payment changes should be described clearly in the lease or addendum.

Pipelines

When considering signing a contract, watch out for terms that would give blanket access to the gas company for pipeline rights-of-way. If gas is being moved from a drilling unit that you're receiving a royalty from, pipeline access is expected by the company and is reasonable for the landowner to grant. If the right-of-way is for gas to be transported from a unit that is not on your property, then this should be negotiated separately and the gas company should pay you an additional fee for this use.

MORE INFORMATION

For information about pipeline issues, see the Marcellus Education Fact Sheet "Negotiating Pipeline Rights-of-Way in Pennsylvania" at pubs.cas.psu.edu/FreePubs/pdfs/ua465.pdf.



The Other Party in the Agreement

When you agree to and sign a gas lease, you are entering into a binding legal relationship with a business—a relationship that may continue for many years. Before signing the lease, you should know exactly with whom you are making the agreement. The other party may not be a gas company, but rather a speculator, a broker, or an independent landman who might sell the lease or take partial ownership of the royalty. Landowners who intend to sign a gas lease should be ready to negotiate a clause making lease assignments or sales subject to their approval. Make sure you understand with whom you are dealing and whether your lease is freely assignable.

Leasing Considerations for Site-specific Factors

As a landowner, you might not be sure what is worth negotiating and what is not, particularly if the energy company doesn't give you much information about the potential for drilling. Landowners who want to control surface activity on their property can stipulate such details as road construction, repair or compensation for timber stand damage, effective restoration of impacted farmland, and other site-specific factors in a private lease. If your lease agreement allows for any surface access, you and your attorney should ensure that your interests are protected in writing. Issues you may want your lease or addendum to address include the following:

- Extent to which water may be used, such as from a farm pond, well, or stream, during the drilling process
- Fairly assessed value of, and compensation for, damage to crops, timber, or water resources; for information about protecting your forested land, see the following Marcellus Education Fact Sheets:
 - “Forest Landowners and Natural Gas Development” at pubs.cas.psu.edu/freepubs/pdfs/ua450.pdf
 - “Forest Landowners and Natural Gas Development: Timber Resources” at pubs.cas.psu.edu/freepubs/pdfs/ua456.pdf
- Implementation of effective conservation and land restoration, such as:
 - Protection of agriculture soils during exploration and well operations so farmland is restored to full productivity afterward
 - Protection or replacement of farm infrastructure, such as roadways, livestock travel lanes, drainage features, and fences
- Road location and construction review by landowner and a qualified engineer or forester
 - Site of well relative to other property uses
 - Possible timing of surface operations to allow for livestock pasturing, hunting, or other rural land activities that have restricted seasons
- Separate written agreement on location of pipelines in the property

When negotiating a lease, you should also include a provision to require the gas company to indemnify you for any liability you might incur as a result of drilling activity. Indemnification means the gas company will protect you against or compensate you for any loss, damage, or injury that happens on your property as a result of drilling. The indemnification clause should be written to address all possibilities, including situations such as someone tripping over the drilling equipment, contamination of a neighbor's water well, an explosion caused by the release of natural gas, and so forth. In addition, since litigation is expensive even if you ultimately win a case, the indemnification clause should include a duty to defend so that the gas company is obligated to hire an attorney for you to defend against any lawsuit.

Another type of clause you should be aware of is the market enhancement clause. Unlike leases from several years ago, many leases today include enhancement clauses that permit the gas company to take "postproduction costs" and "deductions" for the expense of producing, gathering, storing, separating, treating, dehydrating, processing, transporting, and marketing natural gas. You could end up having substantial deductions in your royalty checks for postproduction costs taken under this market enhancement language. Be aware of these market enhancement clauses and consult with an attorney before agreeing to them.

HOW TO FIND CREDIBLE SOURCES OF INFORMATION

If you're considering signing a gas lease, stay as informed as possible. Make it a point to keep up to date on natural gas activity in your area. Talk to friends and neighbors, find out about landowner groups in your area, read publications, and visit websites that you trust. Gas leasing is a challenging issue, so it's good to keep an open mind, be discerning, and look for information that's backed by research.

Penn State Extension is a good place to start. Extension has always been known for disseminating unbiased, research-based information to Pennsylvania's citizens, and that's a valuable resource when it comes to natural gas issues. Extension educators recognized how important gas exploration could be for Pennsylvania landowners and communities when landmen first started knocking on

doors, and the first leasing workshop was held in 2001. Today, Penn State Extension's Marcellus Education Team—a group of experienced educators and faculty—work throughout the state to make sure citizens have access to reliable information. County extension offices may host an educational workshop, discuss leasing arrangements, or refer you to regulatory or legal specialists.

MORE INFORMATION

For more information on Penn State's Marcellus Education Team, as well as other Marcellus issues, visit extension.psu.edu/naturalgas.



MAKING DECISIONS ABOUT GAS LEASING

When the moment arrives and you're sitting at the kitchen table holding a standard gas lease contract and wondering whether to sign it, what do you do? The decision to sign a gas lease rests entirely with the parties named in the lease document—namely, you and the energy company. There is no legal requirement that would force you into signing a lease with a gas company, and public authorities cannot use the power of eminent domain in the natural gas exploration process.

Since you are not legally obligated to sign a gas lease, the decision to sign

is personal. Here are a few things to keep in mind as you consider leasing:

- In any contract, you're giving something up and getting something in return. Do you understand what you're getting in return for allowing gas activity on your land?
- What long-term plans do you have for the land in question? Would gas leasing fit into those plans or interfere with them?
- Are any of your neighbors leasing? Will that affect your decision?
- Is anything in the lease unclear? Does something seem unfair? You can negotiate until you feel your interests

are tended to. An attorney can help greatly with this process.

It's also a good idea to keep a journal or log of all contacts, conversations, and activity that happens from the moment you are first approached about leasing. Writing things down not only can help you keep your thoughts organized, it can also provide documentation should you need it later.

GAS LEASE LANGUAGE

The language on a gas lease contract is difficult for most nonlawyers to understand. Sentences tend to be long and tedious, full of legal terms landowners do not see very often (judicial determination, leasehold, lessee, cash equivalency, etc.). Few landowners can read through each sentence in the preprinted lease and understand its meaning and implication for their property. Gas company representatives may interpret the wording, but anything they say out loud is not what will bind the parties in the contract. The wording in the printed contract will bind the landowner to the gas exploration process, for better or worse.

The standard lease gas companies provide is usually as favorable as or more favorable to them than to the landowner. Again, this is where the importance of legal counsel comes in. Your attorney can protect your rights by helping you interpret the legalese, and then if necessary you can modify the lease by using addenda, which can make the agreement equally favorable to both parties. It is not uncommon for 20 or more of these to be added to the typical industry lease to modify it in a way that is more beneficial to you, the landowner.

FOR LANDOWNERS WHO ARE CURRENTLY LEASING

If you are currently leasing your land for natural gas exploration and drilling, you've already experienced at least some of the processes and issues covered in this guide. You might have some questions about your current lease based on what you've read here. For example, if water testing provisions aren't included in your current lease, it is your responsibility to get your water tested. As well, you'll have decisions to make about the future of your property. If your lease is close to expiring, will you renew? When natural gas activity on your property comes to an end, you should have a clear understanding of how your land (forestland, grassland) will be reclaimed.

Make sure you understand your lease terms, stay up to date with natural gas activity on your land and the surrounding area, and maintain good communication with the gas company leasing your property. If you revisit your lease and have questions, consult your attorney.

THE ROLE OF LEGAL AND FINANCIAL PROFESSIONAL ADVISERS



A qualified attorney can interpret a gas lease, suggest changes, amend the document, and add the specific terms you want. An attorney can also represent you if trouble arises. For example, if royalty payments are not made in the manner agreed to in the lease, an attorney can employ his or her knowledge and influence to resolve the matter. While many lawyers in Pennsylvania can help with gas lease contracts, some attorneys have extensive experience in oil and gas rights to work out special arrangements. It is fair to ask a lawyer if he or she has experience with gas lease contracts

and what compensation will be required for this legal assistance. In fact, before you hire an attorney, it's very important to be certain that you understand the attorney's fee. Different attorneys charge differently.

As well as an attorney, consider hiring a financial planner or accountant to help you manage any income you receive from leasing. A financial professional can also help you deal with tax implications of gas leasing income. No matter what you decide to do with income you might realize, here's one tried and true word of advice: Don't spend any money until you have it!

LEASE AMENDMENTS



In areas where gas leases are about to expire (approaching the end of their primary term), the lease holder may approach the landowner to extend the lease with a lease amendment. Once in place, the lease amendment may override terms and conditions in the initial gas lease, so it's important to understand what is being amended and/or modified and how it will affect you, the landowner. Lease amendments can be used to modify an old "conventional" gas lease that may

exist on the property. Most commonly these lease amendments will attempt to increase the unit size so that the property can be integrated into a larger shale gas unit (generally 800 to 1,200 or more acres). Compensation or bonus payments for lease amendments can vary. You may not be offered any compensation, or you may be offered a substantial bonus. As with any legal document, you should consult with an attorney before signing a lease amendment.

GAS LEASING FAQs

How can I find out if gas companies are leasing in my area?

There are several things you can do. Talk with your neighbors and ask them if they've been contacted by any gas companies. Check the Pennsylvania Department of Environmental Protection (PA DEP) website for companies active in your county and township. Check with your county's Recorder of Deeds. Contact your local extension office for names of Penn State Extension Marcellus Education Team members in your area. Penn State's natural gas exploration and leasing website has a listing of energy companies in Pennsylvania—just go to extension.psu.edu/naturalgas/service-directory/energy-companies. If you call an energy company, you should have your tax parcel number handy because they will ask for that, as well as the township or county you live in.

What should I do if I am asked to lease my land for gas exploration?

Ask the gas company representative or landman for a copy of the lease and say you will look it over. Never sign anything on the spot. Ask your attorney to review the lease and explain its impact on you and your landholdings.

Do I need an attorney? If so, what type of attorney do I need?

To protect yourself and get the best outcome, you should consult an attorney. Exploring and drilling for

gas is a multimillion-dollar venture for energy companies. If a successful gas deposit is tapped on your land, your signature could represent a million-dollar decision. Before signing any natural gas lease agreement, you need to know what you are getting and what you are giving up. An attorney with experience in gas law is your best assurance to get the most out of your gas lease agreement.

One way to find a good attorney is through word of mouth. Who are your friends and neighbors using? You can also find a list of attorneys at extension.psu.edu/naturalgas/service-directory/attorneys.

The company I originally leased with is transferring my lease. How will that affect me?

Transferring leases is common in the natural gas industry. Sometimes, a property company will collect leases so it can sell them to the highest bidder—a company that will actually drill. If your lease is transferred, the terms will stay the same. In the interest of keeping informed, you should know the name of the company that holds the lease.

My neighbor got more than ten times what I leased for. Can I demand more?

You would have to speak with an experienced attorney in gas law. But unfortunately, the answer is probably “no.” Remember, a gas lease is a binding legal contract. The time to do the research and make sure that

the lease is most beneficial to you is before signing the lease agreement. Once you sign, you are legally bound by the terms you agreed to.

I own only four acres. My neighbors have leased. Are the gas companies interested in my little piece of land?

Yes. Although you may never have a drill rig on your property, if your property is in a drilling unit, you are due royalties based on the number of acres you have in the unit.

Is it better to form a group of neighbors or go it alone?

Your decision to lease or not to lease should be based on what's important to you. You may want to join or form a group that has the same goals for land use since the amount of property available to the company by the group often increases its interest and typically provides greater leverage when negotiating terms of the gas lease. On the other hand, if you and your neighbor have different goals for your land, you might want to negotiate on your own.

If I sign a lease, how, when, and how much will I get paid?

You may be offered a one-time bonus payment from the energy company when you sign the lease. You might also receive a delay rental payment, which is an annual payment that would end when a well is drilled on your property. Royalty payments start when natural gas is extracted from your land. The

state law requires that you be paid a royalty of 12.5 percent, but you may negotiate for more than this minimum. All of these types of payments are negotiable.

Many factors determine the amount and manner of payments you will receive after signing a gas lease. These include the current natural gas market, past drilling results in your vicinity, amount of acreage to be leased, the presence of pipelines or other infrastructure in the area of your property, and more.

How can I find the going rate for a lease?

Never accept a first offer on the spot. Before you accept or sign anything, do your research. Talk to your neighbors to find out what they have been offered or have negotiated. Contact a few companies with capacity to drill shale wells and determine their interest in your landholdings. Talk with an attorney who is familiar with oil and gas law about negotiating for the best terms. Contact a member of the Penn State Extension's Marcellus Education Team to find out more about companies that might be leasing in your region.

It's important to realize that the gas industry has changed over the past several years, and natural gas prices have decreased because of an abundant supply. Because of this environment, the "shelf life" of a lease will vary according to location, economics, timing, and competition among gas companies in your area.

What is the Law of Capture? Does it mean my neighbor can take the gas out from under my land?

The Law of Capture states that if a well is drilled on a property, anything that comes up out of that well belongs to the owner of that property. But in the case of natural gas in shale, this is not a concern. First of all, it's illegal to drill under property that is not leased. Furthermore, because the gas in the shale is in dense rock rather than pockets, there's little concern about a Marcellus well extracting natural gas from a neighboring property. The Marcellus shale has to be hydraulically fractured to release the trapped gas, and this fracturing potentially will release gas up to 1,000 feet from the bore hole. The gas companies typically design the drilling units to allow enough distance around the wells so that gas produced from them will be from that unit only.

If I sign a lease allowing a gas company to explore and drill for natural gas on my land, what does this all entail?

This lease covers exploration and drilling only. If a gas company wants to store gas on your property or transport gas from someone else's property across your land, you should be compensated for that separately. You and your attorney should make sure that provisions for storage and transmission of gas are not included in a standard gas lease unless the gas is transported from your drilling unit. In fact, it's important to make sure all processes are covered in separate

agreements—including seismic activity, storage, transportation, pipeline, and timber management.

Who is responsible for making sure my lease agreement is complied with?

It's really up to you, the landowner, to make sure the gas company is honoring the terms in your lease. You should know what stipulations are included in your lease and keep the lines of communication open with the gas company to ensure those stipulations are carried out.

How long is natural gas development going to last in my area?

The short answer is, it can be hard to tell. Natural gas development depends on many factors, and economics is an important one. Gas companies respond to the price of gas, and they will go where the most valuable commodities are. For example, natural gas prices currently are low because of the abundant supply from the shale, and some gas companies are beginning to move to areas where they can extract wet gas and oil.

How do I know my royalty check is accurate?

If you have concerns about your royalty checks, your attorney or financial adviser can help you determine whether the check amounts are accurate.

My farmland is assessed under the Clean and Green program. How will gas leasing affect its status?

Clean and Green is a preferential

assessment that was enacted to encourage landowners to preserve land for farming and forestry, and it allows the landowner to pay lower real estate taxes on agricultural or forested land. Recent changes to the Clean and Green program help protect landowners who are leasing land for natural gas activity. Originally, Clean and Green required a penalty or roll-back tax if property that qualified for the program ceased to be used for approved purposes. As a result of new legislation, roll-back taxes are due only for the portion of the property being used in a nonqualified manner, such as natural gas exploration and drilling.

If your land is assessed under Clean and Green, you'll want an addendum stating that the gas company will reimburse you for any back taxes you have to pay as a result of gas leasing and/or exploration. If your land is under any kind of preservation or conservation easement program, there are limitations on how you can develop the land. You should discuss these issues with your attorney.

What can I do to protect my water supply if I allow drilling on my property?

It's important to realize that natural gas in the shale is about 5,000 to 9,000 feet underground, and the groundwater supply is only about 400 feet underground, so drilling activity doesn't take place near groundwater. Even so, when a gas well is drilled, a steel casing is cemented in place to protect that groundwater.

While every precaution is taken and regulations are in place to minimize the chances that water will be contaminated, the best way to know for sure that your well, stream, or pond is safe is to have your water tested both before and after drilling. You can negotiate in your lease to have the gas company pay for water testing. If the test shows changes after drilling, you can file a complaint with the regional office of the Pennsylvania Department of Environmental Protection's Bureau of Oil and Gas Management.

I've had my water tested, but I don't understand the results. Where can I get help interpreting the numbers in the report?

Understanding your water test report, but they can be confusing to read and interpret. You can find lots of helpful information online at extension.psu.edu/water/marcellus-shale, including a water test interpretation tool and a publication called "Water Tests: What Do the Numbers Mean?"

Can I lease and prevent surface disturbance?

During the lease negotiation, you may include addenda that limit or prevent surface disturbance of your property. It is important to discuss with the gas company what their current plans for development are and how your property may be affected. You should find information about the proposed gathering pipeline path, compressor stations, water lines, and access roads. While you may be in a position to completely eliminate

surface disturbance of your property, you still need to allow transport of natural gas from the unit.

What is well spacing and why should I be concerned about it?

Well spacing refers to the distance between the well bores associated with natural gas or oil development. With the increased number of horizontal wells being drilled, it's also important to understand well pad spacing. Most gas companies are drilling multi-well pads, meaning each well pad can have two or more wells on them. Typically, wells are about 15 feet apart on the pad. While a traditional vertical well may drain the gas from 80 acres, a horizontal drilling well may cover more than 1,280 acres. Understanding the relationship between well pads, gathering lines, compressor stations, and fresh water impoundments is important so you can try and forecast which parts of your property may be affected by natural gas development and production.



RESOURCES

PENN STATE

Penn State Extension
extension.psu.edu/naturalgas

Penn State Marcellus Center for Outreach
and Research
www.marcellus.psu.edu

Penn State Marcellus Shale Electronic Field Guide
www.marcellusfieldguide.org

Penn State Public Broadcasting “Explore Shale”
Project
exploreshale.org

The Agricultural Law Resource and Reference
Center Marcellus Shale Resource Area
law.psu.edu/academics/research_centers/agricultural_law_center/resource_areas/marcellus_shale

STATE AGENCIES

Pennsylvania Department of Environmental
Protection (DEP)
www.depweb.state.pa.us

Pennsylvania Department of Environmental
Protection (DEP) Oil and Gas Programs
www.depweb.state.pa.us/portal/server.pt/community/oil_and_gas/6003

Pennsylvania Department of Agriculture
www.agriculture.state.pa.us

Pennsylvania Department of Conservation
and Natural Resources Oil and Gas Resources
www.dcnr.state.pa.us/topogeo/econresource/oilandgas/index.htm

Pennsylvania Public Utilities Commission
www.puc.state.pa.us

OTHER RESOURCES

Delaware River Basin Commission (DRBC)
www.state.nj.us/drbc

National Association of Royalty Owners (NARO)
www.naro-us.org

Shale Training and Education Center (Shale TEC)
www.shaletec.org

Susquehanna River Basin Commission (SRBC)
www.srb.net

U.S. Energy Information Administration
www.eia.gov

U.S. Geological Survey (USGS)
www.usgs.gov

GLOSSARY

ABTRACTOR A trained professional who verifies that the history of a property title search is complete, the property owner does indeed own the property, and there are no other interests on it.

ADDENDUM An addition to a basic gas lease, usually a condition or restriction to make the lease conditions more favorable to the landowner.

DIVISION ORDER A document that lists a landowner's portion of the gas produced from a pooled production unit. Gas leases allow companies to combine or pool properties of multiple landowners into a production unit that defines the area the company intends to produce natural gas from by drilling multiple horizontal wells. All landowners with acreage in the unit share in the royalties based on their proportional ownership of the unit. Before receiving their first royalty check, most landowners will be asked to sign a division order.

DRILLING UNIT The area from which a well draws natural gas. The unit is designated by the company and based on the area's geology and where the gas would be drawn from when a well is drilled. Landowners within a drilling unit share royalties.

DRY GAS Natural gas from the well free of liquid hydrocarbons; gas that has been treated to remove all liquids; pipeline gas.

HELD BY PRODUCTION A gas industry term used to describe a gas lease that has been extended. Many oil and gas leases include a primary term of five years, meaning that the gas company has five years to begin drilling operations on the leased premises or the lease will expire at the end of the primary term. The gas lease moves into a secondary term as stated in the lease and then is extended as long as gas is produced in paying quantities.

HYDRAULIC FRACTURING A well stimulation process used to maximize the extraction of underground resources such as oil and natural gas. This process enhances subsurface fracture systems to allow oil or natural gas to move more freely from the rock pores to the well bore and up to the surface. A mixture of water, sand, and chemical additives are commonly used to create, extend, and prop open the fractures.

LANDMAN An agent who works for a drilling company or who is contracted by a drilling company or broker. The mission of a landman is to negotiate the lowest possible lease price and most advantageous terms for the energy/gas/drilling company.

LAW OF CAPTURE A law stating that the owner of a tract of land acquires title to the oil and gas produced from wells drilled on that land, though it may be proved that part of such oil and gas migrated from adjoining lands. In the case of unconventional horizontal wells, this is generally not a great concern because shale gas is in dense rock rather than pockets and it's very unlikely that a shale well will extract natural gas from a neighboring property.

NATURAL GAS LIQUIDS Components of natural gas that are liquid at the surface in field facilities or in gas processing plants. Natural gas liquids include propane, butane, pentane, hexane, and heptane. The term is commonly abbreviated as NGL.

POOLING Combining leased properties to create a unit for drilling. Most gas leases have a provision stating that the gas company can combine or “pool” leased land with adjoining land, up to a certain number of acres.

SEISMIC 2-D AND 3-D Data used by geologists and geophysicists working for gas companies to interpret underground rock layer formations. Seismic equipment generates two-dimensional or three-dimensional images of subsurface rock patterns that help gas companies better understand the geology.

SHALLOW WELL A traditional gas well that is much shallower than a shale well. Shallow gas wells have existed for centuries and are sometimes referred to as conventional wells, while those that are drilled into Marcellus shale are called unconventional wells.

TOP LEASE A lease that “lies on top” of a current lease and would take effect when the existing lease agreement ends.

UNCONVENTIONAL FORMATION A shale formation below the base of the Elk sandstone or its geologic equivalent where natural gas cannot be produced except by horizontal or vertical well bores stimulated by hydraulic fracturing.

UNCONVENTIONAL WELL A well that is drilled into an unconventional formation.

UNITIZATION A process in which gas companies designate the boundaries of a drilling unit that comprises several properties. Commonly, unitization is based on an area's geology, and unit size can range from 100 to 1200 or more acres. Landowners in the unit receive a pro-rated share of the royalty based on the acreage they have in the unit.

WET GAS See “natural gas liquids.”

