A Citizen’s Guide To

Legal Issues of Marcellus Shale Gas Drilling

Prepared by
The Widener School of Law’s
Environmental & Natural Resources Law Clinic

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TABLE OF CONTENTS

INTRODUCTION ................................................................. 3

THE BASICS OF GAS DRILLING IN
THE MARCELLUS SHALE FORMATION ................................. 4

LEGAL ASPECTS OF ENVIRONMENTAL CONCERNS ............... 9

LEGAL ISSUES BY PROCESS STEPS .................................. 15

LEGAL ASPECTS OF LANDOWNER LEASING ........................... 16
INTRODUCTION

Thank you for your interest in our Citizens Guide. The Clinic receives many inquiries about issues arising out of Marcellus Shale gas drilling, and so the purpose of this Guide is to provide you with some basic information concerning such drilling to help you understand and put in context the complex legal issues that often arise. The Guide is informational in nature—that is, it does not provide strategy about particular legal issues as much as give you some sense of what the issues can be so that you can work with your attorney to formulate a strategy. The Guide is general in its scope – that is, it covers many but not all legal issues, and does so in a way that does not and cannot be definitive for a particular situation. Our hope instead is that you will know the basics so that you can understand this complex subject better and start to see the questions you can ask your lawyer.

There are many people and organizations who assisted in the preparation of this Citizens Guide. First and foremost are Widener Law students who poured so much into the research and writing of this Guide, especially Jonathon Spadea, Jon Johnson, and Sarah Stoner. The Widener Environmental Law Center, and especially co-directors (and Widener Professors) John Dernbach and James May, provided valuable assistance and guidance. Finally, none of this would be possible without the Pennsylvania Chapter of the Sierra Club, whose general grant supported the opening of the Harrisburg office of the Clinic in January 2010 and the establishment of the Widener Environmental Help Line (1-888-953-6853).

I hope you will find the information in this Citizens Guide useful as we confront one of the most complex issues facing Pennsylvania today.

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THE BASICS OF GAS DRILLING IN THE MARCELLUS SHALE FORMATION

The Marcellus Shale Formation refers to a geologic region of natural gas-rich shale extending from New York to West Virginia, including large portions of Pennsylvania. Estimates of the natural gas reserves in the Marcellus Shale range as high as 489 trillion cubic feet. With such a large and valuable resource below us, the development of the Marcellus Shale will likely have significant economic impacts for Pennsylvania. It can also have significant environmental impacts as well.

I. The Drilling Process

Recovering the gas in the Marcellus Shale Formation is a complicated process involving many steps. Here is a summary of what occurs during this process.

a. Exploration and Site Analysis

Once mineral rights are obtained thorough lease agreements or land purchases, the gas company begins a phase of development known as exploration. This phase allows the company to pinpoint the best location to begin drilling for natural gas deposits. Various techniques may be used and their environmental impacts vary greatly.

The first step in the exploration process usually involves some type of remote sensing technique, the most common of which is seismic exploration. Working on the theory that sound waves travel through different mediums in different ways, companies can identify the type of subsurface rock and its depth. Seismic testing can be performed by machines emitting high frequency waves that penetrate the ground, machines that shake the ground or drop heavy weights to create vibrations, or through explosive charge/dynamite blasting. All three have a potential to adversely affect the land and neighboring land. Obviously, the use of explosive charges is the most worrisome of these techniques because of the potential for the explosions to cause damage to structures and other features on the property.

While seismic testing reveals the potential for gas deposits in a given area, to verify the presence of natural gas, exploratory wells need to be drilled to determine the quantity and quality of gas available for recovery. Once identified, the drill site is selected and the well pad is prepared.

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b. Site Preparation and Drilling

Before drilling can begin, the well site must be prepared to allow room for the drilling rig and support vehicles to access the site. Steps may be taken to create holding tanks or pits for residual drilling fluid waste and to ensure that stormwater runoff is mitigated to the extent possible to prevent unnecessary erosion. This process is commonly known as ‘rigging up,’ and can potentially alter the land greatly.

During the site preparation, forest and vegetation is cleared and the land is leveled and access roads are created. Finally, the drilling rig is constructed. This area, known as the well pad, typically consumes 5 acres of land and includes more than just the drill. Once the well pad site is completed, there will be electrical support machinery, wastewater pits, storage containers, and other supply equipment on the well pad, and numerous heavy-diesel trucks.

Drilling on the Marcellus Shale uses a process known as hydraulic fracturing and horizontal drilling. The nature of the Marcellus Shale formation causes the gas to collect in vertical fractures in the rock. To access these gas reserves, a well must be drilled down to a depth of roughly 8-10,000 feet. From there, the well bore is drilled horizontally in many different lateral directions. The goal is to bisect as many of these vertical fractures as possible. Then, the well bore is pressurized with millions of gallons of water, sand and other chemicals to increase the underground pressure and break open the individual pores of gas pockets in the shale so that gas is released and flows up the well bore to be collected for later use. The amount of water typically required for hydraulic fracturing ranges from about one million gallons for a vertical well to approximately five million gallons for a vertical well with a horizontal lateral. However, some vertical wells with multiple horizontal laterals can consume twenty million gallons or more per month.

Once completed, the drilling rig is deconstructed and the well moves into its production phase.

c. Extraction and Transport of Natural Gas

Production involves the extraction of natural gas and can last decades. During this phase, pipelines and gas compressors may be constructed to ease the transport of natural gas from the well to a treatment plant. Depending on the makeup of the gas, it may be processed onsite to remove impurities.

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d. Site Abandonment and Reclamation

When a well site no longer produces gas, it must be capped and plugged as required by State and Federal Law. Usually, companies place three cement plugs, between 100-200 feet in length, in the well hole. Then a steel plate is welded on top of the pipe.\(^4\) Pennsylvania law requires the gas company to return the well site to its previous conditions within 9 months.\(^5\) However, accelerated remediation and the method of remediation can be specified in a mineral rights lease.

II. Environmental Impacts

Natural gas drilling is a massive process and the property on which drilling occurs – as well as neighboring properties - can be affected. The following briefly describes some of the potential concerns affecting land use, air and noise pollution, and water quality. The extent of the environmental impact depends on many factors and every situation is unique.

a. Land

The land around the well site can be drastically altered. Crops, livestock, native flora and fauna may all be negatively impacted by drilling on the property. On the well pad itself, forested area must be cleared and land must be leveled. In addition, this well pad must be supported by lengthy access roads, pipelines and support facilities.

Because of the near-constant use of heavy machinery, the soil under the well pad and access roads can become heavily compacted and eroded. This leads to decreased soil percolation and increased water runoff.\(^6\) This causes less vegetative growth and in turn, more soil erosion. All of this affects water quality of streams and other water bodies into which stormwater carries such eroded soil.

When a large area of forest is removed, the ecosystem as a whole is affected. Native species of animals are uprooted, and non-native species are given an opportunity to invade the new land. These invasive species are aggressive and difficult to remove once they gain a foothold. Garlic mustard, stilt grass, autumn olive, and Japanese knotweed are all known to invade these types of areas in Pennsylvania forests.\(^7\)

\(^4\) Id. at I-29.

\(^5\) 58 P.S. §601


\(^7\) Sweeney et. al., “Study Guide II,” at 3.
b. Air

While natural gas is considered a clean fossil fuel, its extraction can release a great deal of air pollution. Estimates vary depending on specific wells, but there will be a massive increase in heavy-truck traffic. One study of a Denton, Texas natural gas drill site found that 592 one-way truck trips were required per well.8 Diesel and heavy-duty trucks can emit air toxins such as carbon dioxide, particulate matter, and known carcinogens.9 And these are just the emissions from the trucks. The wells themselves are another source of air pollution from supply equipment or gas leaks. The United States Department of Energy estimates that 50 billion cubic feet of methane escapes from leaking valves during natural gas drilling. This is the single largest source of methane emissions in the nation.10

In addition to methane, other pollutants are released into the air by the drilling process. Along with this principal component of natural gas, one can expect increased emissions of the following: nitrogen oxides; volatile organic compounds; benzene; toluene; ethyl benzene; xylene; carbon monoxide; sulfur dioxide; particulate matter; ozone; and hydrogen sulfide.11 Each of these pollutants causes known health risks.

c. Noise

While not as serious a health risk as air or water pollution, noise can be a near-constant annoyance. During heavy exploration phases, trucks may travel across the land 24-hours a day. If used, gas compressors run at high decibels around the clock. And the various seismic testing techniques previously discussed are by their nature loud and obtrusive.

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d. Water

Water pollution is the single largest environmental concern associated with natural gas drilling. As noted before, wells - whether vertical or horizontal - use significant amounts of water during the drilling process. As more and more wells are drilled in Pennsylvania, the demand for water will be significant. In the Susquehanna and Delaware River basins, the cheapest and most common source of water is a nearby stream, river or lake in the basin watershed. Thus, proper water quality management is critically important for landowners and policymakers alike.

In addition to quantity, water quality issues can arise. When water is used in the drilling process, it is combined with numerous chemicals to create what is known as “slickwater” or “frac water”. All of the chemicals used are designed to perform a specific function to increase gas flow efficiency. There are acids to dissolve minerals and prevent oxidation. Biocides are used to eliminate bacteria in the water and corrosion inhibitors used to prevent corrosion of the pipe. Friction reducers and gels increase flow efficiency of the slickwater. And this is just the start. Other ingredients include oxygen scavengers, pH adjusters, proppants, scale inhibitors, and surfactants. A detailed list of these additives and their function can be found in the U.S. Department of Energy’s “Modern Shale Gas” Primer.12

Anywhere from 30-70% of the slickwater returns to the surface.13 Along with the chemicals detailed above, this water contains a mix of rock, minerals, and in some case, radioactive material.14 Companies often construct onsite storage pits to house the vast quantities of this wastewater – which can pose risks if the waters leak, overflow, or otherwise escape from the pits – something that has already occurred at some Pennsylvania well sites.

At least one analysis of Marcellus Shale drilling activities in Pennsylvania has found significant numbers of accidents, spills, and regulatory violations having environmental impacts. The Pennsylvania Land Trust Association found 1,435 violations of Pennsylvania

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12 Ground Water Protection Council, “Modern Shale Gas, Development in the United States: A Primer,” U.S. Department of Energy, Office of Fossil Energy and National Energy Technology Laboratory, April 2009, pp. 63. It should be noted that only 15,000 gallons of these chemicals are used for every 1 million gallons of water. Industry is quick to note that amounts to only 0.5% by volume. However, this should not downplay the concern of contamination. These chemicals are chosen because the increase gas production – not for minimizing environmental impacts. In the drilling process, these chemicals are combined in a slurry and because much of this frac water gets reused, chemicals can build up over time, as does their potential for adverse environmental impact. It only takes only one leak to contaminate an entire community’s water supply.

13 Sweeney et. al., at 4.

14 “Oil and Gas at Your Door,” Chapter I, pp. I-27.
Oil and Gas Laws between January 2008 and June 25, 2010, with 952 of those violations having or likely to have an impact on the environment.15

Thus, the claim that gas drilling will have no environmental impacts in Pennsylvania is not supported by the facts.

**LEGAL ASPECTS OF ENVIRONMENTAL CONCERNS**

Given the potential environmental impacts of gas drilling, it is important to understand the various legal regulations that may play a role in regulating drilling. There are federal, state, and local sources of regulation to consider.

There are two ways to think about the applicable law. One is to focus on the sources of the law (i.e., federal, state, local). The second is to think about the law in terms of the drilling process. Let’s start with sources.

**Federal Regulation**

Gas Exploration is regulated in the United States mostly under the Department of the Interior and the Environmental Protection Agency though various federal acts such as National Environmental Policy Act, Clean Water Act, Clean Air Act and the Safe Drinking Water Act / Energy Policy Act of 2005.

*National Environmental Policy Act*

The Department of the Interior (DOI) regulates and approves exploration and extraction of natural resources on federally-owned lands throughout the United States. If the drilling involves such federal lands, DOI must follow a decision-making process mandated by the National Environmental Policy Act (NEPA)16 to conduct a thorough analysis of environmental impacts before they give final approval. The NEPA process requires citizen review and potential to comment. However, unless federal lands or funds are involved, NEPA will not be implicated.

*Clean Water Act*

The Clean Water Act of 1972 (CWA)17 establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating water quality standards for surface waters. By authority of the CWA, the EPA has implemented pollution control programs such as setting wastewater standards for industry. They have also set

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15 See www.conserveland.org/violationsrpt.

16 Section 102 of the National Environmental Policy Act of 1969, 42 U.S.C. §4332; CEQ NEPA Regulations 40 C.F.R.§1508.12;

17 Clean Water Act (33 U.S.C. §1251 et seq. (1972)
water quality standards for all contaminants in surface waters. Under the CWA it is unlawful to discharge any pollutant from a point source into navigable waters, unless a permit is obtained by the EPA or a qualifying state agency. EPA’s National Pollutant Discharge Elimination System (NPDES) permit program controls discharges.\(^{18}\) Point sources are discrete conveyances such as pipes or man-made ditches. Individual homes that are connected to a municipal system, use a septic system, or do not have a surface discharge do not need an NPDES permit; however, industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters. This typically includes stormwater runoff as well from associated industrial activity and discharges from municipal storm water systems.\(^{19}\)

However, companies drilling wells for natural gas operate under an exemption from the CWA which excludes materials that are injected into a well for production of gas and water derived from the production of gas as not being a pollutant.\(^{20}\) Congress extended the exemption to all gas construction facilities in the 2005 Energy Bill.\(^{21}\) In addition, the CWA does not required drilling companies to obtain a permit for discharges of stormwater runoff from the exploration, production, treatment, or transmission of natural gas.\(^{22}\)

**Clean Air Act**

The Clean Air Act (CAA), 42 U.S.C. § 7401 et seq., allows EPA to set limits on certain air pollutants in order to ensure basic health and environmental protection from air pollution for all Americans. The CAA also gives EPA the authority to limit emissions of air pollutants coming from sources like chemical plants, utilities, and steel mills through the National Ambient Air Quality Standards (NAAQS). Individual states may have stronger air pollution laws, but they may not have weaker pollution limits than those set by EPA. Additionally, EPA must approve state and local agency plans for reducing air pollution. If a plan does not meet the necessary requirements, EPA can issue sanctions against the state and, if necessary, take over enforcing the CAA in that area.

The purpose of NAAQS is to limit the emission of substances that contribute to air pollution and endanger public health.\(^{23}\) The CAA does not enumerate the substances to be regulated by NAAQS, but rather gives the EPA the authority to determine which substances should be governed by NAAQS.\(^{24}\) Each state must, in turn, adopt and submit to the EPA for

\(^{18}\) 40 C.F.R. § 122.1  
\(^{19}\) 40 C.F.R. § 122.28  
\(^{20}\) Id.  
\(^{22}\) §1251  
\(^{23}\) 42 U.S.C. § 7409(a)-(b) (2006) – National Primary and Secondary Ambient Air Quality Standards  
\(^{24}\) § 7408(a)(1).
approval a State Implementation Plan (SIP) for each primary and secondary standard that provides for the implementation, maintenance, and enforcement of such standards. The EPA established which substances are regulated by NAAQS in the promulgated EPA regulations 40 CFR pt. 50. The regulations set standards for Sulfur Dioxides, Particulate Matter, Carbon Monoxide, Ozone, and Nitrogen Oxide.

The CAA also requires the EPA to establish and enforce National Emission Standards for Hazardous Air Pollutants (NESHAPS). These standards regulate 188 different hazardous air pollutants (HAP). The CAA further directs the EPA to name major and area sources that emit these HAPs, and develop regulations for these sources based on maximum achievable control technology (MACT).

Section 7412(n)(4)(A) of the CAA provides that emissions from oil and gas wells, pipeline compressors, and pump stations cannot be aggregated with emissions from other similar units to determine whether such units or stations are major sources of air pollution or any other purpose under Section 7412. Section 7412(n)(4)(B) provides that the EPA may only establish an "area source" category for oil and gas production wells if they are located in a metropolitan statistical area or consolidated metropolitan statistical area with over a million people if such wells present "more than a negligible risk of adverse effects to public health." Under authority of the CAA, the EPA has issued several regulations that pertain to Oil and Gas exploration and production.

The EPA has established National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks. These provisions apply to certain pumps, compressors, agitators, pressure relief devices, and other pieces of equipment that are intended to operate in organic hazardous air pollutant service 300 hours or more per year.

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25 § 7410(a)(1).
26 40 CFR pt. 50 et seq.
28 See § 7412(b).
29 §§ 7412(a), (c), (g).
32 40 C.F.R. pts. 63.160-.183 (Subpart H) – National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks
33 Id.
The EPA has also established National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities.\textsuperscript{34} These provisions apply to emission points of hazardous air pollutants located at oil and natural gas production facilities that are major or area sources of hazardous air pollutants (i.e., all sources of hazardous air pollutants), as well as "[f]acilities that process, upgrade, or store hydrocarbon liquids prior to the point of custody transfer," and "[f]acilities that process, upgrade, or store natural gas prior to the point at which natural gas enters the natural gas transmission and storage source category or is delivered to a final end user."\textsuperscript{35}


The Safe Drinking Water Act (SDWA), 42 U.S.C. § 300f et seq., is the principal federal law in the United States that ensures safe drinking water for the public.\textsuperscript{36} Pursuant to the act, the EPA is required to set standards for drinking water quality and oversee all states, localities, and water suppliers who implement these standards. The SDWA applies to every public water system in the United States but privately drilled and owned wells are excluded from EPA review.

The Energy Policy Act of 2005 provides for minimal requirements to obtain a permit for underground injection wells but specifically excludes the regulation of the underground injection of brine or other fluids which are brought to the surface in connection with oil or natural gas production or natural gas storage operations, or any underground injection for the secondary or tertiary recovery of oil or natural gas, unless such requirements are essential to assure that underground sources of drinking water will not be endangered by such injection.\textsuperscript{37} In effect, SDWA cannot regulate gas drilling operations.

\textit{Underground Injection Control Program}

The Underground Injection Control Program (UIC Program) regulates certain aspects of hydraulic fracturing. Injection wells are categorized into five classes. The categories are defined based on similarities such as the fluids injected, techniques utilized, and injection depth. The UIC Program primarily regulates activities in Class II and Class V injection wells. Class II wells inject fluids commonly used for natural gas production. The majority of the injected fluid is brine that comes to the surface during the extraction of gas. There are approximately 144,000 Class II wells in operation in the United States, injected

\begin{itemize}
  \item \textsuperscript{34} 40 C.F.R. pts. 63.760-.777 (Subpart HH) – National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities –
  \item \textsuperscript{35} 40 C.F.R. pt. 63.760(a)(1)-(3).
  \item \textsuperscript{36} 42 U.S.C. § 300f et seq. (1974)
  \item \textsuperscript{37} 42 U.S.C.A. § 300h (b)(2).
\end{itemize}
more than two billion gallons of brine every day. Fracturing that uses Class II and V injection wells to open space in a formation are also regulated by the UIC Program.  

State Regulation

Gas exploration is regulated in Pennsylvania under the state’s oil and gas laws (Oil and Gas Act, Coal and Gas Resource Coordination Act, and Oil and Gas Conservation Law), and the environmental protection laws that include the Clean Streams Law, the Dam Safety and Encroachments Act, the Solid Waste Management Act, and the Water Resources Planning Act. DEP’s Bureau of Oil and Gas Management regulates the exploration, development and recovery of Marcellus Shale natural gas reservoirs in a manner that will protect the commonwealth’s natural resources and the environment.

Pennsylvania law requires drillers to case and cement Marcellus Shale natural gas wells through all fresh water aquifers before drilling through deeper zones known to contain oil or gas. This casing and cement protects groundwater from the fluids and natural gas that will be contained inside the well, and keeps water from the surface and other geologic strata from mixing with and contaminating groundwater.

If drilling causes disruption of water quality or flow in water wells, state law requires drilling operators to replace or restore water supplies affected by drilling. If you are not satisfied with the drilling company’s response, a complaint can be filed with the nearest DEP regional office. DEP will investigate complaints within 10 days and issue orders as necessary to replace or restore the water supply. Once a well is no longer producing, the operator must plug the well and restore the site within nine months of plugging the well.

Many landowners and municipalities are interested in receiving notice of well permit applications. DEP has a no-cost subscription service called eNotice that notifies land owners and municipalities with an email when a well permit application is received. This system enables land owners and municipalities to receive notice of a permit application at the same time that DEP receives the application. eNotice can be accessed through DEP’s website at www.depweb.state.pa.us.

Oil and Gas Act

The Oil and Gas Act is the principal law that regulates extraction of natural gas in Pennsylvania. The purposes of the Oil and Gas Act are to develop natural gas resources,

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38 http://www.epa.gov/safewater/uic/wells_hydrofrac.html
40 Id.
The Oil and Gas Act requires companies to obtain a permit from DEP before drilling or altering an existing well. A plat prepared by an engineer or surveyor must be included in the permit application. A notice of the application must then be sent to the surface landowner and to surface landowners or water purveyors who have water supplies within 1,000 feet of the proposed well location. Additionally, notice must be provided to the owner or operator of an underlying coal mine. DEP is required to issue a permit within forty-five days of submission unless it needs to be extended for an addition fifteen days. This short timetable, coupled with the volume of applications and the DEP resources available for meaningful review, can raise concerns about the thoroughness of the review process. DEP can impose conditions in granting a permit or can deny the request for a permit for several reasons, including that the well site is in violation of the Oil and Gas Act or issuance of the permit would violate the Act, an incomplete application, an objection to the well location by the owner or operator of a coal mine, a well is not bonded adequately, or if the applicant has current wells in violation of the Act. After a permit is issued, the natural gas company may begin drilling after providing 24 hour notice to DEP, the surface landowner, and the local political subdivision in which the well is located. These permits typically expire after one year unless renewed.

In situations where a proposed well is planned to be drilled on a surface estate belonging to an individual other than a well operator, the surface estate owner may object to DEP’s permit grant. Objections must be filed within fifteen days of receipt of the plat and notice of the application. Objections may be based on inaccuracies of information in the permit or based on the proposed location of the well.

Local Regulation (Zoning)

On a local level, zoning rules can affect gas drilling or exploration on a particular parcel. Local zoning regulations determine if gas exploration or mineral extraction is a permissible use in any of the zoning districts of the municipality. In many cases, mineral extraction is allowed in at least one zoning district as a permissible use or under a special exception, conditional use, or variance. The local Zoning Officer should be able to help determine if this activity is allowed and if any additional permits are needed.

The interaction of zoning and the Oil and Gas Act is a complex issue due to potential preemption by the Pennsylvania Oil and Gas Act. In 2009, the Pennsylvania Supreme Court decided two key cases that address the extent the Oil and Gas Act supersedes local municipal regulation of gas drilling. In Range Resources Appalachia v. Salem Township,44

41 58 P.S. § 102.
42 58 P.S. § 201.
43 58 P.S. § 202.
Salem Township enacted an ordinance that regulated surface development activities associated with gas drilling operations. The court ruled that the Oil and Gas Act preempted some provisions of the ordinance related to development. In Huntley & Huntley v. Borough of Oakmont, the Supreme Court reversed the Commonwealth Court’s decision that the Oil and Gas Act preempted a local zoning ordinance. The court ruled that a municipality has the authority to designate zoning districts that either permit or prohibit oil and gas wells. Together, Salem Township and Borough of Oakmont seem to hold that local zoning rules controlling the location of drilling (i.e., where drilling is done) are not preempted, but local zoning controlling the activity of drilling (i.e., how drilling is done) are preempted. Thus, local governments in Pennsylvania can require the oil and gas industry to comply with ordinances and go through a public hearing and approval process as a part of an application for a conditional use or special exception application when it relates to where drilling will occur. In addition, this case necessitates that gas companies obey ordinances that prohibit the drilling of wells altogether in a designated zoning district.

**LEGAL ISSUES BY PROCESS STEPS**

If one thinks of the steps in the gas development process, the legal issues discussed above could be rearranged as follows:

*Site Selection*
- NEPA (if federal lands or fund involved)
- Contract law (for leases – see next section of Guide)

*Seismic Testing*
- Law related to trespass (if entry onto land is unauthorized)
- State regulations on explosive charges

*Drill Pad and Well Development*
- Local zoning re location of drilling
- Oil and Gas Act
- Clean Water Act
- Clean Air Act
- Safe Drinking Water Act

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LEGAL ASPECTS OF LANDOWNER LEASING

Drilling on the Marcellus Shale natural gas reserves presents a great financial opportunity to landowners in Pennsylvania. However, this opportunity carries with it the potential for great risk. Before delving into specific issues, it is important to remember that knowledge and information are absolutely critical to protecting your land, your health, and your rights. Fortunately, there is a wealth of information available through the internet, state agencies, and various organizations devoted to Marcellus Shale development in Pennsylvania. Consult your neighbors. Attend community meetings. And before you sign a mineral lease or a surface use agreement, please consult an attorney experienced in the oil and gas industry.

Oil and gas companies must acquire the rights to drill on a particular piece of land before any work can begin. Generally, the gas company will be interested in two basic sets of rights: mineral rights and surface rights. If the landowner owns the mineral rights to a piece of property, the gas exploration companies may want to enter a lease agreement to extract the minerals that are available. A typical lease contains information on what type of work will be conducted on the land and in return how much they are willing to provide in compensation for access to the minerals extracted. If a property owner does not own the mineral rights beneath the property, there are still other options. A property owner may bargain with gas exploration companies to provide more convenient access to the particular location on the property via a surface use agreement with the gas company.

A mineral lease is a contractual agreement between the owner of a mineral tract (the lessor) who grants the right to develop deposits of mineral to a producer (the lessee). Surface use agreements, on the other hand, are a type of contract that dictates how, where, and when a gas company may use the land. The latter can be incorporated into a mineral lease, but can also be used by a landowner who does not own the mineral estate beneath their property. These documents are vital to both the landowner and the gas company. They can provide an interested mineral owner with protections. But they also create a legal relationship, and thus legal liabilities, between the landowner and the gas company. The agreement can contain provisions that detail the rights and duties of each party. As such, mineral and surface leases should only be written, negotiated, and

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46 The mineral estate, or the ownership of minerals lying below the surface of your land, is considered a real property interest, separate from the surface estate. Surface rights refer to the ownership of your land and the ability to use it as you see fit (residence, agriculture, or other development). When different parties own the mineral and surface rights, the rights are severed. Generally, severance occurs when a landowner sells off his mineral rights, or reserves them when selling his surface rights.

47 “Fact Sheet: Landowners and Oil and Gas Leases in Pennsylvania,” PA Department of Environmental Protection, pp. 1, available at (weblink)

48 “Oil and Gas at Your Door, Chapter III: Tips for Landowners,” at pp. III-3.
signed after extensive consultation with an attorney experienced in mineral leases and one familiar with the interests of the landowner.

As a general rule, when negotiating a mineral lease or surface use agreement, document all meetings and most importantly, do not sign anything until you have consulted an experienced attorney. Once the lease is signed, the landowner is bound to its terms of the contract and has little to no recourse outside of the provisions of the lease.

Some of the issues that might arise in the lease negotiation include:

a. **Legal Description and Primary Term**

   Any lease should include a definite description of the property. Including both acreage and boundaries helps to avoid potential disputes, especially if neighboring landowners are also leasing their property.

   The lease should clearly designate its term length. The term limits can vary from lease to lease, but the average length is a five year term. A landowner should be careful to consider automatic extensions of the lease. Some courts have interpreted and found that certain industry practices automatically extend the lease without the consent of the landowner.

b. **Signing Bonus and Royalty Fees**

   In Pennsylvania, landowners must be paid a minimum royalty of 12.5% of the value of marketable gas produced on their property, but that is only a minimum. A landowner should understand how the royalty fees are calculated, as they can be formulated in different ways. Some companies calculate the royalty from gross profits. Others use net profits and remove fees for extraction, production, and taxes. Gas exploration companies may also offer a signing bonus in addition to the royalty fees. A landowner should consult an attorney and a Tax consultant to determine how payments are calculated and possible tax implications arising from such payments.

c. **Surface Use Protections and Reclamation**

   This broad category represents a myriad of provisions designed to protect the interests that may be valued by the landowner: air pollution; water quality and usage; land use restrictions; and noise restrictions. The burden falls to the landowner to prioritize environmental concerns, consult an experienced attorney, and write these protections into the lease agreement. A landowner should also consider the end of the drilling process in these provisions. The Oil and Gas Act requires gas companies to reach an agreement with the landowner on restoration of the property after the well is abandoned. A landowner

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49 Oil and Gas Leases, 58 P.S. §§33-34.

50 Oil and Gas Act, 58 P.S. §601.401.
may, for example, require the gas company, at its expense, to restore the land to its predrilled state as one of the lease terms.

d. Environmental Indemnity

Accidents can happen and environmental damage can occur—that risk is inherent to almost any industry. A landowner who signs a lease can face legal and financial liabilities for accidents occurring on the land or environmental damage caused by the drilling and production operations on the land. One way for a landowner to protect themselves and to control that liability is through indemnity clauses in the lease through which the gas company agrees to pay what the landowner would owe in such circumstances. Without indemnity clauses, a landowner may be left paying substantial fines to neighbors or to the State of Pennsylvania. Even with indemnity clauses, the landowner does not avoid all liability—only the financial burden of such liability, and only to the extent that the gas company has the resources to cover its indemnity promise.

As this brief overview suggests, the leasing of mineral rights and allowing surface access raises complication legal issues. Landowners stand to benefit financially from gas reserves under their property. However, there are many issues to consider besides economics. Land topography can be altered as thousands of well sites are constructed in the next five years. Air pollution in these predominantly rural areas could drastically increase due to more concentrated industrial activity. Lastly, the effect to Pennsylvania’s waters could be far-reaching. With these environmental concerns in mind, it is incumbent upon the landowner to consider all options before signing a natural gas lease. Once signed, there may be little a landowner can do to protect their land and their rights as they are bound by the terms of the contract. A landowner should consult with an experienced attorney, and consider all legal, financial, and environmental benefits and consequences to drilling on their land.