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Commentary

Municipalities and Hydraulic Fracturing: Trends in State Preemption

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INTRODUCTION

Hydraulic fracturing is a technology used to extract natural gas from shale rock formations found deep beneath the earth. It raises many public health and environmental issues of concern to municipalities and planners, both urban and rural. These issues range from potential water contamination and air pollution to noise, dust, truck traffic, and even minor earthquakes. This article identifies regulatory options that municipalities and planners may consider if hydraulic fracturing is a possibility in their community. The options range from outright bans to regulating "where" and "how" hydraulic fracturing may be carried out in the community. Such municipal regulations frequently provoke opposition from gas developers, some landowners, and state legislatures that want to promote energy development. To provide examples of how such conflicts play out in practice, this article will also highlight the responses of courts and legislatures to municipal regulations in six states.

The United States is in the midst of a renaissance in natural gas extraction. Domestic production increased 22 percent between 2005 and 2011.[1] Much of this increase has been driven by the extraction of gas from shale formations, from which the gas was until recently irretrievable. There are large shale deposits across the United States, from Montana to the East Coast and from North Dakota to Texas. The Marcellus Shale, which underlies much of West Virginia, Pennsylvania, Ohio, and New York, is by far the largest known deposit in the United States.[2] Other significant "shale gas" deposits include the Barnett Shale in Texas, the Fayetteville Shale in Arkansas, the Woodford Shale in Oklahoma, and the Haynesville Shale in Arkansas, Texas, and Louisiana.[3]

A variety of technological advancements, including improvements in horizontal drilling, have made it economical to drill for shale gas. But most attention has focused on one aspect of the process: hydraulic fracturing, or "fracking" for short. Fracking is the process of injecting huge quantities of water, a "propping agent" such as sand, and a variety of chemicals into a well at high pressures to create cracks in the shale and release the gas.

Fracking is not a new process; it has been in use for more than 50 years. But the scale and scope have expanded significantly in the last decade. Several factors have contributed to this expansion. These include:

- rising natural gas prices starting in 2002;
- declining North American conventional natural gas production;
- advances in hydraulic fracturing and horizontal drilling technology;
- the identification of large shale gas reserves in the United States;
- growing concerns about energy independence and the geopolitical consequences of continued reliance on foreign sources of natural gas; and
- interest in natural gas as a "cleaner"-burning fossil fuel because of concerns about climate change.

Today, a variety of sources tout shale gas as having potentially "revolutionary" consequences for global energy markets.[4] Some of these consequences are already being felt. For example, the rise in natural gas prices has been reversed, with spot prices recently dipping below $2 per 1,000 cubic feet for the first time since 2002.[5] Production has increased so rapidly—outstripping demand—that concerns have been raised about whether domestic gas storage capacity is going to run out this fall.[6] The low prices are also causing utilities to switch from coal-fired generation to natural gas and are weakening demand for renewables and for new nuclear plants.[7] Moreover, just years after a significant push to develop facilities to *import* liquefied natural gas (LNG) from overseas, there is now a move to develop LNG *export* facilities.[8]

In addition to these effects on energy markets, however, fracking brings with it a variety of health, safety, and environmental concerns. Many of

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these issues relate to water: fracking requires huge amounts of water—millions of gallons per well.[9] If the well casing is inadequate, gas extraction can result in groundwater contamination.[10] In addition, when water is injected into the well, toxic chemicals are frequently added; moreover, the water, as it circulates deep beneath the earth, picks up naturally occurring salts, metals, and radioactive elements. The contaminated wastewater left after fracking must be disposed of, and all the disposal options, from sending the water into underground injection wells to sending the water to wastewater treatment plants, have potential environmental costs. There have even been alleged instances of illegal dumping of wastewater.[11]

Air pollution is also a significant concern. Air emissions can be produced from a variety of sources during the natural gas extraction process, including the engines used to power drill rigs, compressor stations, and other equipment; venting of gas; flaring of excess gas; the heavy trucks used to carry equipment, gas, or water to or from the well; and impoundment pits in which wastewater is stored.[12] The pollutants emitted into the air include dust, volatile organic compounds, nitrogen oxides, sulfur dioxide, and methane.[13] Some of these pollutants can reach high levels near well sites, potentially causing public health problems.[14]

In addition, shale gas extraction can result in a variety of other effects that also have an impact on local quality of life. These include increased truck traffic, noise, and visual impacts. There is also growing evidence that the underground disposal of fracking wastewater can cause minor earthquakes.[15]

WHY MUNICIPALITIES ARE GETTING INVOLVED

In recent years, many municipalities have started addressing the effects of hydraulic fracturing. There are several reasons for this trend. First, as indicated above, many of the environmental and health impacts of shale gas development are felt most acutely in local communities. Second, the location of shale gas deposits can be geographically distinct from areas of conventional natural gas production, meaning that many municipalities—whether urban areas or predominantly rural counties—are encountering large-scale fossil fuel production for the first time or at least the first time in living memory. In addition, even areas in which conventional oil or gas development has occurred may not be prepared for the qualitatively and quantitatively different impacts of shale gas development. Third, some of the areas in which shale gas development is occurring are suburban or even urban in character, presenting particular challenges to maintaining the existing character of these communities in the face of fossil fuel extraction.[16]

Municipalities may also be concerned about the boom-and-bust cycles created by unregulated fossil fuel development. Shale gas development is usually depicted as an economy versus environment issue—with the economic impacts assumed to be positive—but this is not necessarily the case for local communities. While gas development certainly brings investment and jobs into a community, the complete picture is more complicated. In particular, fossil fuel development can produce a local economy that is overly dependent on one industry, leading to lower economic resilience, greater income inequality, and less educated workforces. For example, one study of counties in the western United States found that, because of these effects, "energy-focusing" counties had lower rates of growth for employment and personal income than counties that had little energy extraction.[17] A recent Cornell white paper cautioned that "[n]atural resource extraction has a poor record of leading to strong, diversified regional economies" and that the development of the Marcellus Shale should take into account long-term economic impacts.[18]

A final factor prompting municipalities to act is the perception that the state and federal regulatory regimes have been inadequate to prevent harmful consequences from shale gas development. Federal regulation of many aspects of fracking has been virtually nonexistent.[19] Some states have also been slow to amend their regulatory regimes to address the novel issues presented by widespread shale gas extraction.[20] As a result, some local communities, faced with a local "gas rush," have felt compelled to fill this regulatory gap.

APPROACHES TO MUNICIPAL REGULATION OF FRACKING

In response to the concerns identified above, municipalities have adopted a variety of approaches to regulating shale gas development. Some have passed outright bans, prohibiting either the fracking process in particular or all gas drilling. Others stop short of banning fracking, but limit such activity to certain parts of the municipality, either through zoning or the imposition of specific setback requirements. Finally, some municipalities regulate the manner in which fracking occurs, addressing issues such as truck traffic, noise, visual impacts, and odors. This category of regulation sometimes includes permitting requirements and the imposition of impact fees.

Fracking Bans and Moratoria

Some municipalities have completely prohibited gas drilling or fracking within their borders.[21] While the exact numbers are hard to determine and change on an almost daily basis, it appears that well over 100 municipalities have imposed either permanent bans or temporary moratoria on fracking.[22]

A ban provides the most straightforward way for a municipality to avoid the public health and environmental impacts associated with fracking. It is also, however, the type of ordinance most likely to provoke resistance from gas companies and some landowners. A ban is also, as will be explained below, more likely to be struck down in court than a more limited zoning ordinance.

Regulating Where Fracking Occurs

Municipalities can also choose to restrict the location in which natural gas extraction occurs within their borders, while stopping short of banning it. Such location restrictions can take two forms. First, a municipality can amend

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its zoning ordinance to exclude gas extraction and related activities from certain zones, such as residential areas, or to limit them to certain zones, such as industrial areas.[23] Another variation is to allow gas drilling in some areas only as a conditional use.[24] Sometimes these restrictions target gas extraction in particular, while in other cases the municipality restricts the location of all types of industrial activity, including shale gas extraction.

Second, a municipality can require that wells and associated equipment be located a minimum distance from specified locations or structures. Such "setback" requirements can prevent fracking operations from being located too close to areas that present special health, safety, or environmental concerns. Thus some municipalities have required that wells be kept away from watercourses, parks, inhabited buildings, public buildings, or schools.[25]

Regulating How Fracking Occurs

Whereas the previous ordinances regulate the "where" of fracking, some municipalities have also chosen to regulate "how" fracking is done. Here too, different municipalities have adopted a variety of approaches. Some have adopted a permit requirement or imposed impact fees on all drillers.[26] Others have imposed restrictions aimed at addressing some of the specific impacts of fracking identified above. For example, municipalities have imposed limits related to truck traffic, road construction, and road maintenance;[27] noise levels;[28] odors or other forms of air pollution;[29] visual impacts;[30] and water use and disposal. [31]

LEGAL ISSUES: PREEMPTION AND MUNICIPAL HOME RULE

As municipalities have become more active in banning or regulating fracking, they have faced a growing number of legal challenges to their authority to adopt such ordinances. In some states, the disputes have played out predominantly in the courts. In others, the state legislature has stepped in to attempt to reduce local authority to regulate fracking. In still others, a more cooperative approach has prevailed.

In most cases, challenges have been brought by natural gas companies. These companies are concerned about facing a patchwork of inconsistent regulations in different parts of a state. An outright ban on fracking—or a zoning ordinance that prohibits fracking in areas where a company owns leases—may arguably render worthless a company's natural gas leases.[32] Landowners who want to lease their land to gas companies or who want to receive royalties under existing leases have also in some cases filed challenges to ordinances.

The general question presented by these challenges is: Does the municipality have the authority to adopt the ordinance or has that authority been taken away by the state? Although the general issues are the same wherever these challenges arise, the outcome of any particular case will vary from state to state. This section therefore begins with a general overview of the principles of municipal home rule and state preemption law, before moving to a discussion of some examples of how these issues have played out in some specific states: Pennsylvania, New York, West Virginia, Ohio, Texas, and Colorado.

Basics of Home Rule and Preemption Law

Municipalities are creations of the state and therefore only have as much authority as the state has given them, either through its constitution or statutes.[33] Thus any time a municipality is acting in a contested area, a dispute may arise about whether the municipality is acting within the scope of its authority or if it is instead intruding into an area of state authority, where local authority is said to be "preempted" or "superseded."

Preemption can take three forms. First, a state law might explicitly provide that it prevents local ordinances from addressing particular topics. The effect of this kind of law is called "express preemption." Even if the law does not say this directly, however, a court might conclude that an ordinance is superseded either because it creates a conflict with a specific part of the law—known as "conflict preemption"—or because the state law is so comprehensive that it "occupies the field" and leaves no room for local control—known as "field preemption." In each case, however, the point for a court is to discern the legislature's intent. If a court believes that the legislature intended to supersede municipal authority to regulate in a particular area, then it will find that ordinances regulating that area are preempted.

The question is complicated, however, by municipal home rule. Most states—including all of the states that have seen significant fracking activity with the exception of Arkansas—have constitutional provisions granting municipalities authority to adopt ordinances regarding issues of local concern.[34] These constitutional provisions cannot be overruled by a mere statute. As a result, courts frequently struggle to identify which aspects of oil and gas regulation can be preempted and which aspects present local issues the regulation of which is protected by constitutional home rule provisions.

This analysis is all the more difficult because regulation of oil and gas development presents issues at the intersection of local and statewide concern. States have legitimate interests in the orderly development of their natural resources. At the same time, however, shale gas development creates local impacts of the sort that municipalities have traditionally regulated through their zoning and police powers. Because fracking implicates both local and statewide interests, there are legitimate arguments on both sides of the debate over preemption of local authority to regulate fracking. As described below, these debates are playing out differently in different states.

Pennsylvania is at the center of the development of the Marcellus Shale. The first well drilled in the Marcellus Shale was the "Renz" well in Washington County, Pennsylvania, which began production in 2005.[35] Since then, more than 5,000 Marcellus Shale wells have been drilled in the state.[36] As a result, total natural gas production in Pennsylvania reached 1.3 trillion cubic feet in 2011, more than six times the level in 2008.[37] Pennsylvania—a state in

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which natural gas production was virtually nonexistent a decade ago—now accounts for more than five percent of total domestic production.[38]

As production has ramped up, Pennsylvania has also witnessed a significant number of disputes over municipal regulation of fracking. Until recently, the Pennsylvania Oil and Gas Act contained an express preemption provision that read: "all local ordinances and enactments purporting to regulate oil and gas well *operations* regulated by this Act are hereby superseded."[39] In a pair of decisions issued on the same day in 2009, the Pennsylvania Supreme Court interpreted this provision to prohibit ordinances that "imposed conditions, requirements or limitations on the same features of oil and gas activities regulated by the Act,"[40] but to allow ordinances that "sought only to control the location of wells consistent with established zoning principles."[41]

Under these principles, the court concluded that an ordinance prohibiting drilling in a residential district was acceptable.[42] An ordinance that established permitting procedures, imposed a bond requirement, required predrilling testing of all water sources within 1,000 feet of a well site, and regulated site and road restoration, however, was not.[43]

This balance was upset earlier this year when the Pennsylvania legislature amended the Oil and Gas Act to, among other things, severely restrict municipal authority to regulate oil and gas development. The law, known as Act 13, requires that oil and gas operations (other than surface impoundments, processing plants, and compressor stations) be allowed in all zoning districts, including residential districts.[44] The law invalidates all existing ordinances that regulate oil and gas development and provides several mechanisms for review by the Public Utilities Commission and/or the courts of any new ordinances.[45]

A coalition of townships has challenged the constitutionality of the parts of Act 13 that relate to municipal ordinances. On April 11, 2012, the Commonwealth Court granted an injunction delaying the effect of date of these provisions by 120 days.[46] As of the time of writing, the court had not issued a final decision on the merits of the plaintiffs' claims.[47]

New York, like Pennsylvania, sits above part of the Marcellus Shale. Unlike its neighbor to the south, New York has not yet had a dramatic surge in shale gas extraction because it currently has a statewide moratorium on issuing new permits for fracking.[48] The state, however, is in the process of developing regulations for fracking and the moratorium is expected to be lifted later this year.[49] Because of the anticipated resumption of gas drilling in the state, a number of municipalities in New York have already adopted ordinances limiting or banning the practice.

Two challenges to such ordinances are working their ways through the New York court system. The towns of Dryden and Middlefield have adopted ordinances that ban natural gas extraction. In particular, both ordinances identify natural gas drilling and extraction as prohibited uses in all zoning districts.[50] The Anschutz Exploration Corporation, which owns gas leases covering approximately one-third of Dryden, challenged the Dryden ordinance in Tompkins County Supreme Court; a landowner that has signed gas leases for land it owns in Middlefield challenged that town's ordinance in Otsego County Supreme Court.

The plaintiffs in both cases argued that the ordinances were preempted by New York's Environmental Conservation Law, which includes an express preemption provision that states:

> The provisions of [Article 23 governing Mineral Resources] shall supersede all local laws or ordinances relating to the regulation of the oil, gas and solution mining industries; but shall not supersede local government jurisdiction over local roads or the rights of local governments under the real property tax law.[51]

The question for the courts, therefore, was whether these bans "relat[ed] to the regulation of" natural gas extraction. In a pair of decisions issued in February 2012, both courts found that the ordinances did not. The judges used slightly different reasoning, but both arrived at the conclusion that the state law precluded municipalities from regulating the "how" of fracking but not the "where."[52] To this extent, the decisions paralleled—and indeed cited—the pre-Act 13 Pennsylvania cases. The New York courts took the additional step, however, of concluding that a complete ban carried out through zoning counted as a permissible regulation of the "where" of gas extraction. The courts therefore upheld the ordinances despite the preemption language in the Environmental Conservation Law.

These trial court rulings will not be the last word on this issue in New York. Both decisions have been appealed.[53] For the time being, however, New York allows zoning restrictions on the location of natural gas development, even taken to the extreme of excluding it altogether.

West Virginia is another Marcellus Shale state. Several municipalities in West Virginia have adopted ordinances relating to natural gas extraction, but only one of these ordinances has been challenged in court. This case involved an ordinance adopted by the Town of Morgantown, which completely prohibited "[d]rilling a well for the purpose of extracting or storing oil or gas using horizontal drilling with fracturing or fracking methods."[54]

In 2011, a lower court judge struck down the ordinance.[55] The judge did not rely on any specific language in a state law, but rather on "the State's all encompassing authority regarding the production and development of oil and gas resources."[56] In other words, the court adopted a "field preemption" analysis. Using this approach, it concluded that the state's regulation of oil and gas development did "not provide any exception or latitude to permit the City of Morgantown to impose a complete ban on fracking or to regulate oil and gas development and production."[57]

Morgantown did not appeal the decision.[58] Around the time of the ruling in the Morgantown case, two other municipalities repealed their previously adopted fracking bans. [59] Morgantown, however, is considering a new ordi-

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nance that would limit all "extractive industries" to areas zoned industrial and impose setbacks from "residential areas, churches, hospitals, schools, day care facilities, [and] parks."[60]

The court's broad ruling would appear to leave no room for any sort of municipal regulation of shale gas development, including the narrower ordinance currently in the works in Morgantown. In addition, West Virginia has traditionally taken a narrow view of municipal home rule authority.[61] Nevertheless, there are reasons to believe that an ordinance like the one proposed in Morgantown might survive. First, the court directly ruled only on a complete ban. Second, because the case was not appealed, the West Virginia Supreme Court has not ruled on the issue; it might reach a different result. Therefore, while the law in West Virginia is at the moment unfavorable for municipalities wishing to regulate shale gas extraction, the ultimate outcome is not entirely clear.

Ohio. Eastern Ohio sits above part of the Marcellus Shale, although shale gas development has proceeded at a slower pace there than in neighboring Pennsylvania.[62] Ohio also has a history of conventional oil and gas extraction, however, and as a result, questions of municipal preemption have been occurring there for many years.

Ohio courts look at whether there are actual conflicts between a municipal ordinance and state law. In particular, they look at whether "the ordinance permits or licenses that which the statute forbids and prohibits, and vice versa."[63] This test applies even when the state legislature includes specific language in a statute purporting to preempt municipal authority.[64] This approach is intended to protect the constitutional home rule prerogatives of municipalities.

In a 1992 decision, the Ohio Supreme Court upheld municipal authority to prohibit oil and gas development from particular districts in a zoning ordinance, but struck down the specific ordinance in that case because it identified some agricultural areas as residential, and therefore improperly excluded oil and gas development from those areas.[65] At the time, the state oil and gas law expressly preserved municipal authority to enact local regulations promoting health and safety.

More recently, however, the legislature—like its counterpart in Pennsylvania—has amended the Ohio Oil and Gas Act in an effort to narrow local authority. The law now reads, in part: "The division [of natural resources] has *sole and exclusive authority to regulate the permitting, location, and spacing of oil and gas wells* and production operations within the state."[66] In theory, because—as indicated above—the Ohio courts look for actual conflicts regardless of whether a statute has this sort of specific preemption language, these legislative amendments should make no difference. And, indeed, in lower court decisions to date, a conflict preemption analysis continues to prevail.[67] But the Ohio Supreme Court has yet to rule on a preemption case since the state legislature amended the Oil and Gas Act.

Texas has a long history of oil and gas development and is also home to a significant shale gas formation, the Barnett Shale. In Texas, municipalities have relatively broad authority to regulate gas extraction, as long as the ordinances do not conflict directly with state regulations.[68] In particular, it has long been the law that municipalities "have, under their police power, authority to regulate the drilling for and production of oil and gas within their corporate limits."[69] Pursuant to this authority, some Texas municipalities have adopted lengthy and comprehensive gas drilling ordinances.

Municipal authority is not unlimited, however, and when direct conflicts between the ordinance and state law exist, a court will strike down the offending parts of the ordinance. Thus, in one recent case, the court denied a preliminary injunction against some parts of an ordinance—including landscaping requirements and noise limits—that dealt primarily with aesthetic impacts, but granted an injunction against a fencing requirement that addressed public safety, because the latter was the domain of state law.[70]

Colorado has seen extensive oil and gas development in recent decades and, like Ohio and Texas, has court decisions on preemption in the oil and gas context going back decades. The Colorado courts also look for whether there is an "operational conflict" between the municipal ordinance and state regulations.[71] In practice, this has resulted in very fine-grained, fact-specific comparisons. For example, in one case, a court struck down local regulations addressing noise abatement, visual abatement, and setbacks that were more stringent than the state's.[72] At the same time, however, it concluded that "ordinance provisions requiring an operator to obtain building permits for above-ground structures, maintain access roads, submit emergency response and fire protection plans, and regulate the distances that buildings must be set back from existing wells are matters that a local government may legitimately regulate pursuant to its land use authority."[73]

One exception to this approach is that the Colorado Supreme Court has established a *per se* rule that municipal bans on oil or gas drilling are preempted. The court has reasoned that such bans "substantially impede[s] the interest of the state in fostering the efficient development and production of oil and gas resources in a manner that prevents waste."[74]

In general, Colorado has not witnessed the same assault on municipal authority that has taken place in states like Ohio and Pennsylvania. Instead, a more cooperative approach has prevailed. For one thing, the state Department of Local Affairs has prepared a guide for local governments to oil and gas regulation.[75] This guide explains the impacts of oil and gas development, the preemption case law, and the types of regulations that local governments may adopt. More recently, a task force on oil and gas development did not propose any changes in the division of authority between the state and local governments, instead calling for "collaboration and coordination" and an enhanced role for "local government designees" who can bring issues of local concern to the attention of the

| [T]he Vermont legislature recently passed a permanent fracking ban.

Colorado Oil and Gas Conservation Commission.[76]

CONCLUSION

Local regulation of oil and gas development is a controversial issue, made all the more pressing by the rapid development of the Marcellus Shale and other shale gas reserves and the resulting push back from some communities. The law in this area is unsettled, with some local governments aggressively moving to regulate or ban fracking and with some state legislatures attempting to reduce or eliminate local control.

There are variations in the relationships between states and local governments on these issues, however. Some state governments have themselves been hesitant to embrace hydraulic fracturing. As noted above, New York has a temporary moratorium in place. New Jersey and Maryland have also adopted temporary moratoria.[77] In addition, the Vermont legislature recently passed a permanent fracking ban.[78]

There have also been some examples of state–local cooperation and compromise on gas extraction-related issues. Some such developments in Colorado were identified above. In addition, under the proposed regulatory regime to go into effect in New York after its moratorium is lifted, applicants for drilling permits will need to inform the state Department of Environmental Conservation whether the proposed drilling is consistent with local land use plans.[79] Another example of compromise is found in Idaho's recent revision to its oil and gas law, which prohibits local gas drilling bans but preserves local authority to enact ordinances that "protect public health, public safety, public order or which prevent harm to public infrastructure or degradation of the value, use and enjoyment of private property."[80]

Where there have been conflicts between state and local authority, some general lessons can be drawn. First, ordinances that regulate the "where" of hydraulic fracturing are more likely to be upheld than those that regulate the "how." Second, among those regulating the "where," zoning restrictions are more likely to be upheld than setback requirements, because the latter are more likely to be in conflict with state laws that themselves frequently include setbacks. Third, among those regulating the "how," the ordinances most likely to survive are those that address areas of traditional municipal concern, such as noise, light, dust, and traffic, especially those that do so in a neutral manner, rather than by targeting fracking operations in particular.

In some states, local governments might have no authority at all to regulate gas drilling. As discussed above, this was the conclusion of a lower court in West Virginia. A federal court has also interpreted the law of Louisiana (home of the Haynesville Shale) to leave no room for local regulation.[81]

Finally, the status of total bans is mixed. Based on recent lower courts decisions, such bans have been upheld in New York because they were described as a land use or zoning measure (an area of traditional municipal authority). West Virginia and Colorado courts, however, have prohibited such bans.

Amid all of this uncertainty, one thing is clear: the coming years will see more ordinances, more state efforts to preempt local control and, ultimately, the resolution of these disputes in the courts.

ENDNOTES

1. Total domestic production reached 28,576,117 million cubic feet (mcf) in 2011, up from 23,456,822 mcf in 2005. U.S. Energy Info. Admin., U.S. Natural Gas Gross Withdrawals, *available at* http://205.254.135.7/dnav/ng/hist/n9010us2a.htm.

2. U.S. ENERGY INFO. ADMIN., REVIEW OF EMERGING RESOURCES: U.S. SHALE GAS AND SHALE OIL PLAYS 5 (2011) (estimating the technically recoverable shale gas in the Marcellus Shale as 410 trillion cubic feet). Recently, however, some doubt has been cast on optimistic estimates of the amount of natural gas that can be profitably extracted from the Marcellus Shale and other shale formations. *See* Ian Urbina, *Behind Veneer, Doubt on Future of Natural Gas*, N.Y. TIMES, June 27, 2011, at A1 (citing Energy Information Administration internal e-mails expressing concern that "industry estimates might overstate the amount of gas that companies can affordably get out of the ground"), *available at* http://www.nytimes.com/2011/06/27/us/27gas.html.

3. U.S. ENERGY INFO. ADMIN., REVIEW OF EMERGING RESOURCES: U.S. SHALE GAS AND SHALE OIL PLAYS 5–6 (2011).

4. *See* Amy Myers Jaffe, *Shale Gas Will Rock the World*, WALL ST. J., May 10, 2010; An Unconventional Glut, THE ECONOMIST, May 11, 2010.

5. *Natural Gas Prices Dip Below $2*, ASSOC.IATED PRESS, April 11, 2012.

6. *See* Russell Gold, Rebecca Smith, & Daniel Gilbert, *Gas Glut Rejiggers Industry; Electricity Rates Slide and Coal Feels the Heat as Natural-Gas Prices Plunge*, WALL ST. J., April 10, 2012.

7. *Id.*

8. The Federal Energy Regulatory Commission in April approved Cheniere Energy's plans to build a liquefaction facility at its Sabine Pass LNG terminal in Louisiana. *See* Jennifer A. Dlouhy, *Cheniere Energy LNG Export Project Jumps Last Big Hurdle*, HOUSTON CHRON., April 17, 2012, at B6.

9. U.S. DEP'T OF ENERGY, MODERN SHALE GAS DEVELOPMENT IN THE UNITED STATES: A PRIMER 64 (2009).

10. *See* MASS. INST. OF TECH., THE FUTURE OF NATURAL GAS: AN MIT INTERDISCIPLINARY STUDY 41 (2011) (reporting that groundwater contamination, usually from the drilling process or inadequate well casing, was the most commonly reported incident associated with fracking).

11. *See* Jonathan D. Silver, *Hauler Accused of Dumping Wastewater All Over Region*, PITTSBURGH POST-GAZETTE, March 17, 2011, *available at* http://www.post-gazette.com/stories/local/breaking/hauler-accused-of-dumping-wastewater-all-over-region-287300.

12. *See* Earthworks, Sources of Oil and Gas Air Pollution, *available at* http://www.earthworksaction.org/issues/detail/sources_of_oil_and_gas_pollution; Eliza Griswold, *The Fracturing of Pennsylvania*, N.Y. TIMES, Nov. 20, 2011, at MM44.

13. *See* Earthworks, *Oil and Gas Air Pollution*, *available at* http://www.earthworksaction.org/issues/detail/oil_and_gas_air_pollution.

14. *See* Mark Jaffe, *CU Denver Study Links Fracking to Higher Concentration of Air Pollutants*, DENVER POST, March 20, 2012, *available at* http://www.denverpost.com/breakingnews/ci_20210720/cu-denver-study-links-fracking-higher-concentration-air.

15. *See* Jim Efstathiou Jr., *Fracking-Linked Earthquakes Spurring State Regulation*, BLOOMBERG, April 20, 2012, *available at* http://www.bloomberg.com/news/2012-04-20/fracking-linked-earthquakes-spurring-state-regulations.html.

16. When Fort Worth amended its gas well ordinance in 2008, it cited as one reason for doing so that "between 2001 and 2006, gas drilling and production moved from sparsely populated areas in the northern part of the City to more densely urbanized areas in the southern, western and eastern portions of the City." Fort Worth, Tex., Ordinance No. 18399-12-2008, at 1 (December 9, 2008).

17. *See* HEADWATERS ECONOMICS, FOSSIL FUEL EXTRACTION AS A COUNTY ECONOMIC DEVELOPMENT STRATEGY: ARE ENERGY-FOCUSING COUNTIES BENEFITING? 2–3 (2008), *available at* http://headwaterseconomics.org/pubs/energy/HeadwatersEconomics_EnergyFocusing.pdf.

18. SUSAN CHRISTOPHERSON & NED RIGHTOR, HOW SHOULD WE THINK ABOUT THE ECONOMIC CONSEQUENCES OF SHALE GAS DRILLING? 27 (2011), *available at* http://www.greenchoices.cornell.edu/downloads/development/marcellus/Marcellus_SC_NR.pdf.

19. For example, the injection of fracking fluids into wells is specifically exempted from regulation under the Safe Drinking Water Act, unless they contain diesel fuel. More recently, however, federal agencies have been moving forward with new regulations for hydraulic fracturing. For example, the U.S. Environmental Protection Agency (EPA) recently finalized air pollution rules that will require "green completions" to reduce volatile organic compounds emissions from all hydraulically fractured wells by 2015. *See* EPA, *Summary of Key Changes to the New Source Performance Standards* (April 17, 2012), *available at* http://www.epa.gov/airquality/oilandgas/pdfs/20120417changes.pdf. The U.S. Department of Interior (DOI) has also proposed rules to require the disclosure of chemicals used in fracking on federal or tribal lands. *See* DOI, *Press Release, Interior Releases Draft Rule Requiring Public Disclosure of Chemicals Used in Hydraulic Fracturing on Public and Indian Lands* (May 4, 2012).

20. This situation is now changing to some extent. The Marcellus Shale states of Ohio, Pennsylvania, and West Virginia have recently adopted comprehensive revisions to their oil and gas laws. *See* 2010 Ohio Laws File 27 (S.B. 165); Pa. Act 13 of 2012; 2011 West Virginia Laws 4th Ex. Sess. H.B. 401. New York is also in the process of overhauling its regulations in anticipation of the lifting of the current moratorium on Marcellus Shale drilling. *See N.Y. Dep't of Envtl. Cons., Revised Draft SGEIS on the Oil, Gas and Solution Mining Regulatory Program* (September 2011), *available at* http://www.dec.ny.gov/energy/75370.html.

21. Food and Water Watch has compiled ordinances imposing bans or moratoria on fracking. *See* Food & Water Watch, *Local Actions Against Fracking*, *available at* http://www.foodandwaterwatch.org/water/fracking/fracking-action-center/local-action-documents.

22. *See id.*; *see also* Marcellus Shale Protest, Bans, Moratoria & Resolutions, *available at* http://marcellusprotest.org/bans-and-moratoria.

23. *See*, *e.g.,* Cedar Hill, Tex., Code of Ordinances, ch. 13, art. 2, § 13-18 (prohibiting gas drilling in areas zoned residential); Township of Nockamixon, Pa., Ordinance No. 129, § 2 (2007) (allowing gas drilling only in industrial or quarry zoning districts) [hereinafter Nockamixon Ordinance].

24. *See* Huntley & Huntley, Inc. v. Borough Council of Oakmont, 964 A.2d 855 (Pa. 2009) (reviewing such an ordinance).

25. *See*, *e.g.,* Arlington, Tex., Ordinance No. 11-068, § 7.01(B) (prohibiting gas drilling within 600 feet of a park or of a protected use) (2011) [hereinafter "Arlington Ordinance"]; Cedar Hill, Tex., Code of Ordinances, ch. 13, art. 2, § 13-18 (prohibiting gas drilling with 500 feet of occupied residences); *id*. ch. 15, art. 1, § 15-2 (prohibiting gas drilling within city parks); Coppell, Tex., Ordinance No. 2009-1228, § 9-26-14(B)(4) (2009) (prohibiting the drilling of a well within 1,000 feet of any "residence, religious institution, public building, hospital, school, public park, or any business") [hereinafter "Coppell Ordinance"].

26. *See*, *e.g.,* Arlington Ordinance, §§ 5.01-.02 (requiring gas well permit and payment of application fee and road damage fee); Fort Worth, Tex., Rev. Ordinances § 15-34 (requiring a gas well permit); id. § 15-51 (imposing a permit fee of $3,000 per gas well) [hereinafter "Fort Worth Ordinances"]; Twp. of Jackson, Pa., Ordinance 141, §§ 3, 6 (2006) (requiring that driller obtain a Drilling Operation Surface Disturbance Approval and pay a fee for it) [hereinafter "Jackson Ordinance"].

27. *See*, *e.g.,* Arlington Ordinance §§ 7.01(A)(22), (D); Fort Worth Ordinances § 15-42(A)(27), (37); Jackson Ordinance § 4.

28. *See*, *e.g.,* Arlington Ordinance § 7.01(A)(21), (F) (requiring mufflers on all engines and setting maximum noise levels); Fort Worth Ordinances § 15-42(A)(25), (B) (same); Nockamixon Ordinance § 9 (setting maximum noise levels at any point beyond the property where drilling is occurring at 55 decibels during the day and 45 decibels at night and requiring noise mitigation measures when necessary); Twp. of Cecil, Pa., Ordinance No. 2-2010, § 16 (2010) (setting maximum noise levels and prescribing mitigation measures).

29. *See*, *e.g.,* Arlington Ordinance § 7.01(A)(6), (15); Fort Worth Ordinances § 15-42(A)(8), (10), (28); Nockamixon Ordinance § 4.

30. *See*, *e.g.,* Arlington Ordinance, § 7.01(C) (establishing landscaping and fencing requirements); Fort Worth Ordinances § 15-43 (same); Nockamixon Ordinance §§ 15-16 (same).

31. *See*, *e.g.,* Fort Worth Ordinances § 15-42(17)-(18); Jackson Ordinance § 4(C).

32. This effect on the value of leases raises the possibility that lease owners will argue that an ordinance prohibiting them from drilling constitutes a "regulatory taking," for which they are entitled to compensation under the Takings Clause of the Constitution. *See generally* Timothy Riley, Note, Wrangling with Urban Wildcatters: Defending Texas Municipal Oil and Gas Development Ordinances Against Regulatory Takings Challenges, 32 VT. L. REV. 349 (2007). An analysis of this issue is, however, beyond the scope of this article.

33. DAVID J. MCCARTHY, JR. & LAURIE REYNOLDS, LOCAL GOVERNMENT LAW IN A NUTSHELL 8 (5th ed. 2003).

34. *See*, *e.g.,* Colo. Const. art. XX; N. Y. Const. art. IX, § 2; Ohio Const. art. XVIII, § 3; Pa. Const. art. IX, § 2; Tex. Const. art. XI, § 11; W.V. Const. art. VI, § 39a. Some of these constitutional provisions, like those of Colorado and Ohio, are considered to be "self-executing," meaning that they take effect without any implementing legislation. Others, like those of New York, Pennsylvania, Texas, and West Virginia, require enabling legislation before a municipality is entitled to home rule.

35. Hannah Wiseman, *Regulatory Adaptation in Fractured Appalachia*, 21 VILL. ENVTL. L. J. 229, 240 (2010).

36. A report generated at http://www.depreportingservices.state.pa.us/ReportServer/Pages/ReportViewer.aspx?/Oil_Gas/Operator_Well_Inventory_By_County for all wells drilled between January 1, 2003, and May 1, 2012, produced a result of 5,336 Marcellus Shale wells.

37. *See* U.S. Energy Information Administration, *Top 5 Producing States' Combined Marketed Natural Gas Output Rose in 2011* (April 27, 2012), *available at* http://205.254.135.7/todayinenergy/detail.cfm?id=6030; U.S. Energy Information Administration, *Natural Gas Gross Withdrawals and Production*, *available at* http://www.eia.gov/dnav/ng/ng_prod_sum_a_EPG0_VGM_mmcf_a.htm.

38. *Id.*

39. 58 PA. STAT. ANN. § 601.602 (2010) (emphasis added).

40. Huntley & Huntley, Inc. v. Borough Council of Oakmont, 964 A.2d 855, 863 (Pa. 2009).

41. Range Res.-Appalachia LLC v. Salem Twp., 964 A.2d 869, 876 (Pa. 2009).

42. Huntley & Huntley, 964 A.2d at 866.

43. Range Res.-Appalachia, 964 A.2d at 875-76.

44. Pa. Act 13 of 2012, § 3304(b)(5). The statute does, however, allow municipalities to prohibit wells within residential districts if the wellhead cannot be placed at least 500 feet from existing buildings. *Id*. § 3304(b)(5.1).

45. *Id*. §§ 3302, 3305-06.

46. Robinson Twp. v. Commwealth, No. 284 M.D. 2012, Order (Pa. Commw. Ct. Apr. 11, 2012).

47. Robinson Twp. v. Commonwealth, No. 284 M.D. 2012, 2012 WL 1429454, at *5 (Pa. Commw. Ct. Apr. 20, 2012) (requiring dispositive motions to be filed by May 7, 2012, and oppositions to be filed by May 21, 2012).

48. *See* N.Y. Exec. Order No. 41 (Dec. 13, 2010), *available at* http://www.governor.ny.gov/archive/paterson/executiveorders/EO41.html.

49. Sorell E. Negro, *Fracking Wars: Federal, State and Local Conflicts over the Regulation of Natural Gas Activities*, ZONING & PLAN. REP., February 2012, at 1, 4.

50. Anschutz Exploration Corp. v. Town of Dryden, 940 N.Y.S.2d 458, 465 (N.Y. Sup. Ct. 2012); Cooperstown Holstein Corp. v. Town of Middlefield, No. 2011-0930, 2012 WL 1068841, at *1 (N.Y. Sup. Ct. Feb. 24, 2012).

51. N.Y. Envtl. Conserv. Law § 23-0303(2).

52. Anschutz Exploration Corp., 940 N.Y.S.2d at 471 ("[L]ocal governments may exercise their powers to regulate land use to determine where within their borders gas drilling may or may not take place, while DEC regulates all technical operational matters on a consistent statewide basis in locations where operations are permitted by local law."); Cooperstown Holstein Corp., 2012 WL 1068841 at *7 ("The state maintains control over the 'how' of such procedures while the municipalities maintain control over the 'where' of such exploration.").

53. *See* Chris Dolmetsch & Jim Efstathiou, Jr., *New York Drilling Ban Rulings Being Appealed, Lawyers Say,* BLOOMBERG BUSINESSWEEK, March 30, 2012, *available at* http://www.businessweek.com/news/2012-03-30/anschutz-files-appeal-notice-in-fracking-case-lawyer-says.

54. Morgantown, W.Va., Ordinance 721.03(a), *available at* http://documents.foodandwaterwatch.org/doc/Frack_Actions_MorgantownWV-ban.pdf.

55. N.E. Natural Energy, LLC v. Morgantown, W.V., No. 11-C-411, slip op. at 10 (Monongalia Cty. Cir. Ct. Aug. 12, 2011).

56. *Id*. at 8.

57. *Id*. at 9.

58. Tracy Eddy, *Fracking Discussion Set for Nov.*, DOMINION POST (Morgantown, W.V) October 26, 2011.

59. Vicki Smith, Morgantown Ready to Repeal Drilling Ban, CHARLESTOWN GAZETTE, Nov. 1, 2011, at 6A.

60. Tracy Eddy, *Zoning Law Sent to Council*, DOMINION POST (Morgantown, W.V), May 11, 2012.

61. *See* Robert M. Bastress, Jr. et al., Constitutional *Considerations for Local Government Reform in West Virginia*, 108 W. VA. L. REV. 125 (2005); Willard D. Lorensen, *Rethinking the West Virginia Municipal Code of 1969*, 97 W.VA. L. REV. 653 (1995).

62. Ohio also sits above the Utica Shale, a natural gas-containing formation that is deeper than the Marcellus Shale. As of May 2012, there had been more Utica Shale wells than Marcellus Shale wells drilled in Ohio. *See* Ohio Dep't Nat. Res., Oil and Natural Gas Well and Shale Dev. Res., *available at* http://www.ohiodnr.com/oil/shale/tabid/23174/Default.aspx (identifying 65 Utica Shale wells drilled versus 7 Marcellus Shale wells).

63. Struthers v. Sokol, 140 N.E. 519, 519 (Ohio 1923).

64. Am. Fin. Servs. Ass'n v. Cleveland, 858 N.E.2d 776, 782 (Ohio 2006).

65. Newbury Twp. Bd. of Trustees v. Lomak Petroleum (Ohio), Inc., 583 N.E.2d 302 (Ohio 1992).

66. Ohio Rev. Code Ann. §1509.02 (emphasis added).

67. *See* Natale v. Everflow Eastern, Inc., No. 2010-T-0088, 2011 WL 3809805, *7 (Ohio App. Aug. 26, 2011); Smith Family Trust v. Hudson Bd. of Zoning & Bldg. Appeals, No. 24471, 2009 WL 1539065 (Ohio App. June 3, 2009). The analysis is very fact-specific. Under these two cases, a municipality is allowed to regulate the distance between new houses and existing gas wells, but not between new gas wells and existing houses. The reason is that the state Oil and Gas Act identifies setbacks for the former but not for the latter.

68. *See*, *e.g.,* Unger v. State, 629 S.W.2d 811, 812-13 (Tex. App. 1982) (holding that municipal permitting requirement was not in conflict with state law).

69. Klepak v. Humble Oil & Refining Co., 177 S.W. 2d 215, 217 (Tex. Civ. App. 1944). This remains the law today. *See* Shelby Operating Co. v. City of Waskom, 964 S.W.2d 75, 83 (Tex. App. 1997) ("The development of oil and gas within the city limits is clearly an area subject to regulation under the police powers of a municipality.").

70. Tex. Midstream Gas Servs., LLC v. City of Grand Prairie, No. CIV.A.3:08CV1724-D, 2008 WL 5000038 (N.D. Tex. Nov. 25, 2008), aff'd, 608 F.3d 200 (5th Cir. 2010).

71. Bd. of County Comm'rs, La Plata County v. Bowen/Edwards Assocs., Inc., 830 P.2d 1045, 1059 (Colo. 1992).

72. Town of Frederick v. N. Am. Res. Co., 60 P.3d 758, 765 (Colo. Ct. App. 2002).

73. *Id*. at 766.

74. Voss v. Lundvall Bros., Inc., 830 P.2d 1061, 1068 (Colo. 1992).

75. COLO. DEP'T OF LOCAL AFFAIRS, OIL AND GAS REGULATION: A GUIDE FOR LOCAL GOVERNMENTS (2010), *available at* http://www.colorado.gov/cs/Satellite?blobcol=urldata&blobheadername1=Content-Disposition&blobheadername2=Content-Type&blobheadervalue1=inline%3B+filename%3D%22Oil+%26+Gas+Guide.pdf%22&blobheadervalue2=application%2Fpdf&blobkey=id&blobtable=MungoBlobs&blobwhere=1251731953404&ssbinary=true.

76. Letter from Mike King, Chair, Task Force Established by Executive Order B 2012-002, to Governor John W. Hickenlooper, et al. 2(April 18, 2012); Press Release, Oil and Gas Task Force Makes Recommendations Related to State and Local Regulatory Jurisdiction (April 18, 2012), *available at* http://www.colorado.gov/cs/Satellite/GovHickenlooper/CBON/1251621390178.

77. *See* Jim Marshall & Anna Driver, *New Jersey Issues One-year Moratorium on Fracking*, REUTERS NEWS, August 25, 2011; Bill Holland, *Wary of Fracking, Md. Governor Orders More Study*, GAS DAILY, June 7, 2011, at 1.

78. Dave Gram, *Vt. on Verge of Historic "Fracking" Ban*, BOSTON GLOBE, May 5, 2012, *available at* http://articles.boston.com/2012-05-05/metro/31570956_1_natural-gas-hydraulic-vermont.

79. N.Y. Dep't of Envtl. Cons., Revised Draft Supplemental Generic Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program, Executive Summary at 26 (2011).

80. 2012 Idaho Code Ann. Adv. Legis. Serv. 111 (H.B. 464), § 2.

81. Energy Mgmt. Corp. v. City of Shreveport, 397 F.3d 297, 302-05 (5th Cir. 2005).