Approaches to Local Regulation of Shale Gas Development

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Abstract

Residents of the towns and cities where shale gas development has been occurring are dealing with a whole host of challenges and risks felt at the local level. This paper explores some of the regulatory responses that local communities have taken in order to try to mitigate these risks and challenges. Municipalities and counties have taken a variety of regulatory approaches, which can be categorized as follows: enacting bans and moratoria, implementing place-based regulations, or regulating the manner by which shale gas development occurs (including attempts to control specific negative effects of the process). Case studies that profile regulatory structures in municipalities and counties in Pennsylvania, Colorado, and Texas illustrate the wide variety of regulatory approaches that local jurisdictions have taken.

Keywords: Infrastructure, Land Use Dispute Resolution, Dispute Resolution, Economic Development, Environment, Environmental Management, Environmental Planning, Land Dispute Resolution, Land Law, Land Regulation, Legal Issues, Local Government, Natural Resources, Public Policy, Regulatory Regimes, Natural Gas, Hydraulic Fracturing, Fracking, Shale

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Executive Summary

Shale gas development, along with one of its key technologies—hydraulic fracturing, often called "fracking,"—has raised public concern about a host of issues, primarily centered around drinking water. Residents of the towns and cities where shale gas development had been occurring were dealing with not only the risk of drinking water contamination but also a number of additional challenges felt at the local level. These challenges include noise produced by drilling, hydraulic fracturing, and compression of natural gas; light pollution from industrial operations; traffic and damage to roads that are caused by large trucks hauling water, equipment, and chemicals; and strain on local resources such as water, schools, and medical facilities; among many other impacts experienced by the neighbors of shale gas development.

While our research interest is primarily around local regulatory responses that communities have taken in order to try to mitigate these risks and challenges, it should be noted that local regulatory authority over shale gas development, and over oil and gas development more generally, is nested within a structure of federal and state regulation. States exercise primary regulatory authority over oil and gas development and different states allow local jurisdictions different levels of regulatory authority. Some states allow municipalities and counties to exercise broad discretion in how they would like to control shale gas development within their jurisdictions, while other states prefer to minimize local discretion in favor of implementing a uniform statewide regulatory regime—and the scope of local regulatory authority is before the courts in many states. Generally, states do not allow municipalities to regulate those aspects of oil and gas development that are regulated by the state itself, such as the technical regulations governing the casing of wells. However, most states authorize municipalities to enact general land use ordinances, such as zoning ordinances, that specify where certain types of industrial development may take place, including drilling for natural gas. It should be noted that, with the advent of the shale gas and shale oil booms and the attendant spread of oil and gas development to many areas that did not previously see drilling, conflict over the balance of regulatory authority between state governments and counties and municipalities has increased in recent years and the boundaries between state and local regulation are being actively contested in states around the country.

Within the boundaries allowed to them under state regulatory frameworks, municipalities and counties have taken a variety of regulatory approaches, which can be categorized as follows: enacting bans and moratoria, implementing place-based regulations, or regulating the manner by which shale gas development occurs (including attempts to control specific negative effects of the process). Courts in most states have found that total bans by local jurisdictions on a state-authorized practice exceed the authority of those jurisdictions, with New York State being a prominent exception.[1] Many local jurisdictions have also enacted temporary moratoria as they sort out their local regulatory processes and, for the most part, these seem to be allowable. Place-based regulations enacted by local jurisdictions are generally more likely to be allowed by state

[1] New York State is also noteworthy as it is one of the few states that have taken a cautious approach to shale gas development and in which some local jurisdictions are pushing for greater local control to allow for development. At the time of writing, New York's moratorium remains in place, precluding local interest in developing shale gas resources.

governments, and upheld by state courts, than are total bans or operational regulations, perhaps because place-based regulations align more closely to the land use authority that local jurisdictions traditionally exercise than do full bans or operational regulations. Of the two types of place-based regulation, courts are more likely to allow zoning regulations enacted by municipalities and counties than they are to allow setback requirements because the latter are more often included in state regulations, thereby preempting local setback requirements. Operational regulations, such as those on well casing and pit construction, are more common—and are more likely to survive preemption challenges—in states such as Texas and New Mexico that allow local jurisdictions wider regulatory latitude. In most other states, these types of regulations remain under the purview of the state regulatory authority and therefore are more likely to be challenged by the state government. That being said, ordinances that address areas of traditional municipal concern, such as the noise, light pollution, dust, road maintenance, and traffic, are more likely to be upheld under legal challenge.

Case studies that profile regulatory structures in municipalities and counties in Pennsylvania, Colorado, and Texas illustrate the wide variety of regulatory approaches that local jurisdictions have taken. Pennsylvania, Colorado, and Texas are three key states in the shale gas boom, not only for their production figures but also, from a policy perspective, for their different regulatory approaches.

Pennsylvania served as a focal point of local regulatory innovation as municipalities enacted a wide range of regulatory policies in their attempts to grapple with the effects of rapid shale gas development. The four Pennsylvania municipalities profiled here present a wide range of approaches, with Cecil Township, on one end, allowing oil and gas development as a by-right use in all zoning districts, and with West Homestead Borough, on the other end of the spectrum, aggressively declaring a right to self-governance, banning all corporate extraction of natural gas, and declaring that corporations will lose various constitutional protections if found to be in violation of the municipal ordinance. These four Pennsylvania towns represent the full spectrum of regulatory approaches, featuring bans, zoning and setbacks, and operational and impact-based regulations. The state legislature enacted Act 13 in February 2013 in an attempt to create a uniform statewide regulatory environment, essentially voiding most of the regulations enacted by these four municipalities. Depending on the Pennsylvania Supreme Court's decision with regards to a lawsuit challenging the constitutionality of Act 13, local jurisdictions may or may not regain the ability to exercise some local control over land use and other mechanisms to control the effects of shale gas development.

Colorado's municipalities and counties are very actively negotiating with the state, particularly the Colorado Oil and Gas Conservation Commission (COGCC) as the state's primary regulatory authority over oil and gas development, about the level and types of regulatory authority that they should exercise. The legislature and state courts have tried to create a somewhat collaborative structure for regulation but at least some local jurisdictions seem to believe that the state is not looking out for the best interests of their citizens and that the collaborative structures promoted by the Governor and the COGCC are insufficient to address their concerns. The two municipalities and county profiled here illustrate the diverse approaches taken by local jurisdictions as they seek to navigate the regulatory pathways open to them. The Town of Erie has focused on signing memoranda of understanding with operators active in its jurisdiction,

focusing on trying to minimize spills and leakages and the venting of natural gas. Boulder County has undertaken a long-term process to revise its oil and gas regulations and has adopted an approach in which operators have the option of pursuing one of two permitting tracks. This two-tier approach allows the County the flexibility to pursue an aggressive regulatory strategy by incentivizing operators to apply for permits on the "expedited" track while (arguably) remaining within the regulatory boundaries allowed to local jurisdictions by adhering more closely to state standards with the "standard" permitting track. Despite having enacted these regulations, though, the County recently enacted its moratorium on the processing of permit applications until 2015. The City of Longmont, in the form of the City Council and through a citizens' ballot initiative, has aggressively moved to limit drilling within the city limits. The Longmont City Council enacted regulations to eliminate drilling and production activities in residential and mixed-use zones and to limit oil and gas waste disposal facilities to the city's industrial zones. Subsequently, city voters approved a charter amendment banning the use of hydraulic fracturing within the city. The state of regulation and law in Colorado is also very much in flux, with regulatory changes and revisions occurring at both the state and local levels and lawsuits pending before the courts.

Texas allows greater local jurisdiction than most other states, although a recent court ruling clarified that municipalities and counties are nevertheless preempted from enacting regulations that directly conflict with state regulations enacted by the Railroad Commission and the Texas Commission on Environmental Quality. The long history of oil and gas development in Texas, combined with the increasing push of drilling into suburban and urban areas of major population centers such as Arlington and Fort Worth, combine to create a situation in which many municipalities are enacting sophisticated regulations to protect the safety, health, and wellbeing of their citizens while still fostering oil and gas development. The City of Arlington seems to be aggressively protecting its residents' interests in those areas in which it has authority to do so, using land use mechanisms such as setbacks along with operational regulation for areas like venting, plugging, and well abandonment and impact-focused restrictions on dust, vibration, noxious odors, light pollution, traffic and road damage, and excess sound. Arlington's regulations are similar to those of a number of other municipalities in the Barnett Shale that seem to be using the regulatory purview granted to them by the State of Texas.

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Approaches to Local Regulation of Shale Gas Development

Introduction

Shale gas development first entered the broad public consciousness about five years ago as concern erupted about the risks presented by this technique, often referred to as "fracking," particularly around threats to drinking water. Residents of the towns and cities where shale gas development had been occurring—in some cases, for over 10 years—were dealing first hand with not only the risk of drinking water contamination but also a whole host of additional challenges felt at the local level. These challenges include loud noise produced by drilling, hydraulic fracturing, and compression of natural gas; light pollution from industrial operations that often continue around the clock; excess traffic and damage to roads that are caused by large trucks hauling water, equipment, and chemicals; and strain on local resources such as water, schools, and medical facilities; among many other impacts experienced by the neighbors of shale gas development.

This paper explores some of the regulatory responses that local communities have taken in order to try to mitigate these risks and challenges. The paper will first review the basics of the shale gas development process, including hydraulic fracturing, and why it has spread so rapidly in the past decade. The paper will also review the key risks presented by shale gas development and highlight those risks and challenges faced by the communities in which development is taking place. Next, the paper will turn to the regulatory context, first by providing an overview of how oil and gas (and shale gas, as a subset of that larger field) are regulated by federal, state, and local authorities. Local regulation, as the focus of this paper, is strongly contextual in terms of which state the local jurisdiction is located in, and the paper will explore the relationship between state and local regulation of oil and gas development in six key states. This state-level survey will look at both the legislation and case law that have come to determine how much authority municipalities and counties in different states enjoy to regulate oil and gas development. Next, the paper will review the broad categories of regulatory approaches that local jurisdictions take: enacting bans and moratoria, implementing place-based regulations, and enacting operational and impact-based regulations. Finally, the paper will dig deep into case studies of municipal regulation in three states—Pennsylvania, Colorado, and Texas—to explore what specific jurisdictions are doing to tackle the challenges they face.

A Snapshot of the Technology of Shale Gas Development

Exploration of the possibility of extracting natural gas from shale first began in the 1970s when declining production from conventional gas deposits spurred the U.S. Department of Energy to initiate the Eastern Gas Shales Project in 1976.[2] Technological advances over the following twenty years in the technologies of hydraulic fracturing, horizontal drilling, and the use of fiber

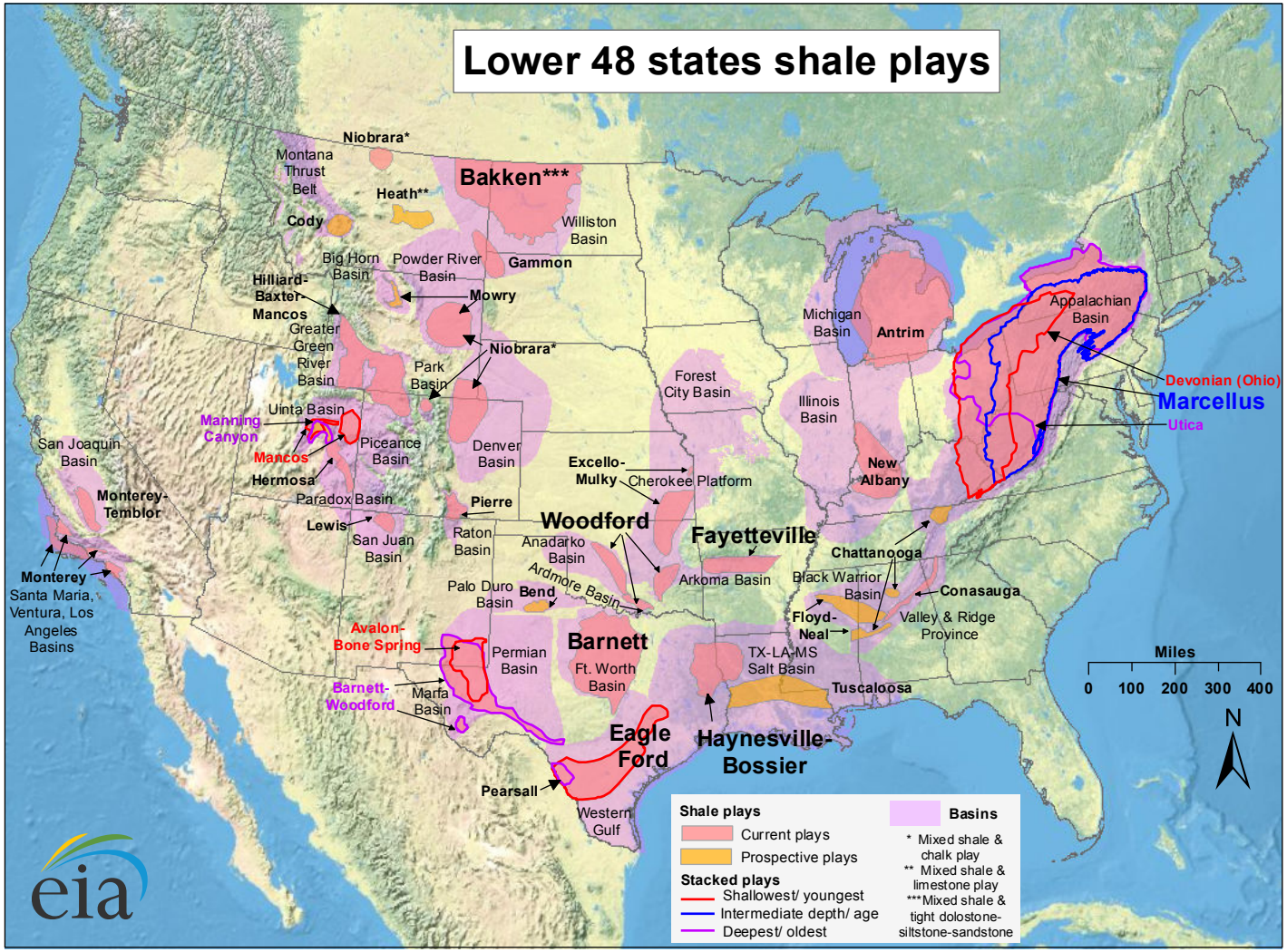
[2] Alex Trembath et al., *Where the Shale Gas Revolution Came From: Government's Role in the Development of Hydraulic Fracturing in Shale* (Breakthrough Institute Energy & Climate Program, May 2012), http://thebreakthrough.org/blog/Where_the_Shale_Gas_Revolution_Came_From.pdf.

optics in microseismic imaging allowed for the first successful commercial shale gas development in Texas' Barnett Shale in 1997.[3] Shale gas production spread from the Barnett to other shales in Texas, Louisiana, and Arkansas in the mid-2000s and sparked a rush in the Marcellus Shale in Pennsylvania in 2008 after a report by Professors Terry Engelder and Gary Lash estimated that estimates of recoverable natural gas in the Marcellus were up to 250 times larger than previously thought.[4] A map of shale plays in the lower 48 states is included in Figure 1 to provide a visual representation of the varied locations in which shale gas (and shale oil) development is occurring.

[3] Railroad Commission of Texas, "Water Use in the Barnett Shale," January 24, 2011, http://www.rrc.state.tx.us/barnettshale/wateruse_barnettshale.php.

[4] "Unconventional Natural Gas Reservoir In Pennsylvania Poised To Dramatically Increase US Production," *ScienceDaily*, January 21, 2008, http://www.sciencedaily.com/releases/2008/01/080117094524.htm.

Figure 1: Lower 48 States Shale Plays, 2011



Source: Energy Information Administration based on data from various published studies.
Updated: May 9, 2011

Source: U.S. Energy Information Administration, "Maps: Exploration, Resources, Reserves, and Production."

The boom in shale gas production in recent years is rapidly altering projections for future energy supply and usage in the United States. The U.S. Energy Information Administration (EIA) estimates that the United States will transition from being a net importer of natural gas to being a net exporter early during the next decade.[5] In addition, electricity generated from natural gas has already begun to supplant electricity from coal-fired power plants and the EIA projects that this trend will continue over the next 25 years.[6] These transitions are projected to be driven largely by shale gas, as the share of U.S. natural gas production from shale is expected to grow from 23 percent in 2010 to 49 percent in 2035.[7] The sharp uptick in natural gas production is creating a number of positive benefits, including cheaper natural gas, economic development and wealth generation in localities where extraction is taking place, and reduced carbon emissions.[8]

The process of shale gas development includes many stages both before and after hydraulic fracturing (hydraulic fracturing is commonly known as "fracking" and is the part of the process that has commanded significant public attention). Laying out these steps here will provide some context for understanding the myriad regulations governing shale gas development that will be discussed in this paper. First, the shale gas operator conducts seismographic testing to locate a promising site in which to drill for gas. Having decided on a site, the operator constructs a well pad, which is a large cement platform that hosts the well (and in the case of shale gas development, often multiple wells) and other associated equipment.[9] The next step is to drill the well itself and case it; casing involves the installation of concentric steel tubes of varying diameters and lengths, all secured by cement.[10] Once drilling reaches the depth at which the shale gas is found, it usually proceeds horizontally in order to maximize exposure to the resource. During drilling, fluid called "produced water" usually flows to the surface through the well and must be disposed of along with other drilling wastes such as drill cuttings (mostly rock that comes out of the well) and used drilling fluids.[11]

The structure of shale does not allow hydrocarbons to flow through a vertical well to the surface at an economical rate, thereby requiring fracturing of the shale in order to extract the gas and oil that is trapped therein. After the well is drilled and casing has been installed, the well is hydraulically fractured. The process of hydraulic fracturing involves punching holes into the portion of the well that has been drilled through gas-containing shale and forcefully injecting high volumes of fracturing fluids (comprised of water, sand or ceramic "propping" agents that

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[5] U.S. Energy Information Administration, *Annual Energy Outlook 2012* (U.S. Energy Information Administration, June 2012), 3, http://www.eia.gov/forecasts/aeo/pdf/0383(2012).pdf.

[6] Ibid., 3–4.

[7] Ibid., 3.

[8] Although natural gas generally produces fewer greenhouse gas (GHG) emissions than does coal, there are some concerns about leakage of methane directly into the atmosphere during the production and transport processes. Two studies that come to differing conclusions about the GHG footprint of shale gas production are: Timothy J. Skone, *Life Cycle Greenhouse Gas Analysis of Natural Gas Extraction & Delivery in the United States*; and Howarth, Santoro, and Ingraffea, "Methane and the Greenhouse-gas Footprint of Natural Gas from Shale Formations."

[9] NY Dept. of Environmental Conservation, "Revised Draft SGEIS on the Oil, Gas and Solution Mining Regulatory Program," September 2011, 5–91 –97, http://www.dec.ny.gov/energy/75370.html.

[10] Ibid., 5–91 –97.

[11] Ibid., 5–91 –97.

hold fractures open, and a specialized cocktail of chemicals) down the well and out through the holes into the surrounding rock.[12] The fracturing fluid fractures the rock, creating passageways by which the gas can flow out of the rock in which it was trapped and through the well to the surface.[13] The entire well is not fractured at once but rather in stages of a few feet at a time. Usually, some quantity of the fluids injected into the well returns to the surface along with water already in the formation; this is called "produced water"[14] and must also be disposed of.[15] The operator installs equipment at the wellhead to control and collect the natural gas that is flowing to the surface and uses pipes to transport the gas to a processing plant. Figure 2 presents a diagram that illustrates key aspects of the shale gas development process, with a focus on hydraulic fracturing.

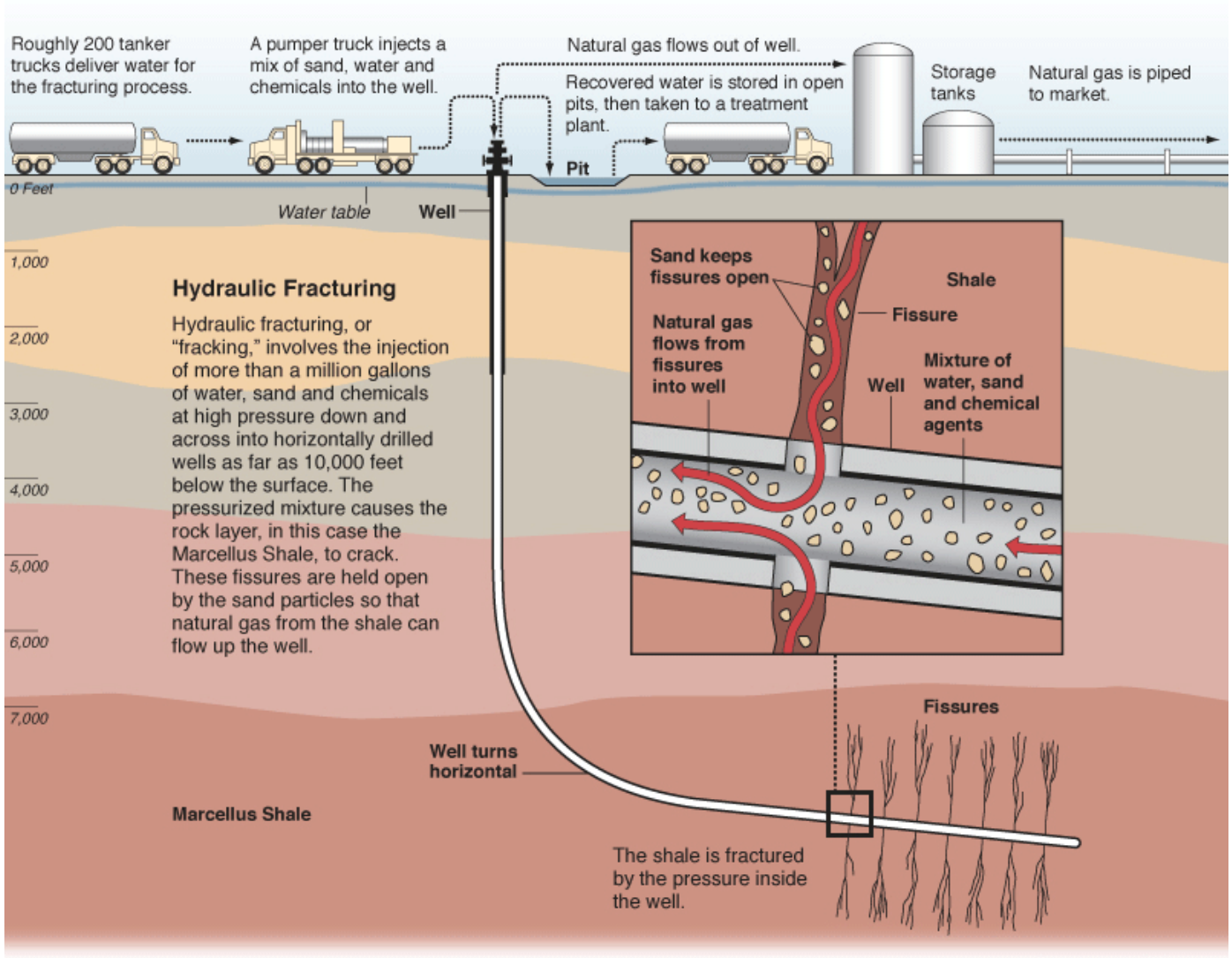
[12] Ibid.

[13] Ibid.

[14] While critics have sometimes focused on "flow back water, " that portion of return liquids that was originally injected, industry generally argues that injected liquids are mixed with water/brine already in the formation, and thus one cannot distinguish between general produced water from the well and "flow back" specifically.

[15] NY Dept. of Environmental Conservation, "Revised Draft SGEIS on the Oil, Gas and Solution Mining Regulatory Program," 5–91 –97.

Figure 2: Illustration of Shale Gas Development Process



Risks Presented by Shale Gas Development

Much of the public concern around shale gas development has focused on hydraulic fracturing, and specifically on the potential for contamination of groundwater resources by the injection of chemicals used in the hydraulic fracturing process. While this risk is real and must be guarded against, there are numerous other risks to human health and safety and environmental wellbeing that also are posed by the shale gas development process. Reviewing these risks here will help the reader to understand the purpose of the myriad regulations governing shale gas development.

Each of the steps in the shale gas development process described in the previous section creates the potential for human or environmental harm. Although all of the potential effects will not be described here, a sampling will illustrate the diversity of potential impacts.[16] For example, testing for locations in which to drill gas wells often involves the use of large trucks called "thumpers" that strike the ground with sufficient force to cause it to vibrate and shake.[17] This can cause damage to nearby buildings and water wells. Construction of well pads and access roads can fragment natural habitat and cause erosion that washes into nearby waterways.[18] The casing and cementing of natural gas wells can be faulty or can deteriorate over time, thereby allowing fluids to pass between the well and surrounding media, including groundwater.[19] High volume hydraulic fracturing, the kind used in shale gas development, accentuates this risk by placing increased pressure on casing when fracturing fluid is pumped down the well at high pressures.[20] Water for drilling and hydraulic fracturing must be obtained from somewhere, usually either local surface water or groundwater sources, and high volumes of water withdrawal can adversely impact local ecology and other water users.[21] Various materials used in the drilling process, including water and chemicals for drilling and hydraulic fracturing, must be trucked in or transported via pipeline (in which case pipelines must be laid) and stored on site before and after use, creating the possibility that substances may be spilled.[22] Waste products including produced water, used fracturing and drilling fluids, drill cuttings, and other industrial products can also spill during on-site storage and transportation for disposal.[23] In addition, all of these wastes—many contaminated with chemicals from the fracturing and drilling processes, or very high mineral content or low-level radioactivity picked up from rocks deep underground—must be

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[16] For a comprehensive review of the risks presented by shale gas development and of policy recommendations for mitigating these risks, *see*, Wiseman, "Risk and Response in Fracturing Policy" (forthcoming, 2013).

[17] "How Thumper Trucks Work—Trucks That Create Earthquakes to Do Underground Imaging," *The Blogs at HowStuffWorks*, accessed August 21, 2012, http://blogs.howstuffworks.com/2011/05/09/how-thumper-trucks-work-trucks-that-create-earthquakes-to-do-underground-imaging/.

[18] NY Dept. of Environmental Conservation, "Revised Draft SGEIS on the Oil, Gas and Solution Mining Regulatory Program," 6–68.

[19] S. G. Osborn et al., "Methane Contamination of Drinking Water Accompanying Gas-well Drilling and Hydraulic Fracturing," *Proceedings of the National Academy of Sciences* 108, no. 20 (2011): 8172.

[20] Ibid.

[21] NY Dept. of Environmental Conservation, "Revised Draft SGEIS on the Oil, Gas and Solution Mining Regulatory Program," ES–9.

[22] Ibid., 6–315.

[23] Ibid.

disposed of, and operators have struggled to come up with safe disposal methods.[24] The drilling and fracturing processes also release volatile organic compounds, methane (a very potent greenhouse gas), and other pollutants into the air, both from the well and also from the running of diesel engines on the well pad and the heavy truck traffic that accompanies drilling.[25]

Most of these risks are not specific to shale gas development and are part and parcel of any operation that drills for oil and natural gas. There are some risks that are particular to shale gas development, such as the larger quantities and greater diversity of chemicals used in hydraulic fracturing, the greater pressure placed on the well casing, and the significantly larger volumes of water that must be withdrawn and ultimately disposed of, compared to conventional drilling. But even these risks are not unique to shale gas development as hydraulic fracturing is coming into increased usage to stimulate wells that are not drilled into shale. It should be highlighted, however, that the recent boom in drilling caused by the shale gas boom has significantly increased the number of wells that are drilled each year and has expanded drilling activity to areas that previously had relatively little of it. Not only does this increased activity increase the likelihood of adverse social and environmental impacts, it also magnifies the risks associated with cumulative environmental impacts.[26]

While all of the risks catalogued here, among many others, are real, there still remains significant contention and controversy about the likelihood of adverse impact from shale gas development and the severity of consequence if adverse events do occur. Simply stated, scientists, policy-makers, and regulators know that risks of various kinds exist but are still struggling to understand the severity of these risks and how to prioritize them. In the meantime, claims and counterclaims have proliferated and proponents and opponents of shale gas development grasp at the limited information available to make their respective cases. For example, to cite perhaps the most prominent controversy related to shale gas development and hydraulic fracturing, there exists significant public concern regarding the threat of groundwater contamination by the chemicals that are contained within fracturing fluids.[27] Numerous regulators, researchers, and industry sources have stated that the threat to groundwater does not arise from hydraulic fracturing itself but rather from poorly constructed wells that can suffer blowouts or otherwise allow for fluid travel between the wellbore and surrounding groundwater sources.[28] Contrary to these assertions,

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[24] Hannah Wiseman and Francis Gradijan, "Regulation of Shale Gas Development, Including Hydraulic Fracturing," *SSRN eLibrary* (October 31, 2011): 126, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1953547.

[25] PA Department of Environmental Protection, *Northcentral Pennsylvania Marcellus Shale Short-Term Ambient Air Sampling Report* (Pennsylvania Department of Environmental Protection, May 6, 2011), http://www.dep.state.pa.us/dep/deputate/airwaste/aq/aqm/docs/Marcellus_NC_05-06-11.pdf; Howarth, Santoro, and Ingraffea, "Methane and the Greenhouse-gas Footprint of Natural Gas from Shale Formations."

[26] Hannah Wiseman, "Fracturing Regulation Applied," *Duke Environmental Law & Policy Forum* 22, no. 2 (April 1, 2012): 365.

[27] Clean Water Action, "Fracking, The Dangers," accessed August 19, 2012, http://www.cleanwateraction.org/page/fracking-dangers.

[28] *See,* for example, Ian Urbina, "Tainted Water Well Challenges Claim of Fracking's Safety," *The New York Times*, August 3, 2011, sec. U.S., http://www.nytimes.com/2011/08/04/us/04natgas.html; Elizabeth Ames, Chairman Railroad Commission of Texas Jones, *Review of Hydraulic Fracturing Technology*, 2011, http://science.house.gov/sites/republicans.science.house.gov/files/documents/hearings/Hydraulic%20Fracturing%20Written%20Testimony-Final-5-9-2011%20jones.pdf; David, Director, Colorado Oil and Gas Conservation

however, an EPA study found likely groundwater due to seepage of fracturing chemicals through rock in Pavillion, Wyoming and a recent study modeled the accelerated rate by which this travel could occur.[29] The methodologies and utility of both of these findings have been heatedly debated, however.[30] In addition, while many sources claim that groundwater contamination is unlikely as long as wells are constructed properly, some parties have made allegations that drilling companies are aware that the cement around wells begins to degrade within years, not decades, and that this can lead to accelerated well failure.[31] This debate is nowhere near its conclusion and even an ongoing study by the Environmental Protection Agency about groundwater contamination may very well fail to settle the matter.

Many of the risks—and also the benefits—of shale gas development present themselves most directly in the municipalities and counties where the gas development activity takes place. That is, the people and the environment located near the sites of drilling, compression stations, and waste disposal (among other types of activity) feel some of the most direct impacts from natural gas development activity. Some of these benefits are positive, including the creation of jobs for local residents, economic stimulus for local businesses, an expanded tax base for local political jurisdictions, and wealth generated through royalties, salaries, rents, and bonuses paid.

Commission Neslin, *Natural Gas Drilling: Public Health and Environmental Impacts*, 2011, http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=0CFoQFjAB&url=http%3A%2F%2Fcogcc.state.co.us%2FAnnouncements%2FHot_Topics%2FHydraulic_Fracturing%2FDirector_Neslin_Senate_Testimony_041211.pdf&ei=UAAxUJLbLc2u6gGBlICICA&usg=AFQjCNFS-n0jxvllQtzgvR1V5hjltk0ElQ&sig2=jmfRFYupYERfJIOAkmKMZw.

[29] Tom Myers, "Potential Contaminant Pathways from Hydraulically Fractured Shale to Aquifers," *Ground Water* (2012), doi:10.1111/j.1745-6584.2012.00933.x; U.S. Environmental Protection Agency, "Pavillion," Overviews & Factsheets,, accessed August 19, 2012, http://www.epa.gov/region8/superfund/wy/pavillion/.

[30] *See*, for example, Jim Jr Efstathiou, "Fracking Fluids May Migrate to Aquifers, Researcher Says," *Bloomberg*, accessed August 19, 2012, http://www.bloomberg.com/news/2012-05-03/fracking-fluids-may-migrate-to-aquifers-researcher-says.html; Christopher Helman, "Questions Emerge On EPA's Wyoming Fracking Study - Forbes," *Forbes*, accessed August 19, 2012, http://www.forbes.com/sites/christopherhelman/2011/12/09/questions-emerge-on-epas-wyoming-fracking-study/.

[31] Josh Fox, *The Sky Is Pink*, 2012, http://vimeo.com/44367635.

Local Impacts of Shale Gas Development

Potential Benefits:

- Jobs for local residents
- Spending at local businesses
- Increased tax collection for towns, cities, and counties
- Royalties, salaries, rents, and bonuses paid to residents

Risks and Potential Costs:

- Stressed water resources
- Groundwater and surface water contamination
- Air pollution from trucks, generators, engines, and wells
- Heavy truck traffic
- Damage to local roadways
- Noise pollution
- Light pollution
- Industrialization of the landscape
- Strain on schools, healthcare services, and emergency services
- Social impacts of outsiders coming in, quick money, income disparity, and boom-and-bust growth

There are also many challenges attendant to shale gas development, however, and regulations, being the focus of this paper, tend to focus on mitigating these negative impacts. Stresses on water resources, impacting both ecosystems and other users, are somewhat localized in nature, and risks of contamination of groundwater and surface water resources will directly impact local populations. While air pollution will generally dissipate over time, high concentrations of emissions from trucks and generators and concentrated pollutants including dust, volatile organic compounds, nitrogen oxides, sulfur dioxide, and methane can adversely impact both people and the environment in the immediate vicinity of the pollution sources. In addition, there are a number of other negative impacts that are borne by local communities: heavy truck traffic; damage to roads, bridges, and other infrastructure; noise pollution from drilling activity and compressor stations; adverse visual impacts owing to light pollution and the construction of industrial facilities in areas that were previously rural, residential, or commercial; strain on social infrastructure such as schools, healthcare facilities, and emergency services; and potential social impacts due to an influx of outsiders, uneven allocative effects from the infusion of resources, and the boom-and-bust nature of extraction-based economic growth.

Municipalities and counties around the country have implemented regulations in an attempt to address many of these challenges. It is worth noting, however, that while local residents and communities may be adversely impacted in many ways, the shale gas rush seems to have provoked a level of public concern that has generally not been seen with other forms of oil and gas development. In part, this is likely because of the greater use of hydraulic fracturing and the

prominent dangers of this technology in the public perception, but it likely also is a result of increasing development activity in many parts of the country—rural, suburban, and even urban—that have not seen oil and gas development activity previously, or at least in recent memory. In some places, at least, local regulatory responses may also be a result of a perception among residents that state and federal regulations are insufficient to protect them—a perception that may arise, in part, in reaction to the development-friendly posture taken by policy-makers such as Governor Corbett in Pennsylvania and the effort by policy-makers such as Governor Hickenlooper in Colorado to (arguably) strike a balance between fostering oil and gas development and protecting human and environmental health and wellbeing.

Overview of the Regulatory Framework Governing Oil and Natural Gas Development

Oil and gas production has historically been regulated primarily by the states. States and some municipalities passed the first regulations governing oil drilling (and later, drilling for natural gas) in the 1930s in an effort to "conserve" oil (that is, promote orderly development of reservoirs so that oil was not "wasted" and left unrecovered underground) and to protect oil wells from contamination by groundwater.[32] States also enacted legislation and promulgated rules designed to guard against risks to public health and environmental damage during succeeding decades.[33] The wave of federal environmental legislation that was enacted during the 1970s also sparked the passage of environmental legislation at the state level, and some of these regulations apply to oil and gas development.[34]

State regulation covers the entire process of shale gas development (and drilling for natural gas and oil more broadly) from beginning to end. States regulate testing for natural gas, the location of gas wells and well pads, the construction of well pads, the construction of wells, the withdrawal of water for drilling and hydraulic fracturing, disclosure of chemicals used, spill prevention and reporting, testing and replacing contaminated water supplies, and the storage and disposal of wastes. The bulk of these regulations are written and enforced by the states, and most states also have primacy to apply applicable federal regulation under the Clean Water Act, Clean Air Act, and Safe Drinking Water Act. The states have adopted a wide range of approaches to regulating shale gas development, with some adopting stricter environmental and public health and safety protections and some setting standards that are more lenient, and with some states favoring prescriptive regulations and other states favoring performance standards. Each state sets its own unique, implicit balance between reaping the benefits and mitigating the costs of shale gas development. States also take a variety of approaches to enforcing regulations, with different states focusing on different types of violations and each state issuing comparatively fewer or

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[32] Ground Water Protection Council, *State Oil and Natural Gas Regulations Designed to Protect Water Resources* (Ground Water Protection Council, May 2009), 13, http://www.gwpc.org/sites/default/files/state_oil_and_gas_regulations_designed_to_protect_water_resources_0.pdf.

[33] Ibid., 14.

[34] Ibid., 14–15; Barry G. Rabe, "Power to the States: The Promise and Pitfalls of Decentralization," in *Environmental Policy: New Directions, 7th Edition*, ed. Norman J. Vig and Michael E. Kraft (CQ Press, 2009), 34–35.

more notices of violation, and administering fewer or more fines, of varying dollar amounts, for different types of violations.

The federal government also regulates certain aspects of shale gas development, although no federal legislation specifically targeted at onshore drilling exists and exemptions have been created in most of the federal environmental regulations that would otherwise apply to shale gas development. Remembering that various exemptions apply, the federal laws (and associated rules and regulations) that apply to aspects of the shale gas development process are the Clean Water Act; and Clean Air Act; the Safe Drinking Water Act; Comprehensive Environmental Response, Compensation, and Liability Act; the Endangered Species Act; the Migratory Birds Treaty Act; the Emergency Planning and Community Right-to-Know Act; and the Occupational Safety and Health Act.[35]

Finally, some local governments also exercise some regulatory authority. Different states have adopted very different approaches to granting localities jurisdiction to manage their engagement with fracturing, with some allowing broad latitude and others keeping all decision-making within the statehouse. Towns, cities, and counties have enacted various types of regulation, including:

- place-based regulations (involving zoning and setbacks),
- operational and impact-focused regulations (regulating the manner by which shale gas development occurs, including attempts to control specific negative effects of the process), and
- temporary moratoria and permanent bans on shale gas development or one of its incumbent processes.

These themes around the contours and limits of allowable local regulation, and the forms that local regulation has taken, will be explored in detail in the rest of this paper.

States' Diverse Approaches to Allowing Local Regulation of Oil and Gas Development

As states exercise primary regulatory authority over oil and gas development, they also decide how much regulatory discretion to allow at the local level. Some states allow municipalities and counties to exercise broad discretion in how they would like to control shale gas development

[35] Some scholars and members of the public, particularly those seeking more robust environmental and public health protections, have called for a more robust federal regulatory role. For example, Wiseman raises the possibility of "developing a federal regulatory floor to ensure minimum standards of environmental and human health protection…." Freeman also calls for a federal regulatory floor that would require a defined minimum level of public health and environmental protection in all states, but would allow states to set higher standards if they so desire. *See:* Hannah Wiseman, "Regulatory Adaptation in Fractured Appalachia," *SSRN eLibrary* (December 2010), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1743595; Jody Freeman, "The Wise Way to Regulate Hydraulic Fracturing," *The New York Times*, July 5, 2012, sec. Opinion, http://www.nytimes.com/2012/07/06/opinion/the-wise-way-to-regulate-hydraulic-fracturing.html.

within their jurisdictions, while other states prefer to minimize local discretion in favor of implementing a uniform statewide regulatory regime. Generally, states do not allow municipalities to regulate those aspects of oil and gas development that are regulated by the state itself, such as the technical regulations governing the casing of wells. However, most states authorize municipalities to enact general land use ordinances, such as zoning ordinances, that specify where certain types of industrial development may take place, including drilling for natural gas.[36]

It should be emphasized that the situation described above, with different levels of regulatory authority allocated between states and local jurisdictions, is far from static in many states. Indeed, with the advent of the shale gas and shale oil booms and the attendant spread of oil and gas development to many areas that did not previously see drilling, conflict over the balance of regulatory authority between state governments and counties and municipalities has increased in recent years. In a number of cases, the authority to regulate oil and gas development that states have claimed as their own have run into conflict with efforts by municipalities and counties to regulate aspects of oil and gas development that impact their local populations. Furthermore, some states have changed their laws around the regulation of oil and gas development, or clarified the interpretation of existing laws, in ways that have constrained the authority to regulate local land use that municipalities and counties have traditionally claimed as their own. In sum, the interface between state and local regulatory authority is increasingly a point of contention in a number of states across the country.

A key concept in situations of conflicting law between different levels of government—in this case, between state and local regulatory authority—is preemption. Under this doctrine, a law or regulation enacted by the higher level of government will generally prevail and the law or regulation enacted by the lower level of government will be rendered unenforceable.[37] Legal theory classifies preemption into either two or three types, although this distinction is academic for the purposes of this paper. In the three-fold classification system, the three types of preemption are: express preemption, conflict preemption, and field preemption. Express preemption occurs when a state law explicitly enjoins local governments from enacting a certain type of law or regulation.[38] Conflict preemption occurs when local law or regulation conflicts with state law or regulation such that both cannot be complied with simultaneously, or when compliance with local law would obstruct the intention or purpose of the state law.[39] Field preemption occurs when state law or regulatory code is deemed, by the courts, to so thoroughly cover a subject that no room remains for local authority in that "field."[40]

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[36] Sorell E. Negro, "Fracking Wars: Federal, State and Local Conflicts over the Regulation of Natural Gas Activities," *Zoning and Planning Law Report* 35, no. 2 (February 2012): 4, http://www.rc.com/documents/negro_frackingwars_2012.pdf.

[37] Keith B. Hall, "When Do State Oil and Gas or Mining Statutes Preempt Local Regulations?," *Natural Resources & Environment* 27, no. 3 (Winter 2013): 13–15.

[38] Ibid.

[39] Ibid.

[40] Ibid.

A question of preemption is made somewhat more complex by the concept of home rule. A grant of home rule authority is given by a state to some local jurisdictions. While the mechanics of home rule authority vary somewhat from state to state, with some states granting the designation in the state constitution and others doing so legislatively (and some states not granting any sort of home rule to local jurisdictions), generally speaking a grant of home rule confers broad authority to the local jurisdiction (such as a city or county) such that the local jurisdiction has the authority to enact laws of local concern.[41] In contrast, jurisdictions that do not have home rule authority are presumed to have only those powers that have explicitly delegated by the state to local jurisdictions.[42] Jurisdictions that do not have home rule authority must therefore ground their regulation of oil and gas development in some authority that has been granted to them (such as zoning authority).[43] Because oil and gas development presents issues that are of both local and statewide concern, though, even laws enacted by home rule jurisdictions are subject to preemption by state law.[44]

Claims of preemption—as a central aspect of the contest between state and local regulatory authority over oil and gas development—are adjudicated in state courts, which means that the level of local regulatory authority allowed in each state is defined both state statutes and by the decisions of the courts of each state. For example, while the presence of a comprehensive oil and gas statute in one state may lead courts in that state to invoke preemption of local regulations under field preemption, courts in another state may rule that state law does not preempt local regulations unless it clearly expresses an intent to preempt local regulations.[45] The different types of regulatory authority over oil and gas development allowed to local jurisdictions in different states is explored below for a selection of six states, which taken together illustrate the very diverse, and still evolving, nature of the relationship between state and local jurisdictions and the extent of allowable local authority when it comes to regulating oil and gas development.

Pennsylvania

Pennsylvania enacted its first comprehensive regulation of oil and gas operations, the Oil and Gas Act, in 1984.[46] The purposes of the Act were to "permit the optimal development of the oil and gas resources of Pennsylvania consistent with the protection of the health, safety, environment and property of the citizens of the Commonwealth;" protect the safety of personnel and facilities engaged in oil, gas, or coal production; protect the safety and property rights of residents; and to protect natural resources, environmental rights and values secured by the

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[41] Ibid.

[42] Ibid.

[43] Shaun A. Goho, "Municipalities and Hydraulic Fracturing: Trends in State Preemption," *Planning & Environmental Law* 64, no. 7 (July 2012): 3–9, doi:10.1080/15480755.2012.699757.

[44] Ibid.

[45] Clifford B. Levine and Shawn N. Gallagher, "State and Local Regulation of Oil and Gas Operations: Drilling Through the Maze of Preemption, Severed Mineral Estates and Surface Owner Rights," *Energy & Mineral Law Institute* 29, no. 11 (2008): 344.

[46] *Oil and Gas Act (Act 223)*, *58*, 1984, http://files.dep.state.pa.us/OilGas/BOGM/BOGMPortalFiles/LawsRegsGuidelines/Act223_uc.doc.

Pennsylvania Constitution.[47] The 1984 Act was clear in designating state law as supreme to local laws that regulate oil and gas production, save for the exception of local land use authority and flood plain management. Section 601.602 of the 1984 Act reads as follows:

> Except with respect to ordinances adopted pursuant to the act of July 31, 1968 (P.L. 805, No. 247), known as the Pennsylvania Municipalities Planning Code, and the act of October 4, 1978 (P.L. 851, No. 166), known as the Flood Plain Management Act, all local ordinances and enactments purporting to regulate oil and gas well operations regulated by this act are hereby superseded. The Commonwealth, by this enactment, hereby preempts and supersedes the regulation of oil and gas wells as herein defined.[48]

Following a Pennsylvania Commonwealth Court decision that found that the Borough of Youngsville had the authority to implement regulations that would control the operations of oil and gas drillers as long as the regulations were enacted pursuant to the Municipalities Planning Code, the Pennsylvania State Legislature revised section 601.602 the Oil and Gas Act in 1992 by adding the following language: "No ordinances or enactments adopted pursuant to the aforementioned acts shall contain provisions which impose conditions, requirements or limitations on the same features of oil and gas well operations regulated by this act or that accomplish the same purposes as set forth in this act."[49] By introducing this language, the Legislature maintained the authority of local jurisdictions to enact laws and regulations under the Municipalities Planning Code and Flood Plain Management Act but attempted to distinguish between, on the one hand, local laws that sought to control the location of oil and gas activity (presumably permissible under the amended Oil and Gas Act) and, on the other hand, local laws that actually attempted to regulate operational aspects of oil and gas development under the guise of land-use planning (presumably impermissible). A number of Pennsylvania state court decisions have affirmed this understanding of the scope of allowable local regulation.[50] As such, between 1992 and 2012, local jurisdictions were generally able to enact ordinances that used zoning or other land use mechanisms to regulate *where* oil and gas development can take place for the purposes of organizing community development to best utilize land within a municipality and of discharging the responsibilities associated with the exercise of the local jurisdiction's police powers.[51] However, local ordinances that went beyond this to, for example, regulate *how* or to define the conditions under which oil and gas production could take place were struck down by the courts for stepping beyond the bounds of the exemption specified by the Oil and Gas Act of 1992.[52]

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[47] Ibid., sec. 601.102.

[48] Clifford B. Levine and Shawn N. Gallagher, "State and Local Regulation of Oil and Gas Operations: Drilling Through the Maze of Preemption, Severed Mineral Estates and Surface Owner Rights," 347.

[49] Ibid., 348–350.

[50] W. Devin Wagstaff, "Fractured Pennsylvania: An Analysis of Hydraulic Fracturing, Municipal Ordinances, and the Pennsylvania Oil and Gas Act," *New York University Environmental Law Journal* 20, no. 327 (January 1, 2013): 338–348, http://www.lexisnexis.com.libproxy.mit.edu/lnacui2api/returnTo.do?returnToKey=20_T17395582604.

[51] Ibid., 348–349.

[52] Ibid.

This framework was significantly revised by the state legislature in 2012. After encountering a shale gas drilling boom beginning in 2008 that brought drilling to many parts of the state that had not previously seen oil and gas development activity, many local jurisdictions passed zoning ordinances and other laws that sought to curb development activity and preserve local control over oil and gas development. In response to myriad concerns about the state's Oil and Gas Act being outdated in terms of its technical requirements, particularly with the rise of horizontal drilling and hydraulic fracturing, Pennsylvania enacted a comprehensive update of its oil and gas laws in February 2012.[53] The 2012 Act, commonly referred to as Act 13, enhanced and strengthened provisions around the following key areas, among others: well permit approval procedures, exceptions, and planning requirements; setbacks and well placement restrictions; protection of water supplies; chemical disclosure and reporting; bonding requirements; and enforcement mechanisms.[54] Act 13 also allows counties to impose unconventional gas well fees on shale gas development and allows municipalities to impose the fee if a county fails to do so.[55] In a variety of ways, therefore, the new Oil and Gas Act attempts to respond to a number of the concerns raised by local jurisdictions (and the residents of those jurisdictions) about the challenges presented by shale gas development in their communities.

In addition, however, Act 13 also seeks to significantly circumscribe the authority of local jurisdictions to enact their own regulations on oil and gas development—including on the land use and zoning authority that municipalities and counties had held since the passage of the 1992 Act. These measures were included to promote oil and gas development by providing a more uniform regulatory environment and curtailing the "patchwork" nature of regulations that oil and gas companies faced between different local jurisdictions.[56] Specifically, Act 13 supersedes local zoning and allows wells, pipelines, and oil and gas operations in all zoning districts (although the Act does specify minimum setbacks from existing buildings), allows compressor stations by-right in agricultural and industrial districts and as a conditional-use in other districts (also with minimum setbacks), and allows processing plants by-right in industrial districts and as a conditional-use in agricultural districts, with minimum setbacks.[57] In addition, municipalities are proscribed from imposing conditions, requirements, or limitations on oil and gas activities that are more stringent than those imposed on other industrial activities; must complete review of complete applications for permitted uses within 30 days and conditional uses within 120 days; may not impose restrictions on road use by overweight vehicles except as authorized under the Municipalities Planning Code; and may not exceed the setback distances specified in the new

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[53] Pa. Act 13 – Pa. HB 1950.

[54] W. Devin Wagstaff, "Fractured Pennsylvania: An Analysis of Hydraulic Fracturing, Municipal Ordinances, and the Pennsylvania Oil and Gas Act," 355–357.

[55] Pennsylvania Public Utility Commission, "Act 13 of 2012," *Act 13 (Impact Fee)*, accessed August 5, 2012, http://www.puc.state.pa.us/naturalgas/naturalgas_marcellus_Shale.aspx.

[56] Jon Hurdle, "Pennsylvania Court Upholds Local Control Over Gas Drilling," *AOL Energy*, July 30, 2012, http://energy.aol.com/2012/07/30/pennsylvania-court-upholds-local-control-over-gas-drilling/.

[57] *House Bill 1950*, n.d., http://www.legis.state.pa.us/cfdocs/billinfo/billinfo.cfm?syear=2011&sind=0&body=H&type=B&bn=1950; Babst|Calland, Attorneys at Law, "PA's New Oil and Gas Law," n.d., http://www.babstcalland.com/legal-resources/pa-new-oil-gas-law.php; "Pennsylvania Act 13: 'Impact Fee', Other Changes," *CoudyNews.com*, March 26, 2012, http://coudynews.com/local-news/pennsylvania-act-13-impact-fee-other-changes/.

Act.[58] Municipalities are permitted to enact provisions that are not covered by the law, although if a municipal provision is deemed to restrict "reasonable development of oil and gas resources" by the Pennsylvania Public Utilities Commission (as opposed to the Attorney General's Office, which previously adjudicated disputes), the local government will be ineligible to receive funds collected through the Well Fees enacted as part of Act 13.[59]

Pennsylvania's Commonwealth Court struck down the provision of Act 13 that limits local land use authority on July 27, 2012, ruling that it "violates substantive due process because it allows incompatible uses in zoning districts and does not protect the interests of neighboring property owners from harm, alters the character of the neighborhood, and makes irrational classifications."[60] At the time of writing, a decision was pending by the Pennsylvania Supreme Court about the constitutionality of key provisions of Act 13.[61]

Colorado

Colorado has a long history of oil and gas development, particularly on the Western Slope with more recent development in the more densely populated Front Range area. As such, the state has an extensive record of jurisprudence around the question of state-versus-local authority for regulating oil and gas development. Nevertheless, despite the length of time that various jurisdictions in Colorado have been grappling with this issue, the matter is far from being settled law or policy. There are a number of likely reasons for this, including the nuanced distinctions between state and local authority that have developed in state jurisprudence, the somewhat-more collaborative approach to regulation that the state has taken (at least in comparison to most other states), the evolving nature of state policy in recent years, and increasing public concern regarding the impacts of oil and gas development—especially as that development has been focused in populous Front Range communities in recent years.

Counties and municipalities derive their authority to regulate the surface effects of oil and gas development from a few key state statutes. These statutes include the Local Government Land Use Control Enabling Act and county and municipal planning code enabling statutes.[62] Broadly speaking, these statutes give significant, although not unlimited, authority to counties and municipalities to exercise control over land use as consistent with promoting the health, safety,

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[58] *Act 13*; W. Devin Wagstaff, "Fractured Pennsylvania: An Analysis of Hydraulic Fracturing, Municipal Ordinances, and the Pennsylvania Oil and Gas Act," 359.

[59] *Act 13*; Babst|Calland, Attorneys at Law, "PA's New Oil and Gas Law"; "Pennsylvania Act 13: 'Impact Fee', Other Changes."

[60] Hurdle, "Pennsylvania Court Upholds Local Control Over Gas Drilling."

[61] Sarah Hoye, "Pennsylvania Court Strikes down Key Part of Law Limiting Local Control of Fracking - CNN.com," *CNN*, accessed August 21, 2012, http://www.cnn.com/2012/07/27/us/pennsylvania-fracking-ruling/index.html.

[62] *Local Government Land Use Control Enabling Act*, *C.R.S. 29-20-101 to 107*, accessed May 28, 2013, http://www.lexisnexis.com.libproxy.mit.edu/hottopics/colorado/; *County Planning Code*, *C.R.S. 30-28-101 to 137*, accessed May 28, 2013, http://www.lexisnexis.com.libproxy.mit.edu/hottopics/colorado/; *Municipal Planning Code*, *C.R.S. 31-23-201, et Seq.*, accessed May 28, 2013, http://www.lexisnexis.com.libproxy.mit.edu/hottopics/colorado/.

and welfare of the community.[63] The Colorado Oil and Gas Conservation Act was enacted in 1951 to encourage the orderly development of energy resources and has been amended since then to include environmental protections.[64] The Colorado Oil and Gas Conservation Commission (COGCC) holds primary regulatory authority over oil and gas in the state, and the Commission is responsible for promoting the exploration, development, and conservation of oil and gas while also handling the permitting process and ensuring industry compliance with state law.[65] In sum, while Colorado state law gives primary regulatory authority over oil and gas development to the state, local jurisdictions have authority to regulate local affairs, including land use.

Colorado's state courts have ruled that local law must cause an "operational conflict" with state law to induce preemption. That is, state law is not presumed to preempt local regulation (either due to the "express" or "field" preemption doctrines outlined above). In a key court case decided in 1992, *Board of County Commissioners of La Plata County v. Bowen/Edwards Associates, Inc.*, the Colorado Supreme Court reviewed the state's Oil and Gas Conservation Act and found no clear statement that the legislature intended to preempt local land use authority (i.e., no express preemption) nor that the state's interest in encouraging oil and gas development is so dominant as to completely exclude the County's interest in land use control. Instead, the standard that the court set was one of operational preemption:

> [s]tate preemption by reason of operational conflict can arise where the effectuation of a local interest would materially impeded or destroy the state interest. ...Under such circumstances, local regulations may be partially or totally preempted to the extent that they conflict with the achievement of the state interest.[66]

The court proceeded to explain that a finding of operational conflict would have to be decided on a case-by-case basis, and would require a fully-developed evidentiary record: "Any determination that there exists an operational conflict between the county regulations and the state statute or regulatory scheme, however, must be resolved on an ad-hoc basis under a fully developed evidentiary record."[67]

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[63] Colorado Department of Local Affairs—Community Development Office, *Land Use Planning in Colorado*, accessed June 20, 2013, http://www.colorado.gov/cs/Satellite/DOLA-Main/CBON/1251594474259#.

[64] *Colorado Oil and Gas Conservation Act*, *Colo. Rev. Stat. § 34-60-100, et Seq.*, accessed June 20, 2013, http://www.lexisnexis.com/hottopics/colorado?app=00075&view=full&interface=1&docinfo=off&searchtype=get&search=C.R.S.+34-60-101; Charles Davis, *Fracking and Sub-state Federalism: State Preemption of Local Regulatory Decisions in Colorado* (Colorado State University, 2012), http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&ved=0CDEQFjAC&url=http%3A%2F%2Fregulation.upf.edu%2Fexeter-12-papers%2FPaper%2520237%2520-%2520Davis%25202012%2520-%2520Fracking%2520and%2520Sub-state%2520Federalism.pdf&ei=TOszUNHqNqq56AHZ84G4Aw&usg=AFQjCNHgBn4jROKfpc41LtEAn4e1O-anMw&sig2=bftGRQTTLy698ipkOgf7YA.

[65] Colorado Oil and Gas Conservation Commission, "Colorado Oil and Gas Conservation Commission Mission Statement and Strategic Plan," accessed June 20, 2013, http://cogcc.state.co.us/.

[66] Board of County Commissioners of La Plata County v. Bowen/Edwards Associates, Inc. (1992).

[67] Ibid.

The Colorado Court of Appeals elaborated on the *Bowen/Edwards* decision in 2006 in *Board of County Commissioners of Gunnison County v. BDS International, LLC,* by clarifying that simply because the state has a regulation in a certain area does not mean that any local regulation in that same area is automatically preempted.[68] The court even listed a series of issues—water quality, soil erosion, wildlife, vegetation, livestock, cultural and historic resources, geologic hazards, wildfire protection, and recreation impacts—that could be legitimate areas for local regulation despite the presence of state regulations in these areas.[69] Again, a fully-developed evidentiary record would be required to determine if a local regulation created an operational conflict with state regulations.[70]

Town of Frederick v. North American Resources Co., decided by the Colorado Court of Appeals in 2002, provides an example of the degree of specificity to which courts in Colorado are willing to examine local and state regulations to determine the presence of operational conflict. Examining the Town of Frederick's regulations, the court ruled that its regulations addressing noise abatement, visual abatement, and setbacks were more stringent than the state's regulations and were therefore preempted by state law.[71] The court also ruled, however, 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."[72]

Despite the Colorado courts' generally-nuanced approach to deciding preemption claims, the Colorado Supreme Court has specified one type of local regulation that is likely to be preempted under its operational conflict standard. In *Voss v. Lundvall Brothers, Inc.,* decided on the same day as *Bowen/Edwards*, the Supreme Court held that the City of Greeley's ordinance banning oil and gas development within the City was preempted by the state's interest in "efficient development and production of oil and gas in a manner preventative of waste and protective of the correlative rights of common-source owners and producers to a fair share of production profits."[73] In a more recent case, the Supreme Court has clarified that mining (or drilling) bans are not *per se* preempted, but will be subject to heightened scrutiny: "local land use ordinances banning an activity that a statute authorizes an agency to permit are subject to heightened scrutiny in preemption analysis."[74]

The State of Colorado has also attempted to follow a more collaborative strategy than many other states with regards to local regulation of oil and gas development. For example, the Colorado Department of Local Affairs commissioned a guidebook called "Oil and Gas Regulation: A Guide for Local Governments" in 2010 that provided an overview of the impacts

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[68] Board of County Commissioners of Gunnison County v. BDS International, LLC (2006).

[69] Ibid.

[70] Ibid.

[71] Town of Frederick v. North American Resources Co. (2002).

[72] Ibid.

[73] Voss v. Lundvall Brothers, Inc. (1992).

[74] Colorado Mining Association v. Board of County Commissioners of Summit County (2009).

from oil and gas development that local jurisdictions may face, detailed the scope of local regulatory authority, and provided suggestions and case studies regarding the types of regulatory approaches that local governments concerned about the impacts could take.[75]

One example of this collaborative approach is the Task Force on Cooperative Strategies Regarding State and Local Regulation of Oil and Gas Development, a body comprised of state and local officials and other stakeholders, that met weekly for two months in early 2012 to discuss collaboration between the state and local jurisdictions around energy development.[76] Although the Task Force steered clear of recommending new laws and instead focused on advocating for a collaborative approach by which issues between local and state jurisdictions could be resolved.[77] In particular, the Task Force honed in on enhancing the Local Government Designee (LGD) program [see next paragraph for more details] and discussed mechanisms by which the state could delegate its inspection authority to local jurisdictions.[78] Local officials in Longmont, Colorado indicated, however, that concrete measures do not seem to have come out the Task Force's work and that the Task Force was largely an exercise in reinforcing the State's claim to primary regulatory authority.[79]

The Colorado Oil and Gas Conservation Commission (COGCC) has also created the Local Government Designee (LGD) program to serve as a point of contact between municipalities and counties and the state. The official definition of an LGD in the state's regulations indicates that he or she is to serve as a one-way conduit of information from the state to his or her local jurisdiction: "Local Government Designee means the office designated to receive, on behalf of the local government, copies of all documents required to be filed with the local governmental designee pursuant to these rules."[80] Indeed, when the author spoke with an LGD in late January,

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[75] Colorado Department of Local Affairs, *Oil and Gas Regulation: A Guide for Local Governments*, 2010, http://www.springsgov.com/units/boardscomm/OilGas/DOLA%20O&G%20Guide%20for%20Local%20Governments.pdf. It should be noted that the Department of Local Affairs (DOLA) has removed the guide from its website although the document is still available elsewhere online. An official with the Colorado Department of Natural Resources (DNR), who requested anonymity, reported that DNR made a request to DOLA to revise the guide to bring it more closely into alignment with DNR's understanding of permissible local policies.

[76] State of Colorado, Office of the Governor, "Executive Order B 2012-002, Creating the Task Force on Cooperative Strategies Regarding State and Local Regulation of Oil and Gas Development," February 29, 2012, dnr.state.co.us/taskforce/Documents/task%20force%20executive%20order.pdf.

[77] Task Force on Cooperative Strategies Regarding State and Local Regulation of Oil and Gas Development, *Recommendations from the Task Force Established by Executive Order 2012-002 Regarding Mechanisms to Work Collaboratively and Coordinate State and Local Oil and Gas Regulatory Structures*, April 18, 2012, http://dnr.state.co.us/taskforce/Pages/home.aspx.

[78] Ibid.

[79] Scott Rochat, "Longmont Councilman Brian Bagley Says Oil/gas Task Force a Joke," *Longmont Times-Call*, March 14, 2012, http://www.timescall.com/news/longmont-local-news/ci_20177374/councilman-brian-bagley-says-oil-gas-task-force?source=pkg; Interview with Sarah Levison, January 24, 2013; Interview with Brien Schumacher, January 24, 2013.

[80] *Local Governmental Designee*, *2 CCR 404-1:214*, n.d., http://www.sos.state.co.us/CCR/Rule.do?deptID=13&deptName=400%20Department%20of%20Natural%20Resources&agencyID=79&agencyName=404%20Oil%20and%20Gas%20Conservation%20Commission&ccrDocID=2124&ccrDocName=2%20CCR%20404-1%20PRACTICE%20AND%20PROCEDURE&subDocID=42701&subDocName=200-SERIES%20%20GENERAL%20RULES&version=20.

2013, the LGD (who also serves as a Senior Planner in his city) indicated that the state had not interfaced very much with him in his role as an LGD as yet.[81] However, since that time, the state has hired two Local Government Liaisons to communicate with the LGDs, and the Liaisons have initiated a series of trainings for the LGDs.[82] The COGCC's rules specify a consultative role for the LGDs, wherein an LGD can request consultation with COGCC and/or the Colorado Department of Public Health and Environment regarding specific Location Assessment and Drilling Permit Applications, can request 10- or 20-day extensions of public comment periods, and will receive advance notice of permit applications and drilling activity.[83]

Finally, the State of Colorado also offers local jurisdictions the opportunity to enter into an intergovernmental agreement with the COGCC to enhance their ability to participate in regulating oil and gas development. The authority that COGCC is willing to delegate appears to be limited to the authority to conduct inspections of oil and gas operations, as this is the only type of delegation included in the recommendations made by the Task Force on Cooperative Strategies Regarding State and Local Regulation of Oil and Gas Development.[84] Indeed, the only intergovernmental agreement of this sort between the COGCC and a local jurisdiction that has been concluded gives Gunnison County the authority to conduct inspections of oil and gas operations within the county.[85] By entering into this agreement, Gunnison County can address concerns that it may have about the frequency of inspections conducted by the COGCC by paying for and supplying its own inspectors. If the County's inspectors find any causes for concern, however, they must report their findings to the COGCC, which has sole authority to determine the type of remedial action, if any, that the operator must take.[86] COGCC also permits local jurisdictions to enter into voluntary agreements with individual operators through the signing of Memoranda of Understanding (MOUs) to foster the types of operating practices that the jurisdiction may want to see, as will be illustrated by the Colorado case study, below.

Notwithstanding these efforts to create cooperative mechanisms for the state to work together with local jurisdictions, the parameters of regulatory authority remain unclear. State courts have made clear that, under current law, local jurisdictions have a robust regulatory role to play, and as will be described in the Colorado case study, below, local jurisdictions are exploring how best

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[81] Interview with Brien Schumacher, interview.

[82] Colorado Oil and Gas Conservation Commission (COGCC), "COGCC—Local Government Designee Newsletter," April 29, 2013, http://cogcc.state.co.us/downloads/LGD_Newsletter/LGD_Newsletter_Spring_2013.pdf.

[83] Colorado Oil & Gas Conservation Commission, "COGCC Rules - 300 Series: Drilling, Development, Producing and Abandonment," May 1, 2013, http://cogcc.state.co.us/rr_docs_new/rules/300.htm#306b; Colorado Oil & Gas Conservation Commission, "COGCC Rules & Regulations Training—Rule 306.b: Local Government Consultation," unknown, http://cogcc.state.co.us/RR_Training/docs/ConsultLgd.html; Colorado Oil and Gas Conservation Commission (COGCC), "COGCC - Local Government Designee Newsletter."

[84] Task Force on Cooperative Strategies Regarding State and Local Regulation of Oil and Gas Development, *Recommendations from the Task Force Established by Executive Order 2012-002 Regarding Mechanisms to Work Collaboratively and Coordinate State and Local Oil and Gas Regulatory Structures*.

[85] "Intergovernmental Agreement Between the Board of County Commissioners of Gunnison County and the Colorado Oil and Gas Conservation Commission," accessed June 20, 2013, http://www.cml.org/uploadedFiles/CML_Site_Map/_Global/Information/now_oil_gunnison.pdf.

[86] Ibid.

to do that. The COGCC, as an arm of the State government, however, believes that some of the actions taken by local jurisdictions go too far and impinge on its own regulatory role, and has filed lawsuits in state court accordingly.

Texas

Texas has a highly decentralized regulatory approach in which local jurisdictions are granted significant leeway to define their preferred approach to regulating oil and gas development that occurs on their land. The Texas Railroad Commission exercises the bulk of statewide regulatory authority, although the Texas Commission on Environmental Quality holds responsibility for administering air quality regulations.[87] The state has a very active oil and gas industry and has traditionally employed a limited regulatory style with regards to oil and gas extraction.[88] That being said, Texas regulators do allow local jurisdictions to go far beyond the baseline standards set at the state level if they so choose. Texas state courts have found that municipalities "have, under their police power, authority to regulate the drilling for and production of oil and gas within their corporate limits."[89] Many Texas municipalities have adopted detailed regulations governing oil and gas development within their city limits and larger cities, in particular, have the technical capacity to enforce this class of regulation that remains the purview of state governments in most other states.

Local authority to regulate oil and gas development is not unrestricted, however. In cases where a direct conflict exists between local law and state law, however, courts have struck down the conflicting portion of local law. Regulations enacted by the City of Grand Prairie were challenged by a company seeking to build an intrastate gas compressor station that claimed that the regulations were preempted by both state and federal law (interstate gas pipelines are regulated under the federal Pipeline Safety Act).[90] Federal district and appellate courts held that all portions of the city's regulations were permissible, including provisions that dealt with landscaping and limitations on noise, save for a provision requiring an eight-foot high security fence because public safety falls under the domain of Texas state law.[91] This case illustrates that very broad regulatory purview that courts have granted to local jurisdictions in Texas in striking down only the narrowly defined portion of the local law that directly conflicts with state law.

The types of detailed regulations adopted by many local jurisdictions in Texas will be explored by using the example of Arlington, Texas in the Texas Case Study, below.

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[87] Wiseman, "Fracturing Regulation Applied," n. 49.

[88] Dianne Rahm, "Regulating Hydraulic Fracturing in Shale Gas Plays: The Case of Texas," *Energy Policy* 39, no. 5 (May 2011): 2974–2981, doi:10.1016/j.enpol.2011.03.009.

[89] Klepak v. Humble Oil & Refining Co. (Court of Civil Appeals of Texas, Galveston 1944).

[90] Tex. Midstream Gas Servs., L.L.C. v. City of Grand Prairie (United States District Court for the Northern District of Texas 2008).

[91] Ibid.; Goho, "Municipalities and Hydraulic Fracturing."

West Virginia

The West Virginia Oil and Gas Act governs most aspects of oil and gas activity.[92] The Act's language is quite broad and charges the West Virginia Department of Environmental Protection's Office of Oil and Gas with monitoring and regulating all activities related to the exploration, drilling, storage, and production of oil and natural gas.[93] In addition, West Virginia law also states that the purpose of the Department of Environmental Protection is to "consolidate environmental regulatory programs in a single state agency, while also providing a comprehensive program for conservation, protection, exploration, development, enjoyment, and use of the natural resources of the state of West Virginia."[94]

In 2011, the City of Morgantown enacted an ordinance banning the use of hydraulic fracturing and horizontal drilling in oil and gas development operations within the city limits and extending to one mile outside of the city's borders.[95] In response to a lawsuit filed by a drilling company, Northeast Natural Energy, a West Virginia state court held that state law creates a "comprehensive regulatory scheme" that "fully occupies" the area of oil and gas regulation.[96] Accordingly, and despite Morgantown's claim that its ordinance was a legal exercise of its authority under its home-rule status, the court struck down Morgantown's ordinance as being preempted by state law. Following the ruling, the City did not file an appeal, but rather proceeded to pass a zoning ordinance in July, 2012 restricting the use of hydraulic fracturing to industrial parks within Morgantown and stipulating that no drilling could take place within 625 feet of a building.[97] At the time of writing, Northeast Natural Energy had not filed suit against the zoning ordinance.[98]

Ohio

In 2004, the Ohio Legislature amended the existing laws governing oil and gas development and placed "sole and exclusive authority to regulate the permitting, location, and spacing of oil and gas wells" with the Division of Mineral Resources Management of the Ohio Department of

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[92] *W. Va. Code R.*, sec. 22–6, accessed May 25, 2013, http://www.legis.state.wv.us/WVCODE/Code.cfm?chap=22&art=6#06.

[93] Ibid., sec. 22–6–2; Clifford B. Levine and Shawn N. Gallagher, "State and Local Regulation of Oil and Gas Operations: Drilling Through the Maze of Preemption, Severed Mineral Estates and Surface Owner Rights," 359.

[94] *W. Va. Code R.*, sec. 22–1–1; Hall, "When Do State Oil and Gas or Mining Statutes Preempt Local Regulations?".

[95] Sean McNamara, Erika Blatt, and Ilyssa Miroshnik, "Controversy over Gas Industry Sweeps Morgantown after Council Bans Drilling," *Pipeline / Pittsburgh Post-Gazette*, January 2, 2013, http://pipeline.post-gazette.com/news/archives/24974-controversy-over-gas-industry-sweeps-morgantown-after-council-bans-drilling; Styers & Kemerait, "State Versus Local Regulation of Shale Gas Development," *Styers & Kemerait*, March 17, 2012, http://www.styerskemerait.com/2012/03/state-versus-local-regulation-of-shale-gas-development/.

[96] Northeast Natural Energy, LLC v. City of Morgantown, 3 (Circuit Court of Monongalia County 2011); Hall, "When Do State Oil and Gas or Mining Statutes Preempt Local Regulations?".

[97] Sean McNamara, Erika Blatt, and Ilyssa Miroshnik, "Controversy over Gas Industry Sweeps Morgantown after Council Bans Drilling."

[98] Ibid.

Natural Resources.[99] The Department of Natural Resources' regulatory authority for oil and gas development was further expanded by the Ohio Legislature in 2010 and 2011 to encompass "production operations" in 2010 and was expanded further in 2011 to include "well stimulation," "completing," "construction" of site, and "permitting related to those activities."[100] The text of the statute, as it reads today, is relatively unambiguous in the authority that it vests in the state agency:

> The [Division of Mineral Resources Management] has sole and exclusive authority to regulate the permitting, location, and spacing of oil and gas wells and production operations within the state, excepting only those activities regulated under federal laws for which oversight has been delegated to the environmental protection agency and activities regulated under sections 6111.02 to 6111.029 of the Revised Code. The regulation of oil and gas activities is a matter of general statewide interest that requires uniform statewide regulation, and this chapter and rules adopted under it constitute a comprehensive plan with respect to all aspects of the locating, drilling, well stimulation, completing, and operating of oil and gas wells within this state, including site construction and restoration, permitting related to those activities, and the disposal of wastes from those wells…. Nothing in this section affects the authority granted to the director of transportation and local authorities in section 723.01 or 4513.34 of the Revised Code, provided that the authority granted under those sections shall not be exercised in a manner that discriminates against, unfairly impedes, or obstructs oil and gas activities and operations regulated under this chapter.[101]

The statute notes the "sole and exclusive authority" that the Division of Mineral Resources Management enjoys in regulating just about all of the aspects of oil and gas development. The only exceptions included in the statute are those pertaining to federal law and "the authority granted to the director of transportation and local authorities in section 723.01 or 4513.34 of the Revised Code." These latter sections of the code pertain to "care, supervision, and control of public roads" and "Issuance of special permits" for motor vehicles, respectively.[102] In other words, the oil and gas statute carves out an exception by which local authorities may regulate the use of their streets and other rights-of-way, so long as they do not discriminate against or obstruct oil and gas activities.[103]

The question of state versus local authority vis-à-vis regulation of oil and gas development was tested in Ohio in February 2013, with a strong finding in favor of state authority. After Beck Energy applied for, and received, a permit to drill from the Ohio Division of Mineral Resources Management, and City of Munroe Falls issued a stop work order and filed a lawsuit against the

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[99] Jeffrey E. Fort, "ODNR's Preemption of Oil & Gas Regulation Upheld," *Energy in Depth - The Ohio Project*, March 18, 2013, http://www.eidohio.org/odnrs-preemption-of-oil-gas-regulation-upheld/.

[100] Ibid.

[101] *Ohio Rev. Code Ann.*, 2013, sec. 1509.02, http://www.lexisnexis.com.libproxy.mit.edu/lnacui2api/api/version1/getDocCui?lni=586N-XYN0-009V-81NX&csi=9258&hl=t&hv=t&hnsd=f&hns=t&hgn=t&oc=00240&perma=true.

[102] Ibid., sec. 723.01; ibid., sec. 4513.34.

[103] Scott Bent, "Ohio Court: State Oil And Gas Law Pre-Empts Local Drilling Regulations | JD Supra," *JD Supra Law News*, February 28, 2013, http://www.jdsupra.com/legalnews/ohio-court-state-oil-and-gas-law-pre-em-52739/.

energy company for failing to follow municipal ordinances requiring the company to obtain a drilling, zoning, and construction permits from the city as well as follow a number of other regulations.[104] While the trial court ruled in favor of Munroe Falls, Ohio's Ninth District Court of Appeals found that, despite the city's invocation of the home-rule clause of the Ohio Constitution, state oil and gas statutes preempted most of Monroe Falls' ordinances, including the following: an ordinance requiring a mandatory drilling permit, a conditional-zoning-certificate requirement, a zoning-certificate requirement, an ordinance requiring a mandatory public hearing prior to drilling, and the mandatory posting of a $2,000 performance bond.[105] However, in line with the exception for local regulation of rights-of-way in §1509.02, the appellate court held that Munroe Falls' following ordinances could stand: a rights-of-way construction permit, a street opening permit, a prohibition on obstruction of the rights-of-way, and a permit for excavating under the surface of a street.[106]

Ohio state law has strongly centralized regulatory authority over almost all aspects of oil and gas development in the Division of Mineral Resources Management of the Ohio Department of Natural Resources. Recent case law seems to indicate that local jurisdictions have very little regulatory authority of their own, including around traditional land use tools such as zoning, save for the exception that has been carved out for local regulation of roads and other rights-of-way.

New York

In New York State, the New York Environmental Conservation Law regulates the production of oil and natural gas.[107] The statute retains all regulatory authority over oil and gas production, with two minor exceptions, in the hands of the state: "The provisions of this article 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."[108] The extent of local regulatory authority over oil and gas production was tested in the early 1980s in the case of *Envirogas, Inc v. Town of Kiantone*, in which a state court held that state law preempted the town's zoning ordinance requiring a company seeking to drill in the town to pay $25 permit fee and post a $2500 bond.[109] The court held that these fee requirements for drilling were an attempt to regulate the oil and gas industry and were therefore preempted by state law.[110]

Notably, following the recent controversy over "fracking" in New York, among other places, some of the state's courts have ruled that local jurisdictions do have the authority to ban oil and

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[104] Jeffrey E. Fort, "ODNR's Preemption of Oil & Gas Regulation Upheld."

[105] Scott Bent, "Ohio Court."

[106] Ibid.

[107] New York State, *Environmental Conservation Law*, accessed May 26, 2013, http://public.leginfo.state.ny.us/LAWSSEAF.cgi?QUERYTYPE=LAWS+&QUERYDATA=$$ENVA23$$@TXENV0A23+&LIST=LAW+&BROWSER=BROWSER+&TOKEN=11294671+&TARGET=VIEW.

[108] Ibid., sec. 23–0303.

[109] Hall, "When Do State Oil and Gas or Mining Statutes Preempt Local Regulations?".

[110] Clifford B. Levine and Shawn N. Gallagher, "State and Local Regulation of Oil and Gas Operations: Drilling Through the Maze of Preemption, Severed Mineral Estates and Surface Owner Rights," 357–358.

gas activity through use of their zoning authority. In 2011 the Town of Middlefield and the Town of Dryden both amended their zoning codes to exclude any oil and gas activity within town boundaries (as did many other municipalities across New York State). In response to lawsuits filed against both towns, state trial courts ruled that the towns had engaged in legitimate exercises of their land use authority.[111] On appeal, in May 2013 the Appellate Division of the New York State Supreme Court unanimously upheld the lower court judgments in both cases.[112] Although the language of the Environmental Conservation Law appears to keep regulatory authority in the hands of the state, the courts noted that, while there had been minimal case law defining the scope of Article 23 (the oil and gas portion of the Environmental Conservation Law), New York State courts had created a body of case law around the Mined Land Reclamation Law.[113] Although the Mined Land Reclamation Law has a similar supremacy clause as the Oil, Gas, and Solution Mining Law—the former reads, in part: "for the purposes stated herein, this title shall supersede all other state and local laws relating to the extractive mining industry"—state courts have ruled that the mining law does not preempt local zoning authority.[114]

The language of New York's Environmental Conservation Law would seem to reserve authority in the hands of the state for regulating oil and gas development, but the state's courts have consistently ruled that the state law (whether in the form of the mining law or the oil and gas law) does not supersede local zoning authority. New York State provides a notable counter-example to the various states described above that have limited, or are seeking to limit, the use of zoning ordinances with regards to oil and gas development.

New York has had an ongoing moratorium on shale gas drilling since 2008 while it attempts to craft a policy that would allow for shale gas development while protecting the environment and public health.[115] As part of this policy-development process, the NYS Department of Environmental Conservation has developed a Revised Draft Supplemental Generic Environmental Impact Statement (Revised Draft SGEIS), which is expected to influence the shape of final regulation.[116] While noting that state law supersedes local law relating to the development of oil and gas resources, New York's Revised Draft SGEIS nevertheless contains

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[111] Rachel Stern, "Judge: Dryden Can Block Gas Drilling in Community," *The Ithaca Journal*, February 21, 2012, http://www.theithacajournal.com/article/20120221/NEWS01/202210394.

[112] Jon Campbell, "Appeals Court Says New York Towns Can Ban Fracking," *Democrat and Chronicle*, May 2, 2013, http://www.democratandchronicle.com/article/20130502/NEWS01/305020038/hydrofracking-New-York-towns.

[113] Ibid.

[114] M. L. Kennedy, "The Exercise of Local Control Over Gas Extraction," *Fordham Envtl. Law Rev.* 22 (2011): 375–433; Rachel Stern, "Judge: Dryden Can Block Gas Drilling in Community."

[115] Danny Hakim, "Hydrofracking Under Cuomo Plan Would Be Restricted to a Few Counties," *The New York Times*, June 13, 2012, sec. N.Y. / Region, http://www.nytimes.com/2012/06/14/nyregion/hydrofracking-under-cuomo-plan-would-be-restricted-to-a-few-counties.html.

[116] NY Dept. of Environmental Conservation, "Revised Draft SGEIS on the Oil, Gas and Solution Mining Regulatory Program," Exec. Sum.–2. The Revised Draft SGEIS states that: "In reviewing and processing permit applications… the Department would apply the requirements contained within regulations, along with the final SGEIS and the findings drawn from it, including criteria and conditions for future approvals" and that, "The final SGEIS will apply statewide…."

draft regulatory language that would require operators to notify the NY Department of Environmental Conservation if a proposal for shale gas development is inconsistent with local land use laws or plans.[117] A finding of inconsistency would prompt the Department to request additional information in the permit application to determine whether there are adverse environmental impacts that have not been addressed.[118] Although New York State's long-running moratorium has created ongoing policy uncertainty, the Revised Draft SGEIS indicates that the State permitting agency may take local land use regulations and plans into account in some fashion.

Conclusion and Summary

As illustrated by this survey of six states that are locations of shale gas development (or, in the case of New York, considering whether and how to allow development), some states allow municipalities and counties to exercise broad discretion in how they would like to control shale gas development within their jurisdictions, while other states prefer to minimize local discretion in favor of implementing a uniform statewide regulatory regime. Most states do not allow municipalities to regulate those aspects of oil and gas development that are regulated by the state itself, such as the technical regulations covering operations down-hole. However, most states authorize municipalities to enact general land use ordinances, such as zoning ordinances, that specify where certain types of industrial development may take place, including drilling for natural gas.

Table 1 summarizes the current state of law and jurisprudence with regards to local authority to regulate oil and gas development in each of the six states covered in this review.

Table 1

State	Allowable Local Regulatory Authority
Pennsylvania	• Local land use control preempted to allow oil and gas operations in all zoning districts and to set state-wide setback standards. • No conditions, requirements, or limitations on oil and gas activities that are more stringent than those imposed on other industrial activities. • May not impose restrictions on road use by overweight vehicles except as authorized under the Municipalities Planning Code. • *Constitutionality of Act 13 under review by Penn. Supreme Court.*
Colorado	• Local law must cause an "operational conflict" with state law to induce preemption with the nature of the conflict determined by the courts on an ad-hoc basis under a fully developed evidentiary record. • Local bans subject to heightened judicial scrutiny.

[117] Ibid., sec. 8.1.1.

[118] Ibid.

	• Various collaborative strategies in place: Task Force, Local Government Designee program, intergovernmental agreements.
Texas	• Local jurisdictions have broad authority to regulate drilling and production of oil and gas within their corporate limits. • Provisions that *directly* conflict with state law are not permissible.
West Virginia	• State law creates a "comprehensive regulatory scheme" that "fully occupies" the area of oil and gas regulation.
Ohio	• The Division of Mineral Resources Management enjoys "sole and exclusive authority" to regulate just about all aspects of oil and gas development. • Local authorities retain the right to regulate the use of their streets and other rights-of-way, so long as they do not discriminate against or obstruct oil and gas activities.
New York	• State law seems to retain all regulatory authority over oil and gas production in the hands of the state, save for local government jurisdiction over local roads and the rights of local governments under the real property tax law. • However, courts have ruled that state law does not supersede local zoning authority, particularly bans on oil and gas development. • Regulatory proposal indicates that state may take account of local land use regulations and plans when assessing permit applications.

Local Approaches to Regulating Oil and Gas Development

As described above, local jurisdictions have widely varying regulatory authority depending on their state's approach to allowing local regulatory discretion. Some states (and state courts, sometimes in contravention of the state government's preferred approach) allow local jurisdictions to exercise significant oversight, while other states sharply circumscribe local authority, even limiting local jurisdictions' traditional ability to regulate land use in ways that impinge on the state's authority to regulate oil and gas development.

Municipalities and counties in states across the country have taken steps to mitigate some of the costs imposed by oil and gas development and, in recent years, the boom in shale gas development. Given the different state contexts, some of these measures in some states have been successfully implemented while state laws have preempted others. Municipalities have taken a variety of regulatory approaches, which can be categorized as follows: enacting bans and

moratoria, implementing place-based regulations, or regulating the manner by which shale gas development occurs (including attempts to control specific negative effects of the process).[119]

Bans and Moratoria

A number of local jurisdictions around the country have enacted either permanent bans or temporary moratoria on oil or natural gas development or on the use of specific techniques, such as hydraulic fracturing.

Dozens of municipalities in the Marcellus Shale area have enacted either permanent bans or temporary moratoria. For example, as described above, the New York towns of Dryden and Middlefield have both enacted bans that have been upheld by New York State courts.[120] In contrast, a West Virginia state court struck down the City of Morgantown's ordinance banning the use of hydraulic fracturing and horizontal drilling in oil and gas development operations, as described above.[121] While much of the initial public opposition to shale gas development arose in states overlaying the Marcellus Shale, particularly Pennsylvania and New York, concern also exists in other parts of the country. For example, Mora County, New Mexico, enacted a ban on oil and gas extraction on county lands, while the voters of the City of Longmont, Colorado, approved an amendment to the City Charter that forbids the use of hydraulic fracturing throughout the city.[122] A number of municipalities and counties around the country have also enacted moratoria on either oil and gas development or some aspect of the practice (particularly hydraulic fracturing) while policy makers deliberate on the longer-term policy to adopt. For example, Boulder County, Colorado, has had a temporary moratorium on the processing of required development plans for local oil and gas permits under the county Land Use Code since February 2012. In a vote on June 18, 2013, the County Commissioners cited the need for further health and safety studies to test the impacts of oil and gas development on air and water quality as well as the ongoing regulatory uncertainty at the state level as reasons to extend the moratorium until January 2015.[123]

Although precise numbers are unknown, the Chairman of *Keuka Citizens Against Hydrofracking*, a community organization in Keuka, New York, has compiled a list of hundreds of

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[119] This framework is derived from a framework for categorizing municipal regulation of shale gas development presented in Shaun Goho's article, "Municipalities and Hydraulic Fracturing."

[120] Rachel Stern, "Judge: Dryden Can Block Gas Drilling in Community"; Jon Campbell, "Appeals Court Says New York Towns Can Ban Fracking."

[121] Northeast Natural Energy, LLC v. City of Morgantown (Circuit Court of Monongalia County 2011); Hall, "When Do State Oil and Gas or Mining Statutes Preempt Local Regulations?".

[122] Scott Rochat, "Longmont Council Will Defend Fracking Ban, Coombs Says," *Longmont Times-Call*, December 4, 2012, http://www.timescall.com/news/longmont-local-news/ci_22126651/longmont-council-will-defend-fracking-ban-coombs-says?source=pkg; Sandra Postel, "As Oil and Gas Drilling Competes for Water, One New Mexico County Says No," *National Geographic - Water Currents*, May 2, 2013, http://newswatch.nationalgeographic.com/2013/05/02/as-oil-and-gas-drilling-competes-for-water-one-new-mexico-county-says-no/.

[123] Boulder County, CO, "Commissioners Extend Temporary Moratorium on Oil & Gas Development in Unincorporated Boulder County Until Jan. 1, 2015," June 18, 2013, http://www.bouldercounty.org/apps/newsroom/templates/bc12.aspx?articleid=3645&zoneid=1%22.

municipalities, counties, and states across the United States (and around the world) that have enacted moratoria or bans, among other measures, to limit the use of hydraulic fracturing or shale gas development, more broadly.

As noted above, bans have met different fates in different jurisdictions, with New York States courts ruling that they fall within the land use authority of states to decide where different types of activity can take place (in the case of a ban, the "where" would be "no place") while Colorado state courts have indicated that any sort of total ban on an activity permitted by the state would be subject to heightened scrutiny.[124] The examples from New York State notwithstanding, it appears that courts in most states have found that total bans by local jurisdictions on a state-authorized practice exceed the authority of those jurisdictions, with courts in Colorado and Pennsylvania, for example, having expressed the opinion that "traditional zoning" designates areas both where an activity is proscribed *and* areas where it is permitted in finding that outright bans throughout a jurisdiction are too stringent.[125]

Place-based Regulations

In line with their traditional role in regulating land use, many local jurisdictions have adopted place-based regulations pertaining to shale gas development. These place-based regulations can take two forms: they can be defined by the zones (designated areas within the political jurisdiction) where various types of activity related to shale gas development can (or cannot) take place, or they can involve "setback" requirements by which various types of equipment related to shale gas development be located a minimum distance from categories of human or natural facilities or resources. These two types of place-based regulation are not mutually exclusive, and a regulatory regime can (and often does) combine zoning and setbacks.

Municipalities around the country have cited their authority to zone for different uses to regulate the general areas in which shale gas development can, and cannot, occur. For example, the City of Coppell, Texas, only allows oil and gas wells to be drilled in areas zoned as Light Industrial or Agricultural.[126] Similarly, the Township of Nockamixon, Pennsylvania, allows oil and gas drilling to occur only in zones designated as Industrial or Quarry.[127] In contrast to these two municipalities that specify where oil and gas operations are allowed, the City of Longmont, Colorado, took a somewhat different tack by enacting a city ordinance that effectively prohibited surface activity associated with oil and gas operations (i.e. any drilling activity) in residential or planned residential areas.[128] The Colorado Oil and Gas Conservation Commission, however, has

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[124] Jon Campbell, "Appeals Court Says New York Towns Can Ban Fracking"; Colorado Mining Association v. Board of County Commissioners of Summit County (2009).

[125] Hall, "When Do State Oil and Gas or Mining Statutes Preempt Local Regulations?"; Goho, "Municipalities and Hydraulic Fracturing."

[126] *Coppell, Texas Ordinance No. 2009-1228, § 9-26-7(A)*, 2009, http://www.nctcog.org/trans/air/Coppell.pdf.

[127] Nockamixon Township, PA, *Recovery of Subsurface Oil and Gas Deposits*, 2007, http://www.nockamixontownship.org/Codes/ordinance129.pdf.

[128] *City of Longmont, Ordinance O-2012-25*, 2012, http://www.ci.longmont.co.us/pwwu/oil_gas/documents/CA_20120724_125237.pdf.

filed suit against Longmont to preempt the ordinance for a number of reasons, including the residential zoning provision.[129]

A second approach to location-based regulation of shale gas development is the use of "setbacks"—that is, requirements that facilities related to natural gas development be placed at a minimum distance, or "set back," from designated human or natural facilities or resources. Setbacks are commonly used by both states and local jurisdictions around the country to regulate oil and gas development. For example, the City of Arlington, Texas, requires that any oil or gas well be set back a minimum of 600 feet from parks and other protected uses.[130] Arlington's ordinance provides for this setback to be reduced to 300 feet when the operator is able to provide written consent of 60 percent of the property owners that are located within 300 feet and 600 feet of the well or when a supermajority of the City Council votes to approve the setback reduction.[131] Arlington's ordinance also specifies a number of other setbacks, both from public facilities such as roads (75 feet) and fresh water wells (200 feet) and also facilities internal to the well site—for example, the wellhead must be set back 25 feet from the outer boundary of the well site and from storage tanks or sources of ignition.[132] Collier Township, Pennsylvania, requires a 1,000 foot setback of mineral removal from schools and daycare centers.[133] Notably, the statute differentiates between conventional and unconventional drilling (perhaps reflecting heightened concern about hydraulic fracturing) by specifying that the 1,000 foot setback can be reduced to 300 feet with written consent of the property owner only for conventional wells, not for unconventional wells.[134] Collier's regulations also require a setback of 300 feet from the property line of "any residential or public building, church, community or institutional building, commercial building, public park or private recreation area without the written consent of the owner."[135]

Pennsylvania's Act 13, as written, supersedes place-based regulations by local jurisdictions (such as those in Nockamixon and Collier) with its own zoning and setback regulations for oil and gas development. As noted above, the state's Commonwealth Court ruled against the land use provisions of the law, and a decision by Pennsylvania's Supreme Court is pending. As described above, Texas allows local jurisdictions broad latitude in regulating many aspects of oil and gas development, including place-based regulations of the sort described here for Coppell and Arlington. Speaking more broadly, place-based regulations enacted by local jurisdictions are more likely to be allowed by state governments, and upheld by state courts, than are total bans (although one could also argue that bans are place-based) or operational regulations.[136] This may

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[129] Tony Kindelspire, "State Suit Against Longmont Would Be Uncharted Territory," *Denver Post*, July 28, 2012, http://www.denverpost.com/dnc/ci_21182917/state-suit-against-longmont-would-be-uncharted-territory.

[130] *Arlington, TX Ordinance No. 07-074 (old)*, 2007, http://www.marcellus-shale.us/pdf/Gas-Drill-Ord_Arlington-TX.pdf.

[131] Ibid.

[132] Ibid.

[133] Collier Township, PA, *Gas Well Ordinance*, *Ordinance No. 592*, 2011, http://www.colliertownship.net/?wpfb_dl=134.

[134] *Ibid.*

[135] Ibid.

[136] Goho, "Municipalities and Hydraulic Fracturing."

be because place-based regulations align more closely to the land use authority that local jurisdictions traditionally exercise than do full bans or operational regulations. Between zoning and setback regulations, courts are more likely to allow zoning regulations enacted by municipalities and counties because setback requirements are more often included in state regulations, thereby preempting local setback requirements.[137]

Operational and Impact-Focused Regulations

Municipalities and counties have also adopted regulations that delve into the more substantive aspects of oil and gas development or that are intended to mitigate some of the negative impacts of shale gas development, particularly those that manifest at the local level. Some local jurisdictions, particularly in Texas and New Mexico, regulate the technical aspects of oil and gas development. A larger array of local jurisdictions also requires operators to secure permits from the local government and levy permitting and impact fees on operators. Many municipalities and counties have also enacted regulations that attempt to mitigate specific impacts such as traffic and road damage, excess noise, odors and air pollution, visual impacts, and water use and disposal.

The City Code of Farmington, New Mexico contains detailed technical regulations governing well casing, drilling and operations procedures, pipelines and valves, the construction of reserve pits and the disposal of wastes from the pits, storage tanks, procedures for abandonment and plugging of the well, and procedures for fire prevention, and other technical areas.[138] Farmington's city code also references state and federal regulations but is noteworthy for specifying technical requirements for many aspects of oil and gas development in its own right. A further example of the types of technical regulations implemented by some local jurisdictions can be seen in the Texas Case Study, below.

Many local jurisdictions have also instituted permitting requirements for oil and gas development and introduced fees and bonding requirements, either to serve as a general stream of revenue, or to offset some of the infrastructure, staffing, and other costs associated with oil and gas development that are borne by the municipality or county. For example, Nockamixon Township, Pennsylvania requires operators to apply for building permits and zoning permits before commencing operations and requires operators to deposit a letter of credit or other financial security with the Township at the time of permitting.[139] Nockamixon Township also requires a separate permit to conduct geophysical exploration.[140] The City of Forth Worth, Texas, requires operators to obtain gas well permits before commencing operations, and the application for the gas well permit contains 28 different types of information including, for example, a "map showing proposed transportation route and road for equipment, chemicals, or waste products used or produced by the gas operation indicating commercial and non-commercial routes," "location and description of all improvements and structures within six hundred (600) feet of the

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[137] Ibid.

[138] *Code of City of Farmington, NM*, *Chapter 19, Oil and Gas Wells*, accessed October 18, 2012, http://library.municode.com/index.aspx?clientId=10760.

[139] Nockamixon Township, PA, *Recovery of Subsurface Oil and Gas Deposits*.

[140] Ibid.

well," submission of a City-wide Road Maintenance Agreement in which the operator agrees to repair any damage that it causes to city roads, and a surveyed site plan for which the City Code specifies an extensive list of features that must be included and the specifications to which the site plan must adhere.[141] Gas well fees at the time of writing are $3,000 for new well permit applications, with various additional fees for items such as seismic survey inspections ($360), annual fee per well ($600), fracture pond ($500), regulated pipeline ($1500), and compressor facilities ($500).[142] Fort Worth also requires operators to carry multiple types of insurance (standard commercial general liability, environmental pollution liability, workers compensation, and automobile liability) and also to post bonds to cover the cost of remedying any damage that they cause, with the bonds varying in amount according to the phase of oil or gas development and the number of wells that the operator has within the city limits.[143] Local jurisdictions in many states have instituted permitting requirements for oil and gas development and introduced fees and bonding requirements and, as can be seen with Fort Worth's regulations, some of these regulations are quite detailed.

Finally, municipalities and counties have also enacted a variety of regulations in an attempt to mitigate the negative local impacts of shale gas development such as traffic and road damage, excess noise, odors and air pollution, visual impacts, and water use and disposal. One example of efforts to control traffic and road damage can be seen with Fort Worth's requirement for submission of a map showing trucking routes (in order to plan for traffic patterns) and the City-wide Road Maintenance Agreement (to pay for damages). Noise caused by oil and gas operations are also a major source of concern for nearby residents. Nockamixon Township sets 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 requires noise mitigation measures when necessary.[144] Farmington, New Mexico, takes an omnibus approach to regulating a variety of nuisances, including noise, odors, and vibrations: "Drilling, completing and operating of well sites shall be carried out in a manner such that no noise, vibration, dust, odor, or other harmful or annoying substances or effect which can be eliminated or diminished occurs to the injury or annoyance of persons living in the vicinity."[145] Local jurisdictions have also taken steps to mitigate aspects of the visual impact of oil and gas development, recognizing that the operations introduce large industrial infrastructure to localities that were previously rural. For example, Cecil Township, Pennsylvania directs operators to: "direct site lighting downward and inward toward the drill site, wellhead, or other area being developed so as to attempt to minimize glare on public roads, and adjacent buildings within three hundred (300) feet of the drill site, wellhead, or other area being developed."[146] Fort Worth, Texas, has detailed landscaping regulations for oil and gas operators that specify the amount of canopy cover that must be in place (requiring

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[141] City of Fort Worth, *Ordinance No. 18449-02-2009*, 2009, http://fortworthtexas.gov/uploadedfiles/gas_wells/090120_gas_drilling_final.pdf.

[142] City of Fort Worth, Texas, "Application for a Drilling, Completion and Production Operations Permit," January 2013, http://fortworthtexas.gov/uploadedFiles/Gas_Wells/Applications_and_Permits/13_Application_Form.pdf.

[143] City of Fort Worth, *Ordinance No. 18449-02-2009*.

[144] Nockamixon Township, PA, *Recovery of Subsurface Oil and Gas Deposits*.

[145] *Code of City of Farmington, NM*.

[146] *Cecil Township, PA Ordinance No. 2-2010*, *2-2010*, 2010, http://www.marcellus-shale.us/pdf/Gas-Drill-Ord_Cecil-Twp-Pa.pdf.

additional planting of trees, if necessary) on a development site, differentiated by the type of zoning and provides guidelines for the types and mix of tree species that are acceptable for planting.[147] Many local jurisdictions are also concerned about the quantities of water used from local groundwater and surface sources and about maintaining water quality. Fort Worth, Texas, for example, has put in place regulations to protect fresh water wells, including the 200-foot setback requirement noted above, and a requirement that the operator provide the city with a "pre-drilling" and "post-drilling" water analysis and flow rate for any wells located within 500 feet of the gas well.[148] Fort Worth also has a number of regulations in place to minimize the likelihood of water contamination, including detailed technical requirements for storage pits and tanks, transportation of chemicals and other fluids, and disposal of wastes.[149]

Local jurisdictions have implemented a wide variety of regulations covering both the technical aspects of oil and gas development and also trying to minimize many of the negative effects of development that are felt locally. Operational regulations, such as those on well casing and pit construction, are more common—and are more likely to survive preemption challenges—in states such as Texas and New Mexico that allow local jurisdictions wider regulatory latitude. In most other states, these types of regulations remain under the purview of the state regulatory authority and therefore are more likely to be challenged by the state government. That being said, ordinances that address areas of traditional municipal concern, such as the noise, light pollution, dust, road maintenance, and traffic, are more likely to be upheld under legal challenge.[150]

Conclusion and Summary

Municipalities and counties have adopted a variety of approaches to mitigate some of the costs imposed by oil and gas development. Municipalities have taken a variety of regulatory approaches, which can be categorized as follows: enacting bans and moratoria, implementing place-based regulations, or regulating the manner by which shale gas development occurs (including attempts to control specific negative effects of the process). Courts in most states have found that total bans by local jurisdictions on a state-authorized practice exceed the authority of those jurisdictions, with New York State being a prominent exception. Many local jurisdictions have also enacted temporary moratoria as they sort out their local regulatory processes and, for the most part, these seem to be allowable—although there will be a time when a "temporary" moratorium becomes a de facto ban. Place-based regulations enacted by local jurisdictions are generally more likely to be allowed by state governments, and upheld by state courts, than are total bans or operational regulations, perhaps because place-based regulations align more closely to the land use authority that local jurisdictions traditionally exercise than do full bans or operational regulations. Between zoning and setback regulations, courts are more likely to allow zoning regulations enacted by municipalities and counties because setback requirements are more often included in state regulations, thereby preempting local setback requirements. Operational regulations, such as those on well casing and pit construction, are more common—

[147] City of Fort Worth, *Ordinance No. 18449-02-2009*.

[148] Ibid.

[149] Ibid.

[150] Goho, "Municipalities and Hydraulic Fracturing."

and are more likely to survive preemption challenges—in states such as Texas and New Mexico that allow local jurisdictions wider regulatory latitude. In most other states, these types of regulations remain under the purview of the state regulatory authority and therefore are more likely to be challenged by the state government. That being said, ordinances that address areas of traditional municipal concern, such as the noise, light pollution, dust, road maintenance, and traffic, are more likely to be upheld under legal challenge.

Table 2 summarizes the different types of regulatory approaches adopted by local jurisdictions.

Table 2

Category	Type of Regulation	Examples
Bans and Moratoria	Permanent ban on oil and gas development or a constituent part, such as hydraulic fracturing	• Mora County, NM: ban on oil and gas extraction on county lands • City of Longmont, CO: ban on hydraulic fracturing and the storage in open pits or disposal of wastes created by hydraulic fracturing within the city
	Temporary moratorium on oil and gas development or a constituent part, such as hydraulic fracturing	• Boulder County, CO: temporary moratorium on the processing of required development plans for local oil and gas permits under the county Land Use Code until January 1, 2015
Place-based regulations	Zoning	• City of Coppell, TX: only allows oil and gas wells to be drilled in areas zoned as Light Industrial or Agricultural • City of Longmont, CO: prohibition on surface activity associated with oil and gas operations in residential or planned residential areas
	Setbacks	• City of Arlington, TX: oil or gas well be set back a minimum of 600 feet from parks; min. 75 feet from public facilities such as roads; min. 200 feet from fresh water wells. Wellhead must be set back 25 feet from the outer boundary of the well site and from storage tanks or sources of ignition
Operational and Impact-Focused Regulations	Regulate the technical aspects of oil and gas development	• City of Farmington, NM: detailed technical regulations governing well casing, drilling and operations procedures, pipelines and valves, the construction of reserve pits and the disposal of wastes from the pits, storage tanks, procedures for abandonment and plugging of the well, and procedures for fire prevention

	Permitting and levying permit and impact fees	• City of Forth Worth, TX: operators required to obtain gas well permits before commencing operations, carry multiple types of insurance, and post bonds to cover the cost of remedying any damage that they cause. Fees: $3,000 for new well permit applications, with various additional fees for items such as seismic survey inspections ($360), annual fee per well ($600), fracture pond ($500), regulated pipeline ($1500), and compressor facilities ($500)
	Mitigate specific impacts such as traffic and road damage, excess noise, odors and air pollution, visual impacts, and water use and disposal	• Nockamixon Township, PA: noise levels at any point beyond the property where drilling is occurring not to exceed 55 decibels during the day and 45 decibels at night, with noise mitigation measures required when necessary • Cecil Township, PA: operators must direct site lighting downward and inward toward the drill site, wellhead, or other area being developed • Fort Worth, TX: operator required to provide a "pre-drilling" and "post-drilling" water analysis and flow rate for any wells located within 500 feet of the gas well

Case Studies

Having looked, broadly, at the scope of local authority allowed to local jurisdictions in various states and the different categories of regulations that municipalities and counties have adopted (again, not all options are available to all jurisdictions in all states), we now turn to specific case studies. Pennsylvania, Colorado, and Texas are three key states in the shale gas boom, not only for their production figures but also, from a policy perspective, for their different regulatory approaches.

Pennsylvania served as a hotbed of local regulatory innovation and ferment as an epicenter of both shale gas production and opposition to that production. Municipalities enacted a wide range of regulatory policies in their attempts to grapple with the effects of shale gas production—until the state legislature enacted Act 13 in February 2013 in an attempt to create a uniform statewide regulatory environment. Depending on the Pennsylvania Supreme Court's decision with regards to the constitutionality of Act 13, local jurisdictions may or may not regain the ability to exercise some local control over land use and other mechanisms to control the effects of shale gas development.

Colorado's municipalities and counties are very actively negotiating with the state, particularly the Colorado Oil and Gas Conservation Commission (COGCC) as the state's primary regulatory authority over oil and gas development, about the level and types of regulatory authority that they should exercise. The legislature and state courts have tried to create a somewhat collaborative structure for regulation but at least some local jurisdictions seem to believe that the state is not looking out for the best interests of their citizens and that the collaborative structures promoted by the Governor and the COGCC are insufficient to address their concerns.

Texas allows greater local jurisdiction than most other states, although a recent court ruling clarified that municipalities and counties are nevertheless preempted from enacting regulations that directly conflict with state regulations enacted by the Railroad Commission and the Texas Commission on Environmental Quality. The long history of oil and gas development in Texas, combined with the increasing push of drilling into suburban and urban areas of major population centers such as Arlington and Fort Worth, combine to create a situation in which many municipalities are enacting sophisticated regulations to protect the safety, health, and wellbeing of their citizens while still fostering oil and gas development.

Pennsylvania

Pennsylvania has been at the epicenter of public concern about shale gas development in recent years and, accordingly, has also been a hotbed of local efforts to regulate oil and gas development. As detailed above, the state government pushed back strongly against state regulatory efforts with Act 13, which sought to preempt almost all local regulatory authority. The constitutionality of the Act is now before the Pennsylvania Supreme Court, after the State's Commonwealth Court found key provisions to be unconstitutional.

The Supreme Court has not rendered judgment on the constitutionality of Act 13 at the time of writing and so the scope of local regulatory authority in Pennsylvania remains unclear. As a result, the diverse approaches to regulating shale gas development taken by four municipalities in Pennsylvania will be explored to provide different perspectives that local regulation took before the passage of Act 13—and could take, depending on the decision of the State Supreme Court. The four local jurisdictions are Cecil Township, Collier Township, Nockamixon Township, and West Homestead Borough.

Survey of Cecil Township's Regulations

In the Purpose section of its oil and gas zoning ordinance, enacted in 2010, Cecil Township declares that oil and gas development is a by-right permitted use in all parts of the Township.[151] The Purpose section proceeds to explain that the state possesses primary regulatory authority over oil and gas development but that the Township retains zoning powers that it can use to define where oil and gas activities can be conducted, to require that companies provide information to the Township and its residents, and to implement security and safety measures of certain kinds.[152]

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[151] *Cecil Township, PA Ordinance No. 2-2010*, sec. 1.

[152] Ibid.

In terms of regulating the location of oil and gas activities, Cecil's ordinance directs operators to consider the location of its operations, where prudent and possible, to minimize interference with the ability of Township residents to enjoy their property and with future Township development activities.[153]

The Township's regulations have a few provisions intended to protect public safety. The regulations require operators to arrange on-site orientation for emergency service providers to orient the service providers to the location, equipment, and layout of the site.[154] Each operator is also required to provide a copy of its "Preparedness, Prevention and Contingency Plan" to the Township's first responders.[155] For wells that will be located within 1000 feet of a Protected Structure, operators are required to install six-foot high temporary fencing around drilling and fracturing equipment, install OSHA-compliant permanent fall protection fencing around pits that could contain fluids of greater than 2-feet depth, post warning signs, and provide a security guard at all times when a drilling rig or fracturing equipment is on site.[156] These provisions do not apply to coal bed methane and conventional oil and gas wells.[157]

Cecil Township created a number of regulations to minimize damage to Township roads and minimize traffic impacts. The Township's regulations require operators to secure permits and post bonds for overweight vehicles.[158] Operators must also take "necessary safeguards" to keep roads free of dirt, mud, and debris.[159] The regulations also specify that operators take "necessary precautions" to ensure that safety of persons in and around road crossings and adjacent to roadways, including by providing flagmen and posting signage.[160]

The Township's regulations contain a number of provisions to reduce noise pollution. For example, the regulations prohibit construction activity prior to the commencement of drilling activities and workover operations between the hours of 10:00 pm and 6:00 am.[161] In addition, operators are required to establish a continuous 72 hour ambient noise level prior to drilling and are not allowed to exceed this ambient level by more than 7 decibels during daytime drilling activities, by more than 5 decibels during nighttime drilling activities, and by more than 10 decibels during hydraulic fracturing operations, with provisions to exceed these increased levels for short amounts of time during each hour.[162] If a complaint about excess noise is received by the Township, the operator is required to monitor noise levels for 48 hours and provide this monitoring data to the Township, meet with Township representatives and affected property

[153] Ibid., sec. 3(9).
[154] Ibid., sec. 3(7).
[155] Ibid., sec. 3(6).
[156] Ibid., sec. 3(14).
[157] Ibid., sec. 3(17).
[158] Ibid., sec. 3(2).
[159] Ibid., sec. 3(3).
[160] Ibid., sec. 3(4).
[161] Ibid., sec. 3(15).
[162] Ibid., sec. 3(16).

owners to discuss possible noise abatement measures.[163] The regulations also require that internal combustion engines and compressors must have either an exhaust muffler or an exhaust box installed if they discharge exhaust into the open air.[164] These provisions do not apply to coal bed methane and conventional oil and gas wells.[165]

Cecil Township's regulations require that operators take "the necessary safeguards to ensure appropriate dust control measures are in place."[166] Cecil Township directs operators to take steps to direct site lighting downward and inward towards the development site in order to minimize glare on public roads and adjacent buildings located within 300 feet of the development site.[167]

Cecil Township requires a variety of measures in its ordinance such that operators share information with the Township and its residents. For example, the Township requires operators of unconventional oil and gas wells to attend a public meeting to present general information about their development plans and answer public questions at least 30 days before beginning development activities.[168] The Township can also require operators to attend additional meetings once a year.[169] Operators are required to provide the Township Zoning Officer with various types of information, including a map showing the planed access route to the well site, information on the status of road bonding, an Erosion and Sedimentation Plan, a well survey plat showing well locations, the operator's contact information, and a copy of the drilling permit issued by the Pennsylvania Department of Environmental Protection.[170] The regulations specify that this information is to be provided "for informational purposes only," indicating that the Township does not claim authority to review the submitted information or ask for changes.[171] Operators are also required to provide residents located within 1000 feet of the well(s) with various types of information, including a copy of the well survey plat showing well locations, and a general description of development plans, and the operator's contact information.[172]

Finally, Cecil Township's drilling ordinance specifies a fine of no more than $600, plus reimbursement for the cost of enforcement expenses (such as court costs), for each day that a violation of the Township's ordinance occurs.[173] An operator must be found to be in violation of the ordinance by a Magisterial District Judge for penalties to apply.[174]

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[163] Ibid.

[164] Ibid.

[165] Ibid., sec. 3(17).

[166] Ibid., sec. 3(8).

[167] Ibid., sec. 3(10).

[168] Ibid., sec. 3(1), 3(17).

[169] Ibid., sec. 3(1).

[170] Ibid., sec. 3(12)–3(13).

[171] Ibid., sec. 3(12)–3(13).

[172] Ibid., sec. 3(11).

[173] Ibid., sec. 4.

[174] Ibid.

Survey of Collier Township's Regulations

Collier Township amended its zoning ordinance in 2011 in response to increased shale gas development. The principle objectives of the amendment, as articulated in the preamble to the amendment and the Legislative Findings, was to limit oil and gas development to non-residentially zoned areas while still allowing for oil and gas extraction throughout most of the township using horizontal drilling, provide for the upkeep and repair of local roads, and increase permit fees in order to meet increased demand for the township's engineering and legal resources.[175]

The Township's regulations classified the digging of oil and gas wells as a conditional use in the following zones: Special Conservation District, Planned Shopping Center District, Highway Interchange District, Highway Commercial District, Special Commercial District, and Industrial District.[176] Since oil and gas wells are not classified as a by-right permitted use in *any* zone, operators are always required to apply for a conditional use permit under the zoning code.

An application for conditional use is required to have a site plan attached and include the following:[177]

- Basic info about property and map (such as index, key, north point, etc.);
- Property lines, zoning ordinance district boundary lines, and total acreage of parcel proposed for development;
- All existing streets, right of ways, and easements related to the development;
- Owners of adjacent properties, including the location of any existing structures and driveway locations;
- The location of relevant natural features on site and those abutting properties within 300 feet of the site, including streams or other natural water courses and adjacent areas which are subject to flooding, and significant stands of existing trees;
- The location of structures on abutting property within 300 feet of common property lines;
- The locations of: all mineral removal structures, facilities, equipment or buildings; existing structure on the site; vehicle and equipment cleaning and tire cleaning areas; proposed access and haul roads; stormwater and sediment controls or any water impoundment facilities;

[175] Collier Township, PA, *Gas Well Ordinance*, 2011, sec. Legislative Findings.

[176] Ibid., sec. II(C–I).

[177] Ibid., sec. II(B)(11).

- An Environmental Impact Statement, which includes the following:
    - A description of existing conditions in the area and the land use history of the property.
    - A description of the proposed mineral removal operations, and associated facilities;
    - An assessment of the proposed mineral removal operations on abutting, surrounding uses.
    - A historical record of previous mineral removal operations at the site; and
    - A description of existing conditions, including mineral removal facilities, structures, buildings or equipment.
    - A plan for compliance with the noise limitations set forth in this Ordinance, including but not limited to identifying the location, design and height of sound walls.
    - A description of the method for disposal of any radioactive tailings or substances.
    - A description of all project site restoration activities and the timetable for same, including but not limited to a description of restoration plantings by location, number, species, and size of trees or other plantings.
- A copy of any permit or permit application issued by or submitted to the Pennsylvania Department of Environmental Protection.
- The location, depth and profile of any proposed pipelines for water, gas, oil or other substance to be installed within the Township in connection with the proposed use.
- A lighting plan, demonstrating maximum feasible reduction of glare into adjacent properties.
- A plan for water usage and disposal, identifying any water source or disposal point within the Township, proposed method of transport within the Township, including truck or pipeline routes, and a schedule for daily inspection of surface water transport lines.
- Such other information pertinent to the proposed mineral removal as may be requested by the Township Engineer or Zoning Officer.

An application fee of $1,000 and an initial review fees escrow deposit of $5,000 are required with the conditional use application.[178]

Collier's regulations set a 300 foot setback from any residential or public building, church, community or institutional building, commercial building, public park or private recreation area, with a 1,000 foot setback from schools and daycare centers.[179] The 1,000 foot setback only applies to unconventional wells, however, with a 300 foot setback for conventional oil and gas wells.[180]

The Township's regulations have a number of provisions intended to protect public safety. The regulations require operators to arrange site visits for emergency service providers to orient the service providers to the location, equipment, and layout of the site. Operators are also required to provide maps, emergency plan documents and any other information relevant to the provision of emergency services to the service providers.[181] In addition, operators are required to keep sites free and clean up rubbish brush, debris, uprooted trees, etc. and are prohibited from disposing of drilling and fracturing residuals and pond liners onsite.[182] Ponds and impoundments are required to be surrounding by six-foot high chain link fences with access gates, and drilling pads are to be similarly secured by a fence and gate during the drilling and fracturing process.[183]

Collier Township created a number of regulations to minimize damage to Township roads and minimize traffic impacts. The Township requires permit applicants to show the proposed routes of trucks used for hauling and design these routes to minimize damage to Township streets, including by demonstrating that the routes have sufficient turning radius to accommodate the trucks.[184] In addition, applicants are required to show the estimated weights of these trucks and show evidence that these weights comply with the weight limits of Township streets, unless an excess maintenance agreement is agreed upon and an accompanying bond is posted.[185] Regardless of the weight of trucks, all operators are required to post bonds to cover road repairs, and the Township Engineer also has the discretion to determine whether an operator should be required to take preventive measures, such as shoring up bridges or putting protective mats over utility lines.[186] In order to minimize traffic impacts, operators are required to create parking areas for their vehicles of sufficient size such that all of their vehicles can be parked off-street.[187] In addition, operators are required to design the surface of these parking areas to minimize dust and

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[178] Ibid., sec. II(B)(13).

[179] Ibid., sec. II(B)(1).

[180] Ibid.

[181] Collier Township, PA, *Gas Well Ordinance*, *Ordinance No. 592*, 2011, sec. II(B), http://www.colliertownship.net/?wpfb_dl=134.

[182] Ibid., sec. II(B)(12).

[183] Ibid., sec. II(B)(16).

[184] Ibid., sec. II(B)(2).

[185] Ibid.

[186] Ibid., sec. II(B)(3).

[187] Ibid., sec. II(B)(8).

take necessary steps to ensure that public roads remain free of dirt, mud, or debris from their operations.[188]

The Township's regulations contain a number of provisions to reduce noise pollution that are targeted at unconventional gas wells (and do not apply to convention oil and gas wells). For example, the regulations limit the types of activity that can be performed between 7:00 pm and 7:00 am.[189] In addition, operators are required to establish a continuous 72 hour ambient noise level prior to drilling and are not allowed to exceed this ambient level by more than 7 decibels during daytime drilling activities, by more than 5 decibels during nighttime drilling activities, and by more than 10 decibels during hydraulic fracturing operations, with provisions to exceed these increased levels for short amounts of time during each hour.[190] If a complaint about excess noise is received by the Township, the operator is required to monitor noise levels for 48 hours and provide this monitoring data to the Township, meet with Township representatives and affected property owners, and present a noise abatement plan for any noise in exceedence of permitted levels.[191]

Collier's regulations also attempt to address air quality and odor concerns. The regulations require operators to operate a vapor recovery unit or vapor destruction unit at any condensate tanks, and also to take precautions to minimize odors perceptible on nearby properties.[192] Upon receipt of complaints about odors, the operator must create an odor control plan.[193]

Finally, the regulations require operators to take various steps to ensure responsiveness to public officials and members of the public, including maintaining a 24-hour telephone access line, specifying maximum times in which members of the public and Township officials should receive responses from operators, and producing a company official in person for at least one hour each week at the Township Municipal Building to address concerns.[194]

Survey of Nockamixon Township's Regulations

Nockamixon Township amended its zoning ordinance in 2007. The principle objectives of the amendment, as articulated in the summary of the amendment and the Background section, was to limit oil and gas development to industrial and quarry zoned areas, limit the number of well pads on any single property, revise insurance and bonding requirements, require viewshed mitigation, mitigate noise pollution, require road clearing and cleaning, and require that an emergency management plan be on site.[195] The following survey of Nockamixon's regulations covers the

[188] Ibid., sec. II(B)(9).
[189] Ibid., sec. II(B)(4).
[190] Ibid., sec. II(B)(5).
[191] Ibid.
[192] Ibid., sec. II(B)(14).
[193] Ibid.
[194] Ibid., sec. II(B)(15).
[195] Nockamixon Township, PA, *Recovery of Subsurface Oil and Gas Deposits*, sec. Background.

Township's zoning regulations for oil and gas development in full, including both older provisions that were retained in the 2007 amendment and new provisions.

Nockamixon's regulations permit oil and gas drilling as a conditional use only in the township's industrial and quarry zones.[196] An application for conditional use is required to include a site plan and contain all information required to comply with the Township's zoning provisions relating to traffic, water resources, environmental and cultural assessment, and all other applicable elements of the Township's zoning code.[197] All drilling and production equipment and operations are required to be set back 600 feet from any non-extraction structures, 100 feet from any streets or property lines, and 1,000 feet from landfills.[198] Minimum lot sizes are specified as 12.5 acres, with only one well pad allowed per property.[199]

The Township's regulations contain a number of general standards for operators, including requirements to contain offensive or noxious odors, fluids, gases, dust or glare to the production site; and requirements for proper and secure storage and off-site disposal of both hazardous and non-hazardous wastes and materials.[200] Operators are also required to provide Township officials with a copy of an insurance policy sufficient to cover payment for any damages or injury to persons or property and payment to control and/or eliminate any hazardous or dangerous event or condition.[201] The hours of operation are limited to Monday through Saturday, 7 a.m. to 7 p.m.[202]

Nockamixon Township has a number of regulations designed to mitigate the visual impact of oil and gas development. The Township requires that the production operation be designed and constructed to minimize the removal of trees and shrubs, protect all natural resources, and minimize the amount of surface disturbance.[203] In addition, operators should avoid conducting operations and placing equipment in scenic and visually sensitive areas, and viewshed mitigation measures (such as plantings and other buffers) should be implemented.[204] The regulations also call for production structures to be designed to integrate with their environment and for glare from lighting and flaring to avoid impacting nearby residences.[205]

The Township specifies a number of regulations to minimize noise pollution. The regulations set allowable noise levels of 55 decibels during the day and 45 decibels at night and on Sundays and federal holidays.[206] In addition, the regulations specify the noise mitigation measures that operators should take in case their operations exceed allowable levels; these measures include

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[196] Ibid., sec. S(2).

[197] Ibid., sec. S(4).

[198] Ibid., sec. S(6).

[199] Ibid., sec. S(6)(a)[9].

[200] Ibid., sec. S(6)(a)[1–3].

[201] Ibid., sec. S(6)(a)[8].

[202] Ibid., sec. S(6)(a)[13].

[203] Ibid., sec. S(6)(b).

[204] Ibid.

[205] Ibid., S(6)(b).

[206] Ibid., S(6)(c).

insulation for equipment, fences and landscaping, and most drastically, the construction of buildings to enclose noncompliant facilities.[207]

The Township prohibits the use of explosives for conducting geophysical exploration and requires that operators submit separate applications for geophysical exploration techniques such as systems employing thumpers or vibroseis.[208]

Nockamixon's regulations also contain a number of provisions to mitigate and control hazards. The regulations specify the use of fuelbreaks to mitigate wildfire hazards and prohibit the acceleration of erosion and sedimentation due to drilling.[209] All production operations are required to be either included in a fire district, be under contract with a fire district for protection services, or be provided with private fire protection (with conditions specified to ensure that the private protection is of equivalent quality to a fire district).[210] Conditional use permit applicants are required to submit an Emergency Preparedness and Public Safety Plan for review by the Township.[211] Operators must also maintain on file with the Township a current list and the Material Safety Data Sheets (MSDS) for all chemicals used.[212] Additional safety regulations include a detailed list of the technical requirements for acceptable forms of fencing, masonry walls, and gates (which the Township requires be used to completely surround all operation sites).[213] The regulations also prohibit onsite storage of any equipment unnecessary for the everyday operation of the site.[214]

Regulations to maintain access and minimize traffic impacts include requirements that operators locate and improve ingress and egress points from sites to ensure adequate capacity for traffic volumes and minimize hazards to other road users.[215] The regulations also prohibit the use of streets serving exclusively residential neighborhoods.[216] Operators are required to provide all weather access roads, suitable for emergency equipment, within 50 feet of their operations, and to keep all public and private rights of way free and clear from mud, dirt, and debris.[217]

Nockamixon's regulations contain provisions to protect watercourses and wetlands, including a required setback of 100 feet from the edge of watercourses and wetlands and a requirement to include culverts or other stormwater management facilities as part of roads or other improvements that obstruct drainages.[218]

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[207] Ibid.

[208] Ibid., S(6)(i).

[209] Ibid., S(6)(e).

[210] Ibid., sec. S(6)(e).

[211] Ibid., S(6)(e).

[212] Ibid., sec. S(6)(e).

[213] Ibid., sec. S(6)(j).

[214] Ibid.

[215] Ibid., sec. S(6)(f).

[216] Ibid.

[217] Ibid.

[218] Ibid., S(6)(h).

Nockamixon Township has a number of regulations for site reclamation. The regulations specify that the objectives for reclamation are to: equal or reduce soil erosion potential as compared to stable pre-operation conditions, and to restore or enhance the pre-existing visual character.[219] Finally, the regulations also specify that reclamation should be initiated as soon as weather and growing conditions permit and should be completed within a year.[220] Operators are required to deposit a financial security with the Township at the time of permitting to ensure that reclamation is fully carried out before abandoning the site, which the township will verify upon site inspection.[221]

Survey of West Homestead Borough's Regulations

The Borough of West Homestead enacted a total ban on the commercial extraction of natural gas in 2011. The Borough's ordinance cites the threats to residents' health, safety, and welfare posed by gas extraction and the right to local, community self-government in enacting its ban.[222] The ordinance cites "the people's fundamental and inalienable right to govern themselves, and thereby secure their rights to life, liberty, and the pursuit of happiness" as the foundation for the ordinance and threatens to separate West Homestead Borough from other levels of government if pressure is brought to bear on the Borough.[223]

West Homestead's regulations cite a number of rights claimed by West Homestead residents and the natural environment. These rights are: the right to water, the rights of natural communities, the right to a sustainable energy future, the right to self-government, the people as sovereign, and all rights as self-executing.[224]

Flowing from these rights, West Homestead enacted a number of protections. These protections include making it unlawful for any corporation to extract natural gas within the Borough, save for wells already in operation at the time that the ordinance went into effect.[225] In addition, the ordinance declares that any corporation in violation of the ordinance forfeits its rights to personhood, the protections of the 1st and 5th amendments, and the commerce and contracts clauses of to the United States Constitution and corresponding sections of the Pennsylvania Constitution.[226] The ordinance also disavows the authority of other levels and branches of government to challenge or overturn West Homestead's municipal ordinance.[227]

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[219] Ibid., sec. S(6)(g).

[220] Ibid.

[221] Ibid.

[222] West Homestead Borough, PA, *Banning Commercial Extraction of Natural Gas*, *Licenses, Permits and General Business Regulations*, 2011, sec. 13–601, http://www.keystatepub.com/keystate-pdf//PA/Allegheny/West%20Homestead%20Borough/Chapter%2013%20Licenses%20Permits%20and%20General%20Business%20Regulations.pdf.

[223] Ibid., sec. 13–607.

[224] Ibid., sec. 13–603.

[225] Ibid., sec. 13–604.

[226] Ibid.

[227] Ibid.

Analysis of the Cecil, Collier, Nockamixon, and West Homestead Regulations

The regulations of the four municipalities profiled here together illustrate the diversity of approaches that municipalities adopted in response to shale gas development. There are clearly significant differences between the regulations profiled here, with the distinctions between Cecil, Collier, and Nockamixon being differences of degrees and the distinctions between these three and West Homestead being differences of kind. West Homestead Borough's ordinance aggressively declares a right to self-governance for the Borough that is not to be infringed in any way by other levels or branches of government. By making this claim, West Homestead seeks to head of preemptory challenges to its ordinance. Substantively, the ordinance bans all corporate extraction of natural gas (although it does not mention non-corporate extraction) and declares that corporations will lose various constitutional protections if found to be in violation of the ordinance.[228]

In contrast, Cecil, Collier, and Nockamixon take comparatively more conventional routes to regulating shale gas development in their towns. Fundamentally, all three ground their regulations in their powers to regulate land use. That being said, there are also significant differences between the regulations adopted by these three townships. Since Cecil Township classifies oil and gas activities as by-right permitted uses in all zones, the Township does not require operators to submit an application or otherwise secure permission before initiating oil or gas development activities. The Township also does not specify any minimum setbacks for oil and gas activities. Collier and Nockamixon, in contrast, designate oil and gas drilling as conditional uses in a limited number of zones (with Nockamixon being the more restrictive of the two, allowing drilling only in Industrial and Quarry zones), thereby requiring all operators to apply for conditional use permits. Both townships specify setbacks, with Nockamixon's standard setback of 600 feet being double the 300 foot standard setback in Collier.

The regulations in Cecil, Collier, and Nockamixon address many shared areas of concern including public safety, damage to roads and traffic congestion, noise and light pollution, and ensuring that operators are sufficiently insured and bonded. The three townships do take somewhat different approaches, or at least emphasize different aspects, in trying to address these concerns, with Nockamixon, for example, going into significantly greater technical specificity as to the characteristics of fences, masonry walls, and gates that would comply with the ordinance, while Collier includes a number of regulations to ensure that Township officials and citizens receive timely responses from operators to queries and complaints. There are also some areas that one Township's ordinance addresses that the other one does not, with Nockamixon, for example, including a number of provisions designed to mitigate the visual impacts of oil and gas development while these sorts of provisions are generally absent from Collier's and Cecil's regulations. Intriguingly, while Cecil generally has the least restrictive regulations of these three townships, it is the only one that specifies a penalty for noncompliance.

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[228] West Homestead Borough's ordinance was drafted with the assistance of the Community Environmental Legal Defense Fund, which cites its mission as "build[ing] sustainable communities by assisting people to assert their right to local self-government and the rights of nature." The organization has helped a number of local jurisdictions in Pennsylvania and in other states across the country draft similar ordinances. *See:* http://celdf.org/index.php.

To reiterate, all four of these ordinances would run afoul of the provisions enacted by the Pennsylvania Legislature as part of Act 13. Residents and local jurisdictions across the state await the State Supreme Court's ruling on the constitutionality of those provisions in order to divine the lawful scope of local regulation of oil and gas development in Pennsylvania.

Colorado

Local jurisdictions in Colorado have taken a wide variety of approaches to exercising local control over aspects of oil and gas development. As described above, Colorado has arguably one of the more complex relationships between state and local control, with the state seeking to provide avenues for input from municipalities and counties through mechanisms such as the Local Government Designee program and providing an opportunity for local jurisdictions to shoulder the responsibility for inspecting oil and gas operations while simultaneously aggressively pushing back against what it views as regulatory overreach by local governments. The social and political context in which shale gas development is taking place may also be one of the more complicated ones in the country, with the state's politics (and, therefore, elected officials) moving in a more environmentally-conscious direction and oil and gas development expanding from its traditional base in the more rural, generally more Republican Western Slope with over a century of extractives development to the denser—and more urban and typically Democratic—Front Range region.[229]

This case study looks at the diverse approaches taken by three Front Range communities—the Town of Erie, Boulder County, and the City of Longmont—in grappling with the challenges presented by shale gas development in their jurisdictions.

The Town of Erie's Approach

The Town of Erie negotiated Memoranda of Understanding (MOUs) with two of the companies operating within Erie town limits, Encana and with Anadarko / Kerr-McGee. MOUs can serve as an alternative vehicle to regulation for a local jurisdiction that is trying to mitigate some of the effects of shale gas development. An MOU is voluntarily negotiated between the government entity and the operators and so, in contrast to regulation by a government entity, all parties (including industry operators) must agree on the terms of the MOU. Particularly in a context in which local jurisdictions are concerned about preemption by state regulatory authorities, MOUs—which are essentially contracts, and not exercises of regulatory authority—can be an attractive alternative to regulation.

Erie's MOUs include the following provisions for the two operators to mitigate the adverse impacts of oil and gas development on town residents:

- Maximize equipment and wellhead setbacks from occupied buildings and residences to the extent feasible and practicable, as determined by the operator;

[229] Davis, *Fracking and Sub-state Federalism: State Preemption of Local Regulatory Decisions in Colorado*.

- Prior to commencement of any new drilling or completion operations, provide notification to landowners within one-half (1/2) mile of the planned location;

- Prior to commencement of any new drilling or completion operations, provide notification about the following to the Town *for informational purposes only*: a summary of planned operations; a site plan; a plan for interim and final site reclamation and revegetation; a plan for noise, light and dust mitigation; and a traffic management plan;

- Utilize steel-rim berms around tanks and separators;

- Utilize closed-loop systems for drilling and completion operations; and

- Utilize multistage pressure separation in conjunction with a vapor recovery unit.[230]

The terms of the MOUs (which are identical) can be incorporated into the permit to drill that each of the two companies receives from the state regulatory body, the COGCC, as enforceable conditions of the permit. As such, if one of the two companies were to fail to follow the terms of its MOU, the COGCC would enforce compliance.[231]

Boulder County's Approach

Boulder County has jurisdiction to regulate land use on both public and private lands in the unincorporated areas of the county (that is, areas that have not been incorporated into a municipality).[232] In February 2012, the Boulder County Board of County Commissioners enacted a temporary moratorium on the processing of applications for oil and gas development under the County's Development Plan Review process.[233] The county's stated reasons for the moratorium include the stated desire to deliberately review the county's existing regulations, which had not been significantly revised since their passage in 1993; widespread public concern about the land use, public health, and environmental impacts of oil and gas development; the advent of new technology such as hydraulic fracturing and horizontal drilling; and the attendant accelerated pace of development of oil and gas resources in Boulder County and surrounding regions.[234]

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[230] "MOU Between Erie, CO and Kerr-McGee Oil & Gas Onshore LP," August 28, 2012, erieco.gov/DocumentCenter/View/2769; "MOU Between Erie, CO and Encana Oil & Gas (USA) Inc.," August 28, 2012, http://erieco.gov/DocumentCenter/View/2768.

[231] Town of Erie, Colorado, "Erie First Municipality in State to Adopt Best Management Practices," *Oil & Gas Operations*, accessed June 21, 2013, https://www.erieco.gov/index.aspx?NID=129.

[232] Boulder County staff, *Staff Report to Board of County Commissioners for November 13, 2012 Meeting, Including Draft Proposed Oil and Gas Development Regulations* (Boulder, Colorado: Board of County Commissioners, November 13, 2012), 5, http://www.bouldercounty.org/doc/landuse/dc120003boccstaffrec20121113.pdf.

[233] Boulder County, CO, "Boulder County Commissioners Approve Drafting New Regulations for Phased Approach to Oil and Gas Development," May 21, 2013, http://www.bouldercounty.org/apps/newsroom/templates/bc12.aspx?articleid=3595&zoneid=1".

[234] Boulder County staff, *Staff Report to Board of County Commissioners for November 13, 2012 Meeting, Including Draft Proposed Oil and Gas Development Regulations*, 3; Ben Doyle, "Recent Changes to Boulder County's Oil & Gas Regulations" (presented at the What's Working in the Gas Patch?, Denver, CO, March 8, 2013), http://www.law.du.edu/documents/rmlui/conference/powerpoints/2013/DoyleB-WhatsWorkingGasPatch.pdf.

Since enacting the initial moratorium, for a period of six months, the Board of County Commissioners has repeatedly extended the moratorium, which is now scheduled to lapse on January 1, 2015.[235] Since the moratorium has been in place, the County has revised its Comprehensive Plan to better account for anticipated oil and gas development and has twice updated its Land Use Code with new and revised regulations governing oil and gas development in unincorporated portions of the county.[236] This review of Boulder County's oil and gas regulations focuses on regulatory changes made to the County's Land Use Code.

The articulated purpose of the oil and gas regulations enacted by the County in late 2012 and early 2013 is to provide for oil and gas development in a way that accounts for current and future lands uses and that mitigates adverse impacts to public health, safety, welfare, and the environment.[237] The regulations require that any new oil and gas development and any existing developments that undergo "substantial modification" must receive a permit under the County's "development plan review" process.[238] Operators can choose to pursue either of two different tracks through the development plan review (DPR) process: a standard track and an expedited track. The expedited track is a voluntary process that operators can opt for where approval can be obtained more quickly, if the proposed oil and gas operation meets particular siting criteria and objective criteria that allow it to qualify for expedited review.[239] In addition, there are certain elements of a DPR application that are common to all applicants. These common elements will be reviewed first, followed by a review of each of the two tracks and the key differences between them.

All applicants are required to have a pre-application conference with the Boulder County Land Use Director. The pre-application conference must be held at least thirty days before the applicant can submit either an application for County development plan review or an application to the Colorado Oil and Gas Conservation Commission (COGCC) for an Application for Permit to Drill (APD).[240] The pre-application conference allows the County to inform applicants about the details of the application process, including the standard and expedited review tracks; and also allows the applicant and the Director to discuss site-specific concerns, project impacts and potential mitigation methods, coordination of the county and state permitting processes, and potential operational conflict concerns."[241] All applicants are also required to provide written

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[235] Boulder County, CO, "Boulder County Commissioners Approve Drafting New Regulations for Phased Approach to Oil and Gas Development"; Boulder County, CO, "Oil and Gas Information," *Oil and Gas Information*, accessed May 15, 2013, http://www.bouldercounty.org/dept/landuse/pages/oilgas.aspx.

[236] Boulder County, CO, "Boulder County Commissioners Approve Drafting New Regulations for Phased Approach to Oil and Gas Development."

[237] Boulder County, CO, *Resolution 2012-142, Approving Docket DC-12-0003 (Land UseCode Text Amendments Related to Regulation of Oil and Gas Operations)*, 2012, sec. 12–100, http://www.bouldercounty.org/doc/landuse/res2012142dc120003.pdf.

[238] Ibid., sec. 12–300.

[239] Boulder County, CO, *Resolution 2012-142, Approving Docket DC-12-0003 (Land UseCode Text Amendments Related to Regulation of Oil and Gas Operations)*; Boulder County staff, *Staff Report to Board of County Commissioners for November 13, 2012 Meeting, Including Draft Proposed Oil and Gas Development Regulations*.

[240] Boulder County, CO, *Resolution 2012-142, Approving Docket DC-12-0003 (Land UseCode Text Amendments Related to Regulation of Oil and Gas Operations)*, sec. 12–400 (D).

[241] Ibid.

notice to all surface owners, landowners, and residents located within a half mile of the development site.[242]

The following types of information are required to be submitted with all DPR applications:

- Proof of ownership or leasehold of mineral rights,
- Date of APD filling with the COGCC,
- Proof of provision of public notice,
- Proof of agreement to use private roads, as needed,
- Map showing all existing wells and other oil and gas operations within one mile of proposed site,
- Site plan (with various types of required information),
- Agricultural Land Mitigation Plan,
- Air Quality Plan,
- Emergency Preparedness Plan,
- Land Disturbance Mitigation Plan,
- Operations Plan,
- Transportation Plan,
- Water Quality Plan.[243]

In addition, Boulder County specifies 24 operational requirements that all oil and gas operators must follow. A number of these requirements are in line with COGCC regulations, such as requirements around flammable material and fire hazards, maximum noise standards, creation of a reclamation plan, creation of a stormwater control plan, and removal of debris.[244] In addition, Boulder County also has a number of additional operational requirements that go beyond COGCC requirements, such as provisions requiring that equipment be painted in colors designed to blend into surrounding environments, that all permanent operation equipment with engines or motors be electrified, provisions for dust suppression, creation of a lighting plan to minimize disturbance to neighbors, and provisions to minimize sediment discharges from roads and well pads.[245]

The County has also introduced a set of roadway impact fees as per the following schedule:

- Roadway deterioration impact fee: $17,300 per well
- Roadway deterioration impact fee: $700 per well pad
- Roadway safety impact fee: $4,000 per well
- Cost of project delay (poor roads) impact fee: $8,600 per well
- Cost of project delay (road safety) impact fee: $8,000 per well.[246]

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[242] Ibid., sec. 12–400 (G).

[243] Ibid., sec. 12–500.

[244] Ibid., sec. 12–800.

[245] Ibid.

[246] Boulder County, CO, *Resolution 2013-49, Approving Oil and Gas Transportation Impact Fees and Associated Amendments to the Transportation Sections of Article 12 of the Land Use Code*, 2013, http://www.bouldercounty.org/doc/landuse/res201349dc120003.pdf.

According to this schedule, a new well on a new well pad would be assessed a total of $38,600 in roadway impact fees, required to be paid prior to issuance of a development plan review construction permit.[247]

All development plan review (DPR) applicants must fulfill the requirements summarized above. In addition, applicants can choose whether to pursue an expedited track or a standard track to fulfill additional requirements.

The expedited DPR process is for operators who voluntarily choose to meet a series of objective criteria and who agree to implement effective performance technologies and practices in the planning, development, and operation of new or significantly modified oil and gas operations. This process is available for operations that meet certain well siting criteria, meet water well testing provisions, and meet air quality criteria beyond the county's granted authority in a local permitting process.[248] In exchange for meeting these standards, Boulder County expedites the permitting process and promises that the Land Use Director will process and make a decision on an application 45 days after the application is deemed to be complete.[249] In addition, in order to encourage its use, the expedited process contains fewer subjective criteria than does the standard process and does not require the development of as many impact mitigation plans as does the standard process.[250]

The following is a partial list of the standards that developments must adhere to in order to qualify for the expedited DPR permitting process:

- Siting standards for new well pads:[251]
    - Wellhead, pumping units, tanks, and treaters are at least 1000 feet from any occupied structure; are at least 500 feet from any surface water body or any domestic or commercial water or irrigation wells; are not located within a platted subdivision or a mapped townsite, a high hazard geologic area, within a floodway,

[247] Ibid.

[248] Boulder County, CO, *Resolution 2012-142, Approving Docket DC-12-0003 (Land UseCode Text Amendments Related to Regulation of Oil and Gas Operations)*, 12–600; Boulder County staff, *Staff Report to Board of County Commissioners for November 13, 2012 Meeting, Including Draft Proposed Oil and Gas Development Regulations*, 9–10.

[249] Boulder County, CO, *Resolution 2012-142, Approving Docket DC-12-0003 (Land UseCode Text Amendments Related to Regulation of Oil and Gas Operations)*, sec. 12–800 (F).

[250] Boulder County, CO, *Resolution 2012-142, Approving Docket DC-12-0003 (Land UseCode Text Amendments Related to Regulation of Oil and Gas Operations)*; Boulder County staff, *Staff Report to Board of County Commissioners for November 13, 2012 Meeting, Including Draft Proposed Oil and Gas Development Regulations*, 9–10.

[251] These standards for new oil and gas developments are presented to illustrate the types of standards that Boulder County has instituted. The County's regulations also contain standards for substantial modifications to existing oil and gas operations with regards to inclusion in the expedited DPR process, although these are not presented here.

within mapped significant natural communities, natural landmarks and areas, rare plant areas, significant riparian corridors, or critical wildlife habitat. [252]

- Air quality standards:[253]
    - All continuously operated equipment shall route natural gas and VOC vapors to capture/control devices with at least a 98% VOC destruction efficiency.
    - All flares shall be fired with natural gas, designed and operated that will ensure no visible emissions except for 5 minutes during any 2 consecutive hours, have installed automatic flame ignition system.
    - Applicant must develop and maintain a leak detection and component repair program.
    - Must use a closed-loop, pitless system for containment and recycling of all fluids.
    - Must use green completions for all wells that are completed by hydraulic fracturing.
    - Applicant must notify Land Use Department at least two (2) days prior to commencement of completion activities.
    - Gas produced during production must be captured and not flared or vented to the maximum extent possible.
    - Must use only no-bleed pneumatic controllers, where such controllers are technically available.
    - Applicant must submit annual report to the Director certifying compliance with air quality requirements and documenting any period of non-compliance, including date and duration along with a compliance plan.
- Emergency response standards:[254]
    - Not cause unreasonable risk of emergency situations.
    - Emergency Preparedness Plan
        - Updated annually or as conditions changes;

[252] Boulder County, CO, *Resolution 2012-142, Approving Docket DC-12-0003 (Land UseCode Text Amendments Related to Regulation of Oil and Gas Operations)*, sec. 12–601 (B).

[253] Ibid., sec. 12–602 (A).

[254] Ibid., sec. 12–602 (B).

        - 24-hour contact information of at least two (2) persons located in or near Boulder County;
        - As-built facilities maps;
        - Detailed information for each potential emergency situation;
        - Access and evacuations routes;
        - Provision that obligates applicant to reimburse emergency responders.
        - MSDS and notification provisions for spills;
        - Surrounding neighborhood communication plan.

- Water Quality Monitoring and Well Testing:[255]

    - Abandoned O&G well assessment

    - Water well sampling

        - Applicant will identify and offer to sample water wells located within ¼ mile of the projected track of the borehole of a proposed well;
        - Applicant shall sample two water wells on each side of project borehole for each ¼ mile section of the borehole track provided permission received from water well owners.
        - Testing shall occur prior to setting conductor casing; one (1) year, three (3) years, and six (6) years after completion. Final test performed at time of final reclamation of oil and gas location.

- Transportation:[256]

    - Applicant's Transportation Plan must ensure public safety for all modes of travel along routes to and from the site and maintain quality of life for other users, adjacent residents, and affected property owners.

    - Transportation Department may require the use of particular routes.

    - Operational and maintenance practices should maintain quality of life for other users, adjacent residents, and affected property owners.

    - Existing private roads should be used unless specific conditions clearly dictate otherwise.

    - Access roads should be build and maintained in accordance with the Boulder County Multimodal Transportation Standards.

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[255] Ibid., sec. 12–602 (C).

[256] Boulder County, CO, *Resolution 2013-49, Approving Oil and Gas Transportation Impact Fees and Associated Amendments to the Transportation Sections of Article 12 of the Land Use Code*, sec. Exhibit A.

- All applicable permits shall be obtained and all applicable fees paid before issuance of a Development Plan Review Construction Permit.

- Any physical infrastructure improvements to the County transportation system shall be made at the determination of the County Transportation Department and at the cost of the operator.

- Any damage to the county transportation system that requires immediate repairs shall be reported immediately by the operator to the Transportation Department which will make the necessary repairs at the operator's cost.

- Agricultural Land Mitigation:[257]

    - Oil and gas operations must be sited to minimize surface use as much as possible and avoid unreasonable loss of agricultural land.

- Land Disturbance Mitigation:[258]

    - Minimize pad size as much as possible.

    - Structures and surface equipment of minimal size necessary for operations.

    - Locate oil and gas operations to achieve compatibility with topography and existing vegetation.

    - Minimize cut and fill.

    - Minimize wetland disturbance.

The standard development plan review process is a goal-based criteria land use permitting process. In the standard DPR process, subjective land use criteria are used to review the impacts to resources on a unique site. The operator is required to create mitigation plans to protect land uses and the environment and to address surface impacts for each, identifying the techniques it will use to mitigate any potential impacts. For instance, rather than locating a proposed new well pursuant to specific objective criteria (1000 feet from an occupied structure, 500 feet from a water well, etc.,), the standard DPR process requires the operator to locate a well in a manner that minimizes impacts to adjacent land uses, water quality, air quality, visual and scenic resources, etc. Due to the subjective and site-specific nature of the standard DPR review process, the review process contains a significantly more extensive public review and engagement

[257] Boulder County, CO, *Resolution 2012-142, Approving Docket DC-12-0003 (Land UseCode Text Amendments Related to Regulation of Oil and Gas Operations)*, sec. 12–602 (E).

[258] Ibid., sec. 12–602 (F).

process and does not have a specific timeline within which a decision about permitting must be made.[259]

Elements of the standard DPR process that are significantly different from the expedited process include:

- Mandatory submission of the following mitigation plans (these plans are not required under the expedited process):[260]
    - Cultural and historic resources mitigation plan
    - Geologic hazard area mitigation plan
    - Natural resources mitigation plan
    - Recreational activity mitigation plan
    - Scenic attributes and rural character mitigation plan
    - Surrounding land uses mitigation plan
    - Wetlands protection plan
- Applicant must hold a neighborhood meeting with adjacent and surrounding landowners and other interested parties thirty days prior to submitting a standard application. Applicant must provide notice to County and all other individuals entitled to notice under the Article ten days prior to the meeting. The purpose of the meeting is for the applicant to provide an overview of its proposed oil and gas operation and allow those in attendance to provide input on the proposed operation including but not limited to well siting and well locations and suggested mitigation measures.[261]
- The Boulder County Board of County Commissioners will conduct a public hearing to review Standard DPR applications. The hearing will review standard application, comments submitted on the application by other agencies, the applicant, landowners, and other interested parties. The Board of County Commissioners makes decision to approve, approve with conditions, or deny application in writing with appropriate findings and reasoning to support decision as soon as practicable after public hearing.[262]

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[259] Ibid., sec. 12–700; Boulder County staff, *Staff Report to Board of County Commissioners for November 13, 2012 Meeting, Including Draft Proposed Oil and Gas Development Regulations*, 13–142–.

[260] Boulder County, CO, *Resolution 2012-142, Approving Docket DC-12-0003 (Land UseCode Text Amendments Related to Regulation of Oil and Gas Operations)*, sec. 12–701.

[261] Ibid., sec. 12–702 (A); Boulder County staff, *Staff Report to Board of County Commissioners for November 13, 2012 Meeting, Including Draft Proposed Oil and Gas Development Regulations*, 13.

[262] Boulder County, CO, *Resolution 2012-142, Approving Docket DC-12-0003 (Land UseCode Text Amendments Related to Regulation of Oil and Gas Operations)*, sec. 12–702 (E, F, G); Boulder County staff, *Staff Report to*

- Mandatory setbacks in line with Colorado state (COGCC) standards. Siting standards are specified for various categories (e.g. surrounding land uses, natural resources, recreational activities, etc.) below.

- Air quality standards:[263]

    - The following standards are shared with the expedited process:

        - All continuously operated equipment shall route natural gas and VOC vapors to capture/control devices with at least a 98% VOC destruction efficiency.
        - All flares shall be fired with natural gas, designed and operated that will ensure no visible emissions except for 5 minutes during any 2 consecutive hours, have installed automatic flame ignition system.
        - Applicant must develop and maintain a leak detection and component repair program.
        - Applicant must submit annual report to the Director certifying compliance with air quality requirements and documenting any period of non-compliance, including date and duration along with a compliance plan.

    - The following standards from the expedited process are *not included* in the standard DPR process:

        - Must use a closed-loop, pitless system for containment and recycling of all fluids.

        - Must use green completions for all wells that are completed by hydraulic fracturing.

        - Applicant must notify Land Use Department at least two (2) days prior to commencement of completion activities.

        - Gas produced during production must be captured and not flared or vented to the maximum extent possible.

        - Must use only no-bleed pneumatic controllers, where such controllers are technically available.

Board of County Commissioners for November 13, 2012 Meeting, Including Draft Proposed Oil and Gas Development Regulations, 13.

[263] Boulder County, CO, *Resolution 2012-142, Approving Docket DC-12-0003 (Land UseCode Text Amendments Related to Regulation of Oil and Gas Operations)*, sec. 12–703 (B).

- Cultural and Historic Standards:[264]
    - Oil and gas operations shall not cause significant degradation of cultural/historical/archaeological resources.
- Geologic Hazard Area[265]
    - Oil and gas operations shall not be located in geologic hazard areas, as identified in the County's Comprehensive Plan, to the maximum extent possible.
    - If operations are located in such an area, applicant must take all reasonable actions to mitigate impacts.
- Land Disturbance Standards:[266]
    - The following standards are shared with the expedited process:
        - Minimize pad size as much as possible.
        - Structures and surface equipment of minimal size necessary for operations.
        - Locate oil and gas operations to achieve compatibility with topography and existing vegetation.
        - Minimize cut and fill.
    - The following standards are included in the standard DPR process but are *not included* in the expedited DPR process:
        - Oil and gas operations shall use and share existing infrastructure to max extent possible and minimize installation of new facilities.
        - Landscape plan to include drought tolerant native species that are less desirable to wildlife. Where vegetation is used for buffering, irrigation plan is required.
        - Analysis of existing vegetation on the site to establish baseline for revegetation upon temporary and final reclamation. Analysis will include written description of species, character and density on site and summary of potential impacts as result of operation.

[264] Ibid., sec. 12–703 (C).
[265] Ibid., sec. 12–703 (E).
[266] Ibid., sec. 12–703 (F).

- Natural Resource Standards[267]

    - Oil and gas operation construction and installation shall not cause significant degradation to mapped significant natural communities, landmarks, areas, rare plant areas, signification riparian or critical wildlife areas as defined in the Comprehensive Plan or identified on site.

- Recreational Activity Standards[268]

    - Oil and gas operations shall not cause significant degradation to the quality or quantity of recreational activities in the County.

- Scenic and Rural Character Standards[269]

    - Oil and gas operations shall not cause significant degradation to the scenic attributes and rural character of the County by using the following methods:

        - Buffering from sensitive visual areas;

        - Maximize screening with native vegetation;

        - Use low profile tanks and equipment.

- Surrounding Land Use Standards[270]

    - Oil and gas operations shall be located and operated in compatibility with surrounding land uses to maximum extent possible following these site-specific characteristics:

        - Oil and gas operations shall be located as far as possible from surrounding land uses;

        - Oil and gas operations shall be sited away from prominent natural features;

        - Oil and gas operations shall be located with consideration to prevailing weather patters including wind directions;

[267] Ibid., sec. 12–703 (G).
[268] Ibid., sec. 12–703 (H).
[269] Ibid., sec. 12–703 (I).
[270] Ibid., sec. 12–703 (J).

- Water Quality Standards[271]

    - Instead of a "Water Quality Monitoring and Well Testing" requirement, as in the expedited DPR process, the standard process has a more qualitative set of water quality standards that specify that oil and gas operations shall not cause significant degradation of surface or ground waters within the County. Methods to achieve compliance with this standard include:

        - Providing the County with information provided to COGCC ensuring compliance with Rule 317(B), 910, and any other applicable COGCC rules governing water quality;

        - Comply with all COGCC rules requiring sampling of water wells and promptly provide County with all water well tests;

        - Prior to completing or fracturing a well, applicant shall identify and provide notice to all water well owners with wells located ¼ mile of projected tack of borehole;

        - Provide plans for downhole construction and installation practices, including casing and cementing design to County and describe how such practices will protect surface or drinking water aquifers.

- Wetlands Protection Standards[272]

    - Oil and gas operations shall not cause significant degradation to wetlands within County.

    - Applicant shall use appropriate mitigation measures and shall not alter historic drainage patterns and/or flow rates.

The regulations articulate Boulder County's recognition of the role of state and federal regulation of oil and gas development and the attendant limitations of local regulation:

> Boulder County recognizes that the COGCC regulates oil and gas operations and that Colorado courts have determined that a County regulation must yield to a state regulation where the application of the County regulation to the oil and gas operation would conflict with a state statute, regulation or other requirement and where the conflict results in the material impediment or destruction of the state's interest in the responsible, balanced development, production and utilization of oil and gas consistent with protection of public health, safety, and welfare, including protection of the environment and wildlife resources.[273]

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[271] Ibid., sec. 12–703 (L).

[272] Ibid., sec. 12–703 (M).

[273] Ibid., sec. 12–900 (A).

Accordingly, the County has instituted a process whereby an applicant for a DPR permit can apply for an "Operational Conflict Waiver" if the applicant believes that an aspect of County regulations causes an operational conflict with state regulations.[274] The operator's waiver request is heard by the Boulder County Board of County Commissioners and the operator can appeal the County Commissioners' decision in court.[275]

While the Boulder County Board of County Commissioners have enacted the regulations described here, they have also enacted a moratorium by which processing of all oil and gas development plan review permits is suspended until January 1, 2015.

The City of Longmont's Approach

On July 17, 2012, the Longmont City Council voted to enact an ordinance that amended the city's existing regulations on oil and gas well operations (last updated in 2000) and also voted to approve a contract and operating agreement with drilling company TOP Operating.[276] Key provisions in the enacted regulations include:

- The regulations set up two standards for drilling and operating wells: a "minimum" set of rules that largely reflect Colorado Oil and Gas Conservation Commission (the state regulatory body) regulations and a tougher "recommended" set that companies can follow if they want a permit more quickly through a fast-track/administrative review process.[277]

- Both the minimum and recommended standards ban surface drilling and facilities in residential zones (including mixed use zones that include residential components). However, an operator can apply for an operational conflict special exception if it still seeks to place a well or otherwise conduct operations in a residential zone (for example, if it cannot otherwise access minerals to which it has secured rights).[278]

- Under both the minimum and recommended standards, oil and gas waste disposal facilities, including injection wells for disposal of oil and gas exploration and production wastes, commercial disposal facilities, centralized E&P waste management facilities, and subsurface disposal facilities are classified as heavy industrial uses and are limited to applicable industrial zoning districts.[279]

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[274] Ibid., sec. 12–900 (B).

[275] Ibid.

[276] Scott Rochat, "Longmont Council Approves Oil/gas Rules 5-2," *Longmont Times-Call*, July 17, 2012, http://www.timescall.com/news/longmont-local-news/ci_21098770/longmont-council-approves-oil-gas-rules-5-2.

[277] City of Longmont, CO, *Oil and Gas Well Operations and Facilities Regulations*, 2012, http://www.ci.longmont.co.us/pwwu/oil_gas/documents/CA_20120724_125237.pdf.

[278] Ibid., sec. 2(32)(c)(iii).

[279] Ibid.

- The recommended standards create setbacks of 750 feet from occupied buildings, platted residential lots, sports play fields, and playgrounds.[280]

- The recommended standards create setbacks of 300 feet from water bodies.[281]

- The recommended standards compel the operator to comply with requirements for additional noise mitigation measures as may be directed by the city. Possible measures are specified in the regulations and include: insulation for equipment, fences and landscaping, and the construction of buildings to enclose facilities.[282]

- The recommended standards compel the operator to use closed loop storage systems (consisting of sealed storage tanks, as opposed to open pits) and prohibit the drilling or operation of any waste water or other injection or disposal wells.[283]

During the same Council meeting in which the Longmont City Council voted to approve the revised regulations, the Council also voted to approve a contract and operating agreement with drilling company TOP Operating. The agreement with TOP Operating included many of the same types of provisions that are contained in the regulations.[284] In addition, the agreement also includes agreements for specific parcels of land in which TOP agreed to consolidate multiple wells onto fewer well pads in order to reduce the footprint of its operations and an agreement to shut down a well and sell 36 acres of land near Trail Ridge Middle School (for which the City would have to pay the company $25,000 cash to shut down the well and $850,000 from future oil and gas royalties for the cost of drilling a new well site).[285]

The Colorado Oil and Gas Conservation Commission promptly filed suit against the City of Longmont over its newly-enacted regulations, claiming that many provisions were preempted by state law.[286] The COGCC's lawsuit charges that eight distinct areas of Longmont's regulations are either preempted by state regulations or beyond the city's authority, including the following:[287]

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[280] Ibid., sec. 2(32)(w).

[281] Ibid.

[282] Ibid.

[283] Ibid.

[284] Scott Rochat, "Longmont Council Approves Oil/gas Rules 5-2"; City of Longmont, CO, "Agreements with TOP Operating Regarding Oil and Gas Leases, Property Purchase and Operating Standards," July 17, 2012, http://www.ci.longmont.co.us/city_council/agendas/2012/documents/071712_11A-SupplementalInfo.pdf.

[285] Scott Rochat, "Longmont Council Approves Oil/gas Rules 5-2"; City of Longmont, CO, "Agreements with TOP Operating Regarding Oil and Gas Leases, Property Purchase and Operating Standards."

[286] Colorado Oil and Gas Conservation Commission, "Complaint for Declaratory Relief - COGCC V. City of Longmont," July 30, 2012, http://www.ci.longmont.co.us/pwwu/oil_gas/documents/ComplaintFINAL.PDF; Tony Kindelspire, "State Suit Against Longmont Would Be Uncharted Territory."

[287] Colorado Oil and Gas Conservation Commission, "Complaint for Declaratory Relief - COGCC V. City of Longmont."

- Longmont's ordinance infringes on the COGCC's authority to regulate the technical aspects of drilling by claiming that the City of Longmont can determine when the use of multi-well sites and directional drilling techniques are "possible or appropriate."[288]

- The City's setback rules are preempted.[289]

- The City's ban on operations in residential zones is preempted.[290]

At the time of writing, the Boulder County District Court had yet to rule on the COGCC's complaint.

Independent of the regulatory revisions and subsequent lawsuit described above, an advocacy organization in Longmont gathered the requisite number of signatures to place a proposed amendment to Longmont's home rule charter on the ballot as a ballot initiative. On November 6, 2012, Longmont voters approved the ballot initiative by a comfortable margin.[291] The ballot initiative amended the City's charter to prohibit the use of hydraulic fracturing (although it did not ban drilling for oil and gas outright) and prohibited the storage in open pits or disposal of wastes created in connection with the hydraulic fracturing process within the City of Longmont.[292] In response to the voter-approved charter amendment, the Colorado Oil and Gas Association (COGA), a trade association for the oil and gas industry, filed suit a second lawsuit against the City of Longmont, arguing that the ban on hydraulic fracturing is a de facto ban on oil and gas drilling and is preempted by state law and constitutes an unlawful taking of private property.[293] This lawsuit is also awaiting a judgment by the court.

Analysis of Erie's, Boulder County's, and Longmont's Approaches

The MOUs negotiated by the Town of Erie implement a number of practices to mitigate risks associated with oil and gas development that are not required by Colorado state regulations including using closed-loop drilling systems (tanks instead of storage pits) and multistage pressure separation and vapor recovery equipment (for "green completions" to minimize venting of methane and VOCs). However, the agreements only apply to two operators; as of January 23, 2013, a conversation with Erie's Mayor Pro Tem indicated that there were two additional operators active with holdings in Erie that were not subject to the terms of the MOUs.[294] In

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[288] Ibid.

[289] Ibid.

[290] Ibid.

[291] Jack Healy, "With Ban on Drilling Practice, Town Lands in Thick of Dispute," *The New York Times*, November 25, 2012, sec. U.S., http://www.nytimes.com/2012/11/26/us/with-ban-on-fracking-colorado-town-lands-in-thick-of-dispute.html; Cathy Proctor, "Fracking Ban in Colorado City Draws Lawsuit—Denver Business Journal," *Denver Business Journal*, December 17, 2012, http://www.bizjournals.com/denver/news/2012/12/17/fracking.html?page=all.

[292] City of Longmont, CO, "Resolution R-2012," August 28, 2012, http://webapp.ci.longmont.co.us/cache/2/fj0chiv1ebryifs1ftwj0bcw/20356540701201302125746O.PDF.

[293] Cathy Proctor, "Fracking Ban in Colorado City Draws Lawsuit—Denver Business Journal."

[294] Interview with Ronda Grassi, January 23, 2013.

addition, many of the provisions of the MOUs are either subject to the discretion of the operator or are informational—the MOUs do not endow the Town with the ability to define minimum setbacks, for example, or to approve the submitted plans for reclamation and revegetation; noise, light and dust mitigation; or traffic management. Mayor Pro Tem Grassi also explained that the Town had tried to include a provision about the use of "benign cocktails" (nontoxic fracturing fluids) in the MOUs but that the companies had not agreed to include such a provision.[295]

Boulder County has undertaken a long-term, deliberate process to revise its oil and gas regulations. Boulder County held almost 25 public meetings, hearings, and open houses during its regulatory review and revision process, soliciting input from members of the public, industry representatives, and from legal advisors.[296] In addition, the County consulted extensively with state regulators to determine the legal limits of local and state regulatory authority in Colorado.[297] County Commissioners Gardner and Domenico have made statements indicating their interest in "impos[ing] regulations that are the most stringent in the state" and in "adopt[ing] and enforce[ing] the most protective regulations we can," respectively.[298] The two-tier approach pursued by the County, in which operators have the option of pursuing one of two permitting tracks, seems to allow the County the flexibility to pursue an aggressive regulatory strategy by incentivizing operators to apply for permits on the "expedited" track while (arguably) remaining within the regulatory boundaries allowed to local jurisdictions by adhering more closely to state standards with the "standard" permitting track. Key differences between the expedited and standard permitting tracks include the water quality testing requirements and enhanced air quality measures contained in the expedited process. It should be noted, however, that even the standard permitting track contains a number of requirements, such as mandatory electrification of equipment, that one could argue constitute operational requirements (which the COGCC generally regulatory jurisdiction over). Boulder County's regulations do contain two separate provisions seeking to coordinate between state and local regulation (and, possibly, to head off preemption challenges from the state): the mandatory pre-application conference is meant to include a discussion of potential operational conflicts and the regulations allow operators to apply for an "Operational Conflict Waiver" if the applicant believes that an aspect of County regulations causes an operational conflict with state regulations. Ben Doyle, an Assistant County Attorney for Boulder County, has explained that the County's goal is to "harmonize" oil and gas developmental and operational activities taking place under the County's regulatory jurisdiction with the County's overall plan for land-use *and* with the state's interest in oil and gas development.[299] He proceeded to explain that, while local control over local land use impacts is critical, ultimately the results of regulation are most important.[300] Ultimately, the strength and legal validity and durability of Boulder County's regulations may not become clear until the

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[295] Ibid.

[296] Boulder County, CO, "Boulder County Commissioners Approve Drafting New Regulations for Phased Approach to Oil and Gas Development."

[297] Interview with Matt Lepore, January 23, 2013.

[298] Boulder County, CO, "Boulder County Commissioners Approve Drafting New Regulations for Phased Approach to Oil and Gas Development."

[299] Ben Doyle, "Recent Changes to Boulder County's Oil & Gas Regulations."

[300] Ibid.

County's moratorium on processing development plan review permits, currently scheduled for January 1, 2015.

The City of Longmont has taken a much more aggressive regulatory tack than has Erie and has pursued a different strategy than has Boulder County. Even before voters approved a charter amendment banning the use of hydraulic fracturing within the city, Longmont revised its regulations to eliminate drilling and production activities in residential and mixed-use zones and limited oil and gas waste disposal facilities to the city's industrial zones. Intriguingly, both Erie and Longmont negotiated MOUs with operators. While Erie's MOUs leave setbacks at the discretion of the operators and require the two signatory operators to notify landowners and the Town about the planned operations, Longmont's MOU contains mandatory setbacks, requirements to consolidate drilling sites, mandatory water testing, and various operational requirements. In addition, while Erie's MOUs only apply to the two companies that chose to sign them, Longmont included many of the same provisions contained in its MOU with TOP Operating in its regulations as provisions under the "recommended" permitting track (for expedited approval). When asked why the City opted to include those same provisions in its regulations, even when TOP Operating was the only company operating in Longmont at the time, Longmont Councilmember Sarah Levison explained that passing the ordinance was critical to securing the safety, health, and wellbeing of Longmont's citizenry in case other operators came to Longmont who chose not to sign an MOU.[301] On the other hand, while Longmont's regulations may be more aggressive than Erie's—and the Charter amendment definitely puts the City into a more aggressive posture than Boulder County has adopted—neither Erie nor Boulder County is facing two lawsuits simultaneously from the Colorado Oil and Gas Conservation Commission and the Colorado Oil and Gas Association. Longmont's Mayor, Dennis Coombs, and Councilmembers Sarah Levison and Brian Bagley all have made statements indicating that the ordinance, charter amendment, and subsequent lawsuits are all part of the process and "intergovernmental conversation" in determining how much authority local jurisdictions will have to govern themselves and make decisions regarding oil and gas development as they see fit for their own residents.[302]

Texas

Local jurisdictions in Texas have significant authority to regulate many of the local effects of oil and gas development, particularly those involving concerns such as land use, roads, traffic, noise, and odors. Texas has a long history of oil and gas development and many municipalities located over the Barnett and Eagle Ford Shales have adopted relatively detailed ordinances incorporating elements such as comprehensive permitting requirements, tiered setback requirements, detailed insurance and bonding requirements, and numerous provisions to minimize local nuisances such as excessive noise, light, and odors.

[301] Interview with Sarah Levison, interview.

[302] Ibid.; Tony Kindelspire, "State Suit Against Longmont Would Be Uncharted Territory."

This case study will explore the regulations adopted by the City of Arlington, Texas, as an example of the type of detailed regulations adopted by many Texas jurisdictions.[303] Arlington is sandwiched between Dallas and Fort Worth, in the heart of the Barnett Shale. Regulations similar to Arlington's have been enacted by cities including Colleyville, Fort Worth, Grand Prairie, Keller, and Mansfield, among many others.[304] Each of these cities has gas drilling ordinances that run between 35 and 100 pages and contain many provisions similar to one another. The City of Keller even adopted Fort Worth's Gas Well Ordinance as a "placeholder" regulation in 2009.[305] Arlington's regulations, described here, provide a window into the types of regulations adopted by many local jurisdictions in Texas.

Survey of Arlington's Regulations

Arlington has repeatedly revised its gas drilling and production ordinance after enacting it in 2003, amending it in 2005, 2007, 2008, 2010, and 2011, with the 2011 version still in effect at the time of writing.[306] These revisions reflect the rapidly evolving nature of both gas production in the Barnett Shale and the legal context. Since shale gas development was successfully pioneered in the Barnett Shale during the 1990s, the Shale has remained extraordinarily productive, producing an estimated 4.8 trillion cubic feet of natural gas.[307] A large number of wells have also been dug in urban areas such as Fort Worth and Arlington, compelling municipalities to adapt their regulations to respond to the crush of wells and their citizens' consequent concerns. In addition, the *Tex. Midstream Gas Servs., L.L.C. v. City of Grand Prairie* case, decided by a Federal District Court in 2008 and affirmed by the United State Court of Appeals for the Fifth Circuit in 2010, clarified the lines between state and local jurisdiction in Texas, causing Arlington to revise its regulations accordingly.[308]

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[303] This survey of Arlington's regulations focuses on the technical aspects of the regulations and operational requirements. Beyond these elements, the regulations also contain some procedural elements, such as provisions for modification of existing permits and an appeals process for operators, that are not included in this review.

[304] City of Colleyville, Texas, *Gas and Oil Well Drilling and Production Ordinance*, *Land Development Code, Chapter 3.1*, 2012, http://www.colleyville.com/images/content/files/communitydevelopment/ch._03.1_gas_and_oil_well_drilling_and_production_fifth_revision.pdf; City of Fort Worth, Texas, *Gas Drilling and Production Ordinance*, 2009, http://www.fortworthgov.org/uploadedFiles/Gas_Wells/090120_gas_drilling_final.pdf; City of Grand Prairie, Texas, *Gas Drilling and Production Ordinance*, *Land Development Code, Chapter 3.1*, 500, http://www.gptx.org/Modules/ShowDocument.aspx?documentid=4742; City of Keller, Texas, *Gas Drilling and Production Ordinance*, *1465*, 2009, http://www.cityofkeller.com/Modules/ShowDocument.aspx?documentid=3493; City of Mansfield, Texas, *Gas Drilling and Production Ordinance*, *114.01 et Seq*, accessed June 21, 2013, http://www.mansfield-tx.gov/efiles/Departments/Planning%20and%20Zoning/ordinances/Chapter114GasWellDrillingRegulations.pdf.

[305] City of Keller, Texas, "Gas Well Ordinance Update," accessed June 21, 2013, http://www.cityofkeller.com/index.aspx?page=887.

[306] City of Arlington, Texas, *Gas Drilling and Production Ordinance*, *11-068*, 2011, sec. Preamble, http://www.arlingtontx.gov/planning/pdf/Gas_Wells/Gas_Drilling_and_Production_Ordinance.pdf.

[307] "What Is The Barnett Shale?," *StateImpact Texas*, accessed June 30, 2013, http://stateimpact.npr.org/texas/topic/barnett-shale/.

[308] Tex. Midstream Gas Servs., L.L.C. v. City of Grand Prairie (United States District Court for the Northern District of Texas 2008); For example, Arlington's 2011 revision to its regulations removed operational regulations that were previously included in the city's regulations, such as specifications for surface casing and storage tanks. An order version of Arlington's ordinance can be found at: *Arlington, TX Ordinance No. 07-074 (old)*.

Arlington's ordinance cites as its purpose the balanced development of natural gas resources in a manner that will "protect the health, safety and general welfare of the public; minimize the potential impact to private and public property and mineral rights owners, protect the quality of the environment and encourage the orderly production of available mineral resources."[309] The city requires operators to go through a two-step permitting process, consisting of securing a Specific Use Permit (SUP) and then a gas well permit.[310] Each of these permits requires the operator to organize a neighborhood meeting as well as review by Arlington's Planning and Zoning Commission and/or the City Council.[311] Arlington's regulations specify the nature of the outreach that must be conducted for the neighborhood meetings, including notification of all property owners located within 600 feet of the drilling site and all neighborhood associations located within one mile of the drilling site.[312] Ultimately, the City Council decides on whether to approve a gas well permit, and the Council has the discretion to require additional setbacks, alternate drilling sites, and other precautions as needed before approving an application.[313]

The gas well permit application requires the submission of myriad types of information, summarized here:

- Application form containing basic background information about the applicant, contact and emergency contact info, information about the surface property and owner, and basic information about the acreage of the drill site and number of wells proposed to be drilled;

- Multiple site plans and maps which show the following types of information: proposed transportation routes and roads for equipment, water, chemicals or waste products; the location and description of all buildings within six hundred feet of the drilling zone; the location of all improvements and equipment associated with natural gas drilling and production; potentially impacted public and natural features (including impacted vegetation, creeks and other topographic features, nearby buildings and other structures; fire protection facilities; and water sources and quantities to be used, including a presumption that reclaimed water will be used for hydraulic fracturing;

- A description of public utilities required during drilling and operation;

- A copy of any Stormwater Pollution Prevention Plan required by the Environmental Protection Agency;

- Legal description of the lease property, the parcel, and the production unit and name of the geologic formation as used by the Railroad Commission of Texas;

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[309] City of Arlington, Texas, *Gas Drilling and Production Ordinance*, sec. 1.02.

[310] Ibid., sec. 5.01.

[311] City of Arlington, Texas, "Gas Well Permitting Process Instructions," accessed June 21, 2013, http://www.arlingtontx.gov/planning/pdf/Gas_Wells/Gas_Well_Permitting_Process.pdf; City of Arlington, Texas, *Gas Drilling and Production Ordinance*, sec. 5.03.

[312] City of Arlington, Texas, *Gas Drilling and Production Ordinance*, sec. 5.03.

[313] Ibid.

- A copy of the determination by the Texas Commission on Environmental Quality of the depth of useable quality ground water;

- Required insurance and security documents;

- An Emergency Action Response Plan which is consistent with the laws and regulations of various state and federal regulatory bodies and includes information about how the operator will respond to emergencies, precautionary measures taken, emergency notification procedures, availability of necessary personnel and equipment, emergency shutdown and safe restoration of operations procedures, and how a follow-up incident investigation will be conducted. The Emergency Action Response Plan is to be kept current with evolving conditions on site;

- A Hazardous Materials Management Plan;

- A copy of the pre-drilling ambient noise level report;

- A Site Restoration Plan documenting existing site conditions and detailing site restoration methods to return the site to its condition before operations commenced.[314]

Arlington requires operators to submit one-time application and inspector fees of $14,500 per well, along with sign installation fees of $100 per street frontage and annual administrative/inspection fees of $2,000 per well.[315] In addition, operators are assessed road damage fees according to the transportation routes shown in their site plans, with these fees ranging from $92 per lane mile to $2,773 per lane mile, depending on the type of roads used and whether the operator uses water that is piped in or water that is hauled in using tankers.[316]

Arlington also requires that operators provide the city with a security instrument and carry insurance. The security instrument can be in the form of cash, a bond, or an irrevocable letter of credit in the following amounts:

- $100,000 security per site if the site has 1 well,
- $150,000 security per site if the site has from 2–5 wells,
- $250,000 security per site if the site has 6 or more wells.[317]

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[314] Ibid., sec. 5.02.

[315] City of Arlington, Texas, "Gas Drilling Fee Schedule," October 1, 2010, http://www.arlingtontx.gov/planning/pdf/forms/fees_gas_drilling_1.1.10.pdf. Fees are current as of the time of writing.

[316] Ibid. Fees are current as of the time of writing.

[317] City of Arlington, Texas, *Gas Drilling and Production Ordinance*, sec. 6.01.

The City also requires operators to carry insurance of various kinds:

- Commercial general liability of no less than one million dollars per occurrence,
- Excess or umbrella liability of no less than ten million dollars,
- Environmental pollution liability of no less than five million dollars per loss, which must extend for four years beyond the expiration or suspension of the gas well permit,
- Control of well coverage of no less than five million dollars per occurrence,
- Workers compensation and employers liability at, respectively, Texas Statutory Limits and no less than five hundred thousand dollars per accident,
- Automobile liability of no less than one million dollars combined single limit per occurrence.[318]

Arlington has a host of on-site and technical regulations, a selection of which is summarized here to provide an illustration of the depth and the detailed nature of the municipality's regulations:[319]

- The city requires compliance with Texas state regulations (promulgated by the Railroad Commission) for areas such as plugging and abandoning wells, blowout prevention equipment, and waste disposal.
- All drilling and production operations must be conducted in such a manner as to minimize dust, vibration, or noxious odors, and shall be in accordance with the best accepted practices incident to drilling for the production of gas and other hydrocarbon substances in urban areas.
- All production equipment shall be painted and maintained at all times in neutral colors that are compatible with surrounding uses.
- Frac ponds (earthen pits holding fracturing fluids) must have a lining of a specified maximum permeability and must have shrubs and street trees planted around them in accordance with their distance from a right of way or protected use.
- Setback of 300 feet from any building for venting or burning of gases, with required screening and a 72-hour public notice period before any flaring activity begins.
- To the extent practicable, and taking into account safety considerations, site lighting shall be directed downward and internally so as to avoid glare on public roads and adjacent dwellings and buildings within three hundred (300) feet.

[318] Ibid.

[319] Ibid., sec. 7.01.

- Minimum standards for private roads, including width, overhead clearance, and surface materials.

- No salt water disposal wells are allowed within city limits and the design and location of saltwater disposal lines much be approved by city personnel.

- Security requirements, including cameras and security personnel on site.

- Signage requirements.

- Standards for storage tanks, including detailed regulations for secondary containment systems and safety and aesthetic regulations involving setbacks and the maximum height of tanks.

- Vapor recovery units required for any site that produces more than one barrel of condensate per day.

- Waste must be stored in closed-loop storage tanks.

- Wells must be setback 600 feet from protected uses (which include residences, religious institutions, various types of medical and assisted care facilities, schools, day care centers, and public parks), with a provision that this setback can be reduced to 300 feet upon a vote of 7 or 9 City Council members or with written consent of 70% of surface property owners located in the 300 foot to 600 foot zone that would be impacted by the reduced setback. Wells must also be setback between 25 and 200 feet of various features *internal* to the drilling site, such as storage tanks (25 feet) and fresh water wells (200 feet).

- Specifications for natural gas compressor stations, including those involving location, setback, noise levels, and landscaping and fencing.

- Landscaping and perimeter fencing requirements for aesthetic and public safety purposes, including specifications on the planting of street trees and the security of gates installed in the perimeter fencing.

- Limits on the transportation routes that vehicles associated with drilling and/or production can take owing to their weight or impact on local activities, including passage through school zones, near protected uses, or along high-traffic streets.

- Restrictions on work hours for certain activities, particularly high-noise activities, to daylight hours.

- Detailed instructions on restricting excess noise, including instructions on measuring ambient noise levels, submission of a noise mitigation plan, decibel limits on the amount that certain activities can exceed pre-drilling ambient noise levels during daytime and nighttime hours, restrictions on low-frequency outdoor noise levels, and requirements for performing continuous monitoring of noise levels and reporting such information to the City's Inspector.

Arlington requires that operators apply for permission to install or otherwise perform work on any pipelines that pass on, under, or across any public property (presumably, almost all pipelines would involve passage under some municipal right of way). While gas pipelines enjoy the power of eminent domain under Texas state law, Arlington's regulations claim some authority over pipelines that pass through city property such that the pipelines not interfere with existing infrastructure, restore property to the condition that it was in prior to pipeline construction, and comply with City ordinances.[320]

The City's regulations also specify requirements for maintenance of the well site and cleanup after a spill or leak and after operations have been completed. Maintenance requirements include the requirements for painting that are noted above, as well as a requirement that a hundred foot radius around wells, tanks, and separators be kept free from debris, pools of liquid, weeds, brush, trash, and other waste materials.[321] In the event of a cleanup, spill, malfunction, or well blowout, the operator is required to begin cleanup and/or well control procedures immediately and, if the operator does not, the City may contract with cleanup and well control experts, with costs borne by the operator.[322]

Arlington's regulations supplement the Railroad Commission's regulations for plugging and abandoning a well with requirements for site restoration. The regulations specify that a city Inspector must inspect and certify that all equipment has been removed and the site sufficiently remediated before the site can be considered abandoned.[323] In addition, Arlington also specifies that well casings should be cut and removed at least three feet below the surface and a permanent abandonment marker pipe installed of the required diameter and height above the surface.[324]

Finally, the regulations specify that the City has the authority to impose penalties for noncompliance with the regulations. The City's regulations specify that the operator will be given a reasonable period of time to rectify any operational deficiencies before penalties, including fines and permit suspension, are imposed.[325] The penalties specified in the ordinance are fines of either $500 per day or $2,000 per day during which the penalized violation is ongoing.[326] The lesser $500 per day amount is for offenses not involving a culpable mental state, while the greater $2,000 per day amount is for offenses in which a culpable mental state is alleged and the offense governs fire safety, zoning, or public health and sanitation, including dumping of refuse.[327] The City can also suspend or revoke a gas well permit for noncompliance

[320] Rahm, "Regulating Hydraulic Fracturing in Shale Gas Plays"; City of Arlington, Texas, *Gas Drilling and Production Ordinance*, sec. 7.01.

[321] City of Arlington, Texas, *Gas Drilling and Production Ordinance*, sec. 7.02.

[322] Ibid.

[323] Ibid., sec. 7.03.

[324] Ibid.

[325] Ibid., sec. 5.06.

[326] Ibid., sec. 10.01.

[327] Ibid.

with the terms of the permit or noncompliance with applicable federal, state, or local laws and regulations.[328]

Analysis of Arlington's Regulations

Arlington's regulations are highly detailed, albeit focused on a limited subset of areas that are under municipal, rather than state, jurisdiction. In order to secure a gas well permit, operators must first secure a Specific Use Permit (SUP) under the city's zoning provisions, and then submit a detailed application consisting of multiple site plans and maps as well as an Emergency Action Response Plan, a Hazardous Materials Management Plan, a Site Restoration Plan, and reports on the depth of usable ground water and the ambient noise level. In addition, operators must provide proof of securing sufficient insurance coverage of various sorts and must provide the City with a security instrument in case the City needs to draw down on the security to remedy harm or damage caused by the company. Furthermore, the City charges upfront application and inspector fees regardless of whether the well that is later drilled is productive or not.

Once an operator commences work, it is required to minimize local disturbances such as dust, vibration, noxious odors, light pollution, traffic and road damage, and excess sound. Collin Gregory, a Gas Well Coordinator for the City of Arlington, reports that most of the complaints from residents about gas production are about excessive noise levels.[329] Arlington has implemented detailed regulations around noise, requiring operators to assess ambient noise levels prior to beginning operations and then limiting the decibel level of the increase from their operations. Operators are required to perform continuous monitoring of noise levels, at their own expense, to minimize exceedences of permissible noise levels. Arlington's regulations also include provisions to protect health and safety, for example through requiring setbacks of equipment, infrastructure, and practices such as flaring and burning from protected uses and mandating the use of tanks instead of open pits for storage of waste materials, but many safety regulations are under the provision of the State of Texas, not a local jurisdiction such as Arlington. The City also takes steps to minimize the visual impacts of operations by mandating that equipment be painted in neutral colors, requiring landscaping and ornamental fencing, and requiring that sites be kept clean and tidy (of course, some of these provisions also help to protect public safety). In addition, the City also regulates pipelines that pass over, under, or through public property, such as streets and sidewalks, despite the fact that pipeline operators enjoy the power of eminent domain, in order to protect the use and condition of municipal infrastructure.

Given the inherently circumscribed nature of municipal authority under state law, Arlington seems to be aggressively protecting its residents' interests in those areas in which it has authority to do so, using land use mechanisms such as setbacks along with restrictions on dust, vibration, noxious odors, light pollution, traffic and road damage, and excess sound. Arlington's regulations are similar to those of a number of other municipalities in the Barnett Shale that seem to be using the regulatory purview granted to them by the State of Texas.

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[328] Ibid., sec. 5.06.

[329] Negro, "Fracking Wars: Federal, State and Local Conflicts over the Regulation of Natural Gas Activities."

Conclusion

Shale gas development presents a tricky challenge for many local jurisdictions: along with the benefits of jobs, wealth, and economic growth come a whole host of challenges ranging from risks of water overuse and contamination to hazards such as spills of toxic materials to quality of life concerns such as noise and light pollution and impacts on the character of a community. Different local jurisdictions have taken a whole host of different approaches to dealing with these challenges including using zoning and setbacks to restrict the location of development activity, implementing regulations focused on mitigating specific risks and costs, and suspending or even banning development altogether. As emphasized above, the parameters of permissible local action vary widely from state to state. Furthermore, these parameters are under active negotiation in every state surveyed (as well as others not surveyed here). The scope and nature of local regulation and efforts to control shale gas development are live issues that will, no doubt, continue to evolve.

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