

ENERGY AND THE ENVIROMENT

Fracking The Marcellus Shale

Jeffery R. Higgins, Jr.

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I. Introduction

"There's a whole ocean of oil under our feet! No one can get at it except for me," this memorable quote from the critically acclaimed film, *There Will Be Blood*, perfectly highlights the ongoing issues involving the extraction of natural gas in the Marcellus Shale.¹ The discovery of natural gas in the Marcellus Shale has the potential to be a game-changer because natural gas possesses significant advantages over other fossil fuels.² The only drawback, however, is the highly controversial process of hydraulic fracturing (fracking), which is presently the most efficient means of extracting the gas.³ The lack of federal regulations has left Marcellus Shale's states, New York, Pennsylvania, and West Virginia, with the difficult task of balancing the uncertain harms to public health and the environment against the significant economic benefits of extracting the natural gas.⁴

Regulation on the state level has not been able to keep pace with the technological development of hydraulic fracturing due to the rapid pace of the natural gas boom.⁵ Local governments have relied on a combination of common law and zoning to slow down the expansion of hydraulic fracturing. These preemptive actions by local governments often conflict with the state interest and lead to questions involving state preemption. This paper will highlight the interactions between state, local, and federal governments with the natural gas industry as they try to navigate the dynamic world of natural gas drilling. Section one of the paper will

¹ *There Will Be Blood* (Paramount Vintage & MiraMax Films 2007).

² American Natural Gas Alliance (ANGA), *Why Natural Gas?*, (Apr. 12, 2012), <http://www.anga.us/why-natural-gas>.

³ Brian J. Smith, *Fracking The Environment?: An Examination of the Effects and Regulation of Hydraulic Fracturing*, *Tex. Wesleyan L. Rev.* 129 (2011).

⁴ Emily C. Powers, *Fracking and Federalism: Support For An Adaptive Approach that Avoids the Tragedy of the Regulatory Commons*, 19 *J.L. & Pol'y* 913, 914 (2011).

⁵ Smith, *supra* note 3, at 130.

provide background into natural gas, hydraulic fracturing, and the current state of federal regulation of fracturing. Section two examines the use of zoning or local ordinances as regulatory substitutes by local municipalities. Section three highlights observations in the local municipalities' efforts to regulate hydraulic fracturing. In conclusion, Section four attempts to provide a potential framework for a federal program regarding fracturing by comparing three previous regulatory programs.

A. Why Natural Gas?

The United States (U.S.) is heavily reliant upon energy to power its economy. Thus, it should come as no surprise the link that exists between the economic success of the U.S. and cheap energy prices.⁶ Moreover, when there are disruptions in energy supply or spikes in energy prices, the nation as whole suffers economically.⁷ The Oil Crises of 1973 and 1979 have shown the power the oil supply has over economic viability of the nation. Recently, civil war in Libya—a nation that is only accountable for one percent of oil imports of the United States—raised the average price of gas to \$3.89 per gallon, and there is no question of the unstable state of the economy today.⁸

The energy consumed by the U.S. comes with a very expensive environmental price tag. The U.S. is both the world leader in the consumption of energy and the amount of greenhouse gas (GHG) emissions released.⁹ Scientific research proves that GHGs are the likely source of the highly destructive climate change that the planet is currently undergoing, and the worldwide economic boom of the past fifty years has released staggering amounts GHGs into the

⁶ Josh Lute, *LNG Terminal: Future or Folly?*, 43 Willamette L. Rev. 621 (2007).

⁷ *Id.*

⁸ Kristen Allen, *The Big Fracking Deal: Marcellus Shale—Pennsylvania's Untapped Resource*, 23 Vill. Envtl. L. J. 51, 52 (2012).

⁹ Lute, *supra* note 6, at 621.

atmosphere.¹⁰ The U.S., although initially slow to recognize the climate change problem, has implemented several programs targeted at reducing GHGs.¹¹ Moreover, the nation has begun to move towards the consensus that the U.S. should decrease carbon emissions in order to avoid a catastrophic environmental disaster, and the government has become more aggressive in the search for alternative energy sources.¹²

T. Boone Pickens once said natural gas is “cleaner, cheaper... abundant and ours,” in comparison to oil.¹³ T. Boone and many others believe that natural gas can be the solution to the U.S. energy problem. There are four major reasons why there is so much hope for the development of natural gas: (1) it is domestically owned; (2) it is abundant; (3) it is clean; and (4) it is economically beneficial.¹⁴ First, natural gas is an abundant domestically owned resource. The Energy Information Administration (EIA) estimated that the U.S. has 2,543 trillion cubic feet of natural gas.¹⁵ To put that amount in perspective, the U.S. uses about 23-25 trillion cubic feet of gas per year, thus the U.S. has enough natural gas to power the nation for years to come.¹⁶ Most of this increase in supply is due to hydraulic fracturing that allows oil companies to reach the once unreachable shale gas.¹⁷ Therefore, the production of natural gas has picked up the pace, and in 2009 and 2010, the U.S. surpassed the Russia as the world’s top

¹⁰ *Id.*

¹¹ *Id.*

¹² *Id.*

¹³ Hannah Coman, *Balancing the Need for Energy and Clean Water: The Case for Applying Strict Liability in Hydraulic Fracturing Suits*, 39 B.C. Env’tl. Aff. L. Rev. 131, 132 (2012).

¹⁴ ANGA, *supra* note 2.

¹⁵ Naturalgas.org, *How Much Gas is There?*, <http://www.naturalgas.org/overview/resources.asp>.

¹⁶ Shale we Drill? The Legal and Environmental Impacts of Extracting Natural Gas From Marcellus Shale, 22 Vill. Env’tl. L. J. 189, 192 (2010).

¹⁷ IHS Cambridge Energy Research Associates, *Fueling North America’s Energy Future: The Unconventional Natural Gas Revolution and the Carbon Agenda* 1 (2010).

natural gas producer.¹⁸ In 2000, shale gas accounted for only one percent of U.S. natural gas; today it is twenty percent.¹⁹ By 2035, shale gas is predicated to account for fifty percent of natural gas supply.²⁰

While natural gas production is on the upswing, the worldwide of supply of oil is on the decline.²¹ Analysts believe that the worldwide oil consumption is at point called Hubbert's Peak.²² The Hubbert's Peak is the point where oil production peaks and slowly declines afterwards.²³ Analysts believed that the continental U.S. reached its apex in the 1970's.²⁴ Moreover, the U.S. has used anywhere from seventy to eighty percent of its oil reserves.²⁵ The world, however, has used about fifty percent of its oil with majority of that oil being located outside the U.S.²⁶ Furthermore, there is twice as much natural gas available, as there was ever oil and half of that oil is gone.²⁷

The abundance of domestic natural gas has and will continue to have a major impact on U.S. foreign policy.²⁸ Many policymakers believe that natural gas can reduce the U.S.'s dependency on foreign oil.²⁹ Currently, the U.S. consumes an estimated 18.8 million barrels per day

¹⁸ Energy Information Administration (EIA), *The U.S. surpassed Russia as world's leading producer of dry natural gas in 2009 and 2010*, (Mar. 13, 2012), <http://www.eia.gov/todayinenergy/detail.cfm?id=5370>.

¹⁹ *Id.*

²⁰ *Id.*

²¹ *Shale we Drill?*, *supra* note 16, at 192.

²² *Id.*

²³ *Id.*

²⁴ *Id.*

²⁵ *Id.*

²⁶ *Id.*

²⁷ *Id.*

²⁸ Joseph Lazzaro, *Natural Gas: A Cure for America's Crazy Oil Addiction*, *DailyFinance.com* (May 21, 2012, 11:05 PM), <http://www.dailyfinance.com/2011/02/24/natural-gas-a-cure-for-americas-irrational-oil-addiction>.

²⁹ *Id.*

(MMbd), which places the U.S. number one in the world in oil consumption.³⁰ In 2005, foreign oil imports peaked at sixty percent of the total oil consumed, however, the present rate is at forty-five percent with over half (fifty-two percent) coming from North American sources.³¹ The Persian Gulf accounts for twenty-two percent and Africa measures in at twenty percent of total imported oil.³² Hence, it appears as if the political outcry to reduce the dependency on foreign oil is a great exaggeration.³³ The improvement in efficiency, changes in consumer behavior, and natural gas boom, however, in the recent years has reduced the amount of oil imported.³⁴

In addition, the vast supply will provide the U.S. greater foreign policy flexibility.³⁵ Even with the reduction of oil imports, most of the world's remaining oil resides in the Middle East.³⁶ Thus, the U.S. often finds itself in situations where the nation has to balance competing—and at times conflicting—interest in the Middle East.³⁷ This often leaves the U.S. “walking on egg shells” when dealing with key oil suppliers.³⁸ A U.S. less dependent on oil does not face the pressure to make foreign policy decisions based on oil supply considerations.³⁹

Natural gas possesses significant advantages over coal and oil when it comes to environmental impacts.⁴⁰ When natural gas is burned, it emits fewer pollutants, such as nitrogen

³⁰ EIA How Dependent are we on foreign oil?, Energy In Brief (May 21, 2012, 11:44 PM), http://www.eia.gov/energy_in_brief/foreign_oil_dependence.cfm.

³¹ *Id.*

³² *Id.*

³³ *Id.*

³⁴ *Id.*

³⁵ Lazzaro, *supra* 28, note 27.

³⁶ How Much Oil is There Left, Really?, Makewealthistory.org (last visited 5/2/2012), available at <http://makewealthistory.org/2010/06/11/how-much-oil-is-there-left-really/>.

³⁷ EIA, *supra*, note 29.

³⁸ *Id.*

³⁹ *Id.*

⁴⁰ International Energy Agency (IEA), Are We Entering the Golden Age of Gas? 85, http://www.iea.org/weo/docs/weo2011/WEO2011_GoldenAgeofGasReport.pdf.

oxide and sulphur dioxide.⁴¹ For the same amount of heat produced, natural gas emits twenty percent less carbon dioxide than burning oil and forty percent less than coal.⁴² Gas also produces no waste product that requires management, such as ash. Natural gas also boosts the environmental friendliness, in regards to electricity generation, where the issue is more acute.⁴³ When producing electricity, gas uses about sixty percent less water than oil, and seventy percent less water than coal for the same electrical output.⁴⁴ As nations continue to thirst for energy to drive economic growth, the stress placed upon air and water quality increases as a result.⁴⁵ Thus, many, including Robert Hefner, have labeled natural gas the transnational energy source.⁴⁶ Proponents of natural gas believe that natural gas can be the bridge fuel until a renewable source is reliable enough to support the commercial and residential energy demands of the nation.⁴⁷

The financial benefits of natural gas are enormous, which is probably the reason why hydraulic fracturing has become unavoidable. A report conducted by Penn State reports that natural gas extraction in Pennsylvania, in 2008, yielded \$2.3 billion in total value.⁴⁸ In addition, 29,000 jobs were created and \$240 million in state and local tax revenue in 2008 was collected.⁴⁹ The numbers for 2009 increased to \$3.8 billion of total value with more than 48,000 jobs and \$400 million in tax revenue. Individuals who leased their land to oil and gas companies can stand

⁴¹ *Id.*

⁴² *Id.*

⁴³ *Id.*

⁴⁴ *Id.*

⁴⁵ *Id.*

⁴⁶ Robert A. Hefner, *The Grand Energy Transition: The Rise of Energy Gases, Sustainable Life and Growth, and the Next Great Economic Expansion* 55 (2009).

⁴⁷ *Id.*

⁴⁸ Timothy Considine ET AL., *An Emerging Giant: Prospects and Economic Impacts of Developing the Marcellus Shale Natural Gas* 5 (2009); *available at*

<http://www.alleghenyconference.org/PDFs/PELMisc/PSUStudyMarcellusShale072409.pdf>

⁴⁹ *Id.*

to gain royalties reaching about \$180,000 per year and signing bonus for only one acre of land.⁵⁰ Multiplying this economic yield by the number of acres and the financial incentive to lease one's land is obvious. These economic gains extend from state-to-state, and states are often forced to balance potential large financial gain against the environmental health of the state.

B. What is Fracking?

Although, the benefits of natural gas are evident, the method of extracting the natural gas has stirred up much controversy.⁵¹ Hydraulic fracturing is the method of using water and pressure to extract natural gas from geologic formations with low permeability.⁵² The process was first used commercially in 1949, but has only recently become a fixture in oil and gas production due the improvements through the years that has made the process more cost-effective.⁵³ Immense amounts of water, sand, and chemical additives⁵⁴—combined to form fracking fluid—are pumped into the subsurface rock formation and the pressure creates cracks (fractures) in the rock along the natural fault lines. The sand in the fracking fluid holds the fractures open, then the fracking fluid is drained, and the cracks are left open for the gas and oil to flow to the wellbore.⁵⁵ These wellbore can extend as far down as 12,000 and can extend as far as 4,500 feet from the well site.⁵⁶ Moreover, the specific process of fracturing depends on the type of formation, the

⁵⁰ Powers, *supra* note 4, at 927.

⁵¹ Hannah Wiseman, Untested Waters: The Rise of Hydraulic Fracturing in Oil and Gas Production and the Need to Revisit Regulation, *FORDHAM ENVTL. L. REV.* 115 (2009).

⁵² Coman, *supra* note 13, at 134.

⁵³ Smith, *supra* note 3, at 130; Wiseman, *supra* note 45, at 121.

⁵⁴ Smith, *supra* note 3, at 130.

⁵⁵ *Id.*

⁵⁶ Powers, *supra* note 4, at 921.

resource being extracted, and the tightness of the formation.⁵⁷ No matter the variation of fracking utilized, the controversy and environmental consequences of fracking remain present.

The controversy surrounding fracking begins with groundwater contamination, and the major source of this contamination is the composition of the hydraulic fracturing fluid used in the fracturing process.⁵⁸ The fluid is made of approximately ninety percent water, nine percent sand, and one percent chemical additives.⁵⁹ The specific chemical additives and precise amount of the additives, however, are unknown because the composition of those fluids are considered to be trade secrets, thus most companies do not disclose them nor is there a federal law that requires disclosure.⁶⁰ Some of the common chemicals found in fracking fluid are hydrochloric acid, ethylene glycol, ammonium persulfate, citric acid, potassium chloride, potassium carbonate, and isopropanol.⁶¹ Reports have also surfaced that diesel fuel, benzene, and arsenic are components of fracking fluid as well.⁶² The amount of chemical additives has the potential to be quite large because 50,000 to 5 millions of gallon of water is used during a single fracturing operation.⁶³

Due to the vast amount of the water used in the fracturing process, the production of enormous amounts of wastewater is only logical.⁶⁴ The billions of gallons of water mixed with various chemicals and sand that swell to surface after fracking is known as flow-back water.⁶⁵ Often, this flow-back water contains uranium, which is naturally present in the rock, because it is

⁵⁷ Wiseman, *supra* note 51, at 120.

⁵⁸ Smith, *supra* note 3, at 132.

⁵⁹ Coman, *supra* note 13, at 136.

⁶⁰ *Id.*

⁶¹ *Id.*

⁶² *Id.*

⁶³ *Id.*

⁶⁴ Smith, *supra* note 3, at 134.

⁶⁵ *Id.*

solubilized by the fracking fluid.⁶⁶ Reports indicate twenty to forty percent of fracking fluid remains underground and gradually leaks into the groundwater and contaminates it.⁶⁷ The flow-back water that returns to the surface is moved to a large retention pond, moved to a water treatment facility⁶⁸, or recycled by some gas companies for use in another fracking operation; however, reusing the flow-back water only intensifies the chemical state of the water.⁶⁹ The Environmental Protection Agency (EPA), moreover, reported that contaminants could enter the drinking water supply through the fractures in the rock created by the fracking process, improperly sealed abandoned wells, leaks from production wells, or fracturing fluid spills into surface water.⁷⁰ In addition, the EPA also reported that sometimes fracturing fluid is injected directly into the water supply⁷¹ and some fracking fluids are left inside the fracked formations, meaning that they could contaminate future water supply as the water table raises.⁷² Fracking fluid and flow-back water are classified as non-hazardous industrial waste, which makes an already unbearable situation even more unbearable because the classification as a non-hazardous industrial waste does not require manifesting by companies, and this prevents tracking and verification of disposal.⁷³

Around the nation, numerous communities have felt the effects of groundwater contamination. There is no doubt of the potential and real harm of the hazardous fracking fluids, even when diluted, to the general health and welfare of the local citizens near the drilling site.⁷⁴

⁶⁶ Coman, *supra* note 13, at 137.

⁶⁷ Allen, *supra* note 8, at 58.

⁶⁸ *Id.*

⁶⁹ Smith, *supra* note 3, at 138.

⁷⁰ Allen, *supra* note 8, at 60.

⁷¹ *Id.*

⁷² Wiseman, *supra* note 51, at 137.

⁷³ Smith, *supra* note 3, at 140.

⁷⁴ Wiseman, *supra* note 51, at 137.

A resident of Colorado, whose home was 3,000 feet west of a drilling site, testified at a congressional hearing in 2007 that a water well on a neighbor's property exploded and sand built up in his own water filter.⁷⁵ In addition, the witness stated that due to the water contamination, his wife suffered from burning eyes, nosebleeds, fatigue, headaches, hand numbness, bloody stools, rashes, welts, and blisters on her skin.⁷⁶ The wife then was diagnosed with chemical exposure, but the physician could not identify the chemicals, and the witness himself suffered from rectal bleeding.⁷⁷ The contaminated water's harm also extended to the plant life on his property, which all died.⁷⁸ This is just one of the many gut-wrenching stories of water contamination, as exhibited by the documentary *Gasland*.⁷⁹

The harms of hydraulic fracturing, however, do not stop at groundwater contamination. The ancillary harms range from persistent noise and vibrations from drilling injection, air pollution, and property value destruction, to social disruption.⁸⁰ The large amount of water used in the fracking process is a heavy burden on local water bodies, which result in water scarcity issues.⁸¹ Aquifer depletion, which is when more water is being removed from an aquifer at rate greater than it is being replaced, occurs often near fracking operations and is a major concern for both public and private water supplies.⁸² Subsurface interference, caused by fracking, could cause seismic disturbance and trigger earthquakes.⁸³ Finally, increased truck traffic leads to road

⁷⁵ Matt Willie, Hydraulic Fracturing and "Spotty" Regulation: Why the Federal Government Should Let States Control Unconventional Onshore Drilling, 2011 B.Y.U.L. Rev. 1743, 1759 (2011).

⁷⁶ *Id.*

⁷⁷ Wiseman, *supra* note 51, at 138.

⁷⁸ *Id.*

⁷⁹ GASLAND (2010) (A documentary highlighting the negative effects of hydraulic fracturing in town and communities across the country).

⁸⁰ Powers, *supra* note 4, at 924.

⁸¹ *Id.* at 925.

⁸² Smith, *supra* note 3, at 139.

⁸³ Powers, *supra* note 4 at 924.

deterioration, and destruction of animal habitat and local landscapes.⁸⁴ As hydraulic fracturing continues to occur, more research will shed the light on any more possible harmful effects of fracking.

C. Lack of Federal Regulation

1. Safe Drinking Water Act and the lack of regulation under the Act.

The most alarming aspect of fracking that troubles many is the “Swiss-cheese” approach of regulation that federal government has taken towards hydraulic fracturing.⁸⁵ During the 1970s and 1980s, Congress passed several laws to ensure the protection of the environment for future generations.⁸⁶ Environmental regulation in the U.S. began with the Clean Water Act in 1972.⁸⁷ The statute’s goal was to reduce the discharge of pollutants into national waters by 1985, but oil and gas exploration was exempt from the regulation under the Clean Water Act.⁸⁸ The Safe Drinking Water Act (SDWA), however, is the only federal law that regulates groundwater pollution in public water systems.⁸⁹ Enacted in 1974, the SDWA gave the EPA the power to set national standards governing the acceptable levels of water-contaminates in public water systems.⁹⁰ The statute mandates the regulation of any contaminant that adversely affects human health.⁹¹ Furthermore, the SDWA commissions states to implement regulations to protect their underground drinking water sources, as long as the state complies with the EPA standards and

⁸⁴ *Id.*

⁸⁵ Coman, *supra* note 13, at 138.

⁸⁶ Allen, *supra* note 8, at 66.

⁸⁷ *Id.* at 67.

⁸⁸ *Id.*

⁸⁹ *Id.*

⁹⁰ Angela C. Cupas, The Not-So-Safe Drinking Water Act: Why We Must Regulate Hydraulic Fracturing at the Federal Level, 33 *Wm. & Mary Envtl. L. & Pol’y Rev.* 605 (2009).

⁹¹ 42 U.S.C. § 300f (2000).

the EPA approves.⁹² The states have the primary responsibility for administering an Underground Injection Control Program, which prohibits unauthorized underground injection and requires fracturing companies to get a permit before beginning.⁹³ The SDWA granted the EPA the authority to intervene with the states' regulatory program if federal regulation is essential to protecting drinking water supplies.⁹⁴

Critics believe that the EPA has not properly used the power granted by the statute to protect drinking water, but has instead selected to create favorable regulatory schemes for the oil and gas industries.⁹⁵ When writing the SDWA, the legislature showed great deference to the expertise of the EPA by granting the EPA broad discretion in areas of environmental law and policy.⁹⁶ Instead, the EPA has engaged in circular process of assessment and half-hearted investigations.⁹⁷ The conflict between what the SWDA required and the EPA's hands-off approach towards fracking came before the Eleventh Circuit in *Legal Environmental Assistance Fund v. U.S. Environment Protection Agency* (LEAF).⁹⁸

2. Legal Environmental Assistance Fund v. U.S. Environment Protection Agency

This case involved the EPA approved Alabama's Underground Injection Control program administered by the Alabama Department of Environmental Management.⁹⁹ Alabama agency officials, however, believed that hydraulic fracturing wells fell outside the SDWA, thus were unregulated because the primary purpose of the methane fracturing process was not extraction

⁹² *Id.*

⁹³ Wiseman, *supra* note 51, at 143.

⁹⁴ Cupas, *supra* note 91, at 615.

⁹⁵ *Id.* at 611.

⁹⁶ *Id.* at 613.

⁹⁷ *Id.*

⁹⁸ *Legal Env'tl. Assistance Found., Inc. (LEAF) v. U.S. Env'tl. Prot. Agency*, 118 F.3d 1467, 1471 (11th Cir. 1997).

⁹⁹ *Id.* at 1470.

process that involved the underground “emplacement” of fluids.¹⁰⁰ Even though at the time, several of the wells fell within the spectrum of regulation under the SDWA.¹⁰¹ LEAF petitioned the EPA to withdraw the approval of the Alabama UIC due to the failure to regulate hydraulic fracturing.¹⁰² The EPA, however, denied the petition and held that hydraulic fracturing was outside the definition of underground injection.¹⁰³ LEAF took the case to the Eleventh Circuit, and the court found that the SDWA required that hydraulic fracturing be regulated under state UIC programs.¹⁰⁴ Therefore, the EPA should have withdrawn approval from the Alabama UIC.¹⁰⁵ As a result, Alabama was compelled to incorporate fracking into its UIC.¹⁰⁶

3. The 2004 EPA Hydraulic Fracturing Study

After LEAF, the EPA commenced a study to determine whether the SDWA should apply to fracking.¹⁰⁷ The study did not find a casual connection between water contamination and injecting of fracking fluid into coal bed methane wells.¹⁰⁸ Nonetheless, the methodology and impartiality of the panel has been placed in question,¹⁰⁹ and Alan Septoff, writing for the EarthWorks blog, labeled the report “a-get-out-of-enforcement-free-card” for the drilling industry.¹¹⁰ Professor Wiseman attacked the report as too general to provide sufficient data,¹¹¹ possibly based on outcome driven science,¹¹² and stated the report suffered from omitted or

¹⁰⁰ *Id.* at 1471.

¹⁰¹ *Id.*

¹⁰² *Id.* at 1470.

¹⁰³ *Id.* at 1471.

¹⁰⁴ *Id.* at 1475.

¹⁰⁵ *Id.* at 1478.

¹⁰⁶ *Id.*

¹⁰⁷ Cupas, *supra* note 91, at 144.

¹⁰⁸ Coman, *supra* note 13, at 138.

¹⁰⁹ *Id.*

¹¹⁰ Willie, *supra* note 75, at 1770.

¹¹¹ Wiseman, *supra* note 51, at 176.

¹¹² *Id.* at 170.

hidden data.¹¹³ The EPA panel reporting on fracking relied on data provided by Halliburton, Inc. and the Gas Technology Institute and included employees of these companies as panel members.¹¹⁴ Most of the report's conclusions were based on literature reviews and industry data, not fieldwork, and some were unsupported with citations.¹¹⁵ The scope of the study was limited and rather misleading because it did not focus on the effects of fracking in shale formations, but the underground injection of fluids and whether that caused drinking water contamination.¹¹⁶ A letter, written by an EPA whistle-blower, Weston Wilson, in which he described the study as “scientifically unsound and urged continued investigations through an unbiased panel, supported the claims of flawed research methods and investigation.”

The 2004 report, however, had its fair share of supporters as well. Defenders of the report suggested that the report was only Phase I of a comprehensive study, but if that was the case, the negative data concerning fracking that was uncovered should have prompted the need for an additional study.¹¹⁷ Moreover, proponents of the study also cited regional differences,¹¹⁸ previous federal regulatory failures¹¹⁹, and the cost of federal regulation¹²⁰ as support for the 2004 study. These justifications, conversely, are more supportive of the federal government leaving regulation to the states and not conducting such a limited investigation. In 2005, nevertheless, Congress officially exempted hydraulic fracturing from EPA regulation in the

¹¹³ *Id.* at 173.

¹¹⁴ *Id.*

¹¹⁵ *Id.* at 178.

¹¹⁶ *Id.* at 176 (Noted that the information (material safety data sheet) presented in the in the report was for the pure report. The report, however fails to explain how each fracking product, will act when injected in to the ground as fracking fluid nor does the report concern the recovery of such fluid); Coman, *supra* note 4, at 138.

¹¹⁷ *Id.* at 177.

¹¹⁸ Willie, *supra* note 75, at 1772-78.

¹¹⁹ *Id.* at 1777.

¹²⁰ *Id.* at 1778-80.

Energy Policy Act of 2005, often called the Halliburton Loophole.¹²¹ The Energy Policy Act of 2005 exempted fracking with the exception of diesel fuel from the definition of underground injection in Section 1421 of the SDWA.¹²² This decision by Congress has left the regulation of hydraulic fracturing completely to the states.

II. Marcellus Shale States

A shale is a highly organic rock formation that developed millions years ago as result of the vast amounts of animal and plant life settling on the bottom of the seabed.¹²³ As time passed, deposits of silt covered the organic matter, and the combination of heat, pressure, and bacteria slowly formed hydrocarbons.¹²⁴ These hydrocarbons locked in layers of sediment, which over many years developed into the shale rock formations that we know today.¹²⁵ Each shale's tiny pores have the potential to contain substantial amounts of oil and gas.¹²⁶ Up until recently, the economic viability of the natural gas in these shales was unrealized,¹²⁷ unless either the shales have natural fractures or artificial fractures created via hydraulic fracturing. As of 2011, there were over twenty identified shale formations containing natural gas, but none of the shales has earned as much attention as the Marcellus Shale.¹²⁸

¹²¹ Coman, *supra* note 13, at 139.

¹²² Cupas, *supra* note 91, at 622.

¹²³ Aaron Stemplewicz, The Known "Unknowns" of Hydraulic Fracturing: A Case For a Traditional Subsurface Trespass Regime In Pennsylvania 13 Duq. Bus. L.J. 219, 221 (2011).

¹²⁴ *Id.*

¹²⁵ *Id.* at 222.

¹²⁶ *Id.*

¹²⁷ *Id.* at 223.

¹²⁸ *Id.* at 222.

The Marcellus Shale garnered its name from the town Marcellus, New York, where the formation outcrops.¹²⁹ The formation underlies an estimated 95,000 square mile area, or in the alternative 34 million acres of land.¹³⁰ Estimates by experts, as of 2009, predicted the potential recoverable natural gas production from the Marcellus Shale could be as much as 489 trillion cubic feet.¹³¹ The states of Pennsylvania, New York, West Virginia, and Ohio are the Marcellus Shale states. Due to the lack of federal oversight of natural gas drilling, those states are left without any Federal guidance about how to navigate the uncharted waters of hydraulic fracturing. The states, enticed by the allure of the financial gain, often leave the local municipalities to deal with the regulation of hydraulic fracturing. Recently, a trend has developed in the three states of Pennsylvania, New York, and West Virginia: the local municipalities of those states have employed the use of local zoning regulations to constrain the expansion of fracturing. The zoning regulation strategy, however, conflicts with state oil and gas statutes, which leaves the state courts to decide the preemption issues. This section will explore this trend in the Marcellus Shale states of Pennsylvania, New York, and West Virginia.

A. Pennsylvania

The state of Pennsylvania has a rich history as carbon fuel producer, from oil to coal. In the late Nineteenth Century, Pennsylvania experienced a drilling boom, but at that time oil was the desired resource.¹³² When Edwin Drake struck oil in the town of Titusville in 1869, he catalyzed a shockwave of oilmen and speculators that rushed to Pennsylvania in hopes of making

¹²⁹ John M. Smith, *The Prodigal Son Returns: Oil and Gas Drillers Return to Pennsylvania with a Vengeance are Municipalities Prepared?* 49 Duq. L. Rev. 1 (2011).

¹³⁰ *Id.* at 4.

¹³¹ Considine, *supra* note 48, at 5.

¹³² Smith, *supra* note 130, at 3.

their fortunes.¹³³ By the early Twentieth Century, Pennsylvania was producing one-half of the world's oil.¹³⁴ With the oil and gas industry leaving for the oil fertile Texas and Southwest, the oil boom in Pennsylvania went with them.¹³⁵

In addition, Pennsylvania coal fueled both the Industrial Revolution and iron production¹³⁶ that drove the modernization of the nation. Pittsburgh steel mills helped Pennsylvania become one of the nation's top coal-producing states.¹³⁷ During World War I, coal production in Pennsylvania peaked at 177 million tons, which accounted for 80% of the total U.S. demand.¹³⁸ The coal industry, however, without sufficient regulation, led to pollution of Pennsylvania's streams and river ways.¹³⁹ Pennsylvania has spent close to \$500 million to mitigate the effects of the coal industry's pollution, and all of the funds came from pockets of taxpayers.¹⁴⁰

The Marcellus Shale encompasses forty-nine of Pennsylvania's sixty-seven counties. In addition, Pennsylvania watersheds supply water to more than 15 million people in the cities of Philadelphia and New York City with water.¹⁴¹ In 2005, not too soon after the first successful gas well developed with fracking technology, Pennsylvania was quickly labeled as the "nation's drilling epicenter".¹⁴² Because of Pennsylvania's significant place in the Marcellus Shale, at the

¹³³ *Id.*

¹³⁴ *Id.*

¹³⁵ *Id.* at 4.

¹³⁶ Allen, *supra* note 8, at 51.

¹³⁷ *Id.*

¹³⁸ *Id.*

¹³⁹ *Id.*

¹⁴⁰ *Id.*

¹⁴¹ Coman, *supra* note 13, at 141.

¹⁴² Allen, *supra* note 8, at 71.

onset of the natural gas boom, Pennsylvania was left alone to experiment in the regulation of natural gas drilling with other Marcellus Shale states standing on the sidelines.¹⁴³

In 1984, Pennsylvania enacted the Oil and Gas Act (Act) as the comprehensive oil and gas statute of the state. The Act, however, has not succeeded in protecting local communities or the state from the emerging natural gas industry in Pennsylvania.¹⁴⁴ The pace of the development of natural gas drilling initially caught the state off guard.¹⁴⁵ The state has attempted to update its Oil and Gas Act with 25 Pa. Code § 95.10, which sought to increase the regulation of wastewater resulting from hydraulic fracturing.¹⁴⁶ Multiple sources, however, have reported that at the state level, Pennsylvania has not done enough to regulate hydraulic fracturing¹⁴⁷ and regulators are drastically understaffed.¹⁴⁸ In 2010, 31 inspectors were responsible for the oversight of 125,000 oil and gas wells.¹⁴⁹

According to the Former Secretary of the Pennsylvania's Department of Conservation and Natural Resources, John Quigley, stated that the state is "burning the furniture to heat the house. . . . In shifting from coal towards natural gas we're trying for clearer air, but we're producing massive amounts of toxic wastewater with salts and naturally occurring radioactive

¹⁴³ *Id.*

¹⁴⁴ Smith, *supra* note 130, at note 12.

¹⁴⁵ Laura Legere, Departing DEP Secretary Says More Rules Needed for Marcellus Shale, *Scranton Times Tribune*, Jan. 16, 2010, available at <http://thetimes-tribune.com/news/departing-dep-secretary-says-more-rules-needed-for-marcellus-shale-1.1091068#ixzz1BP7moTb5> (Statement by the former Pennsylvania Department of Environmental Protection Secretary).

¹⁴⁶ Allen, *supra* note 8, at 72.

¹⁴⁷ Ian Urbina, Regulation Lax as Gas Well's Tainted Water Hits Rivers, *N.Y. Times*, Feb. 26, 2011, available at http://www.nytimes.com/2011/02/27/us/27gas.html?_r=1&pagewanted=all; Allen, *supra* note 8, at 73; Smith, *supra* note 130, at 12.

¹⁴⁸ Smith, *supra* note 130, at 12.

¹⁴⁹ *Id.*

materials.”¹⁵⁰ The New York Times reported that 1.3 billion gallons of wastewater was produced in Pennsylvania in the last three years, and most of the water—enough to cover Manhattan in three inches of water—was sent to treatment plants unequipped to remove the containments from the water.¹⁵¹ In the terms of spills, the natural gas industry is allowed to report their own spills, write their own spill response plans and manage their own clean-up efforts.¹⁵²

The lack of regulation extends to the tax treatment of the oil and gas industry. The issue of whether to impose a gas severance tax was a major issue in the 2010, election for Pennsylvania’s governor.¹⁵³ The eventual winner, Tom Corbett, labeled the gas industry as an “infant industry” that would be stifled if a gas severance tax was place upon the industry.¹⁵⁴ Former Secretary of Pennsylvania’s Department of Environmental Protection (DEP), John Hanger, believed the decision not to tax the Marcellus gas industry is a mistake.¹⁵⁵ Even with billions of dollars of foreign investment pouring in,¹⁵⁶ Pennsylvania is the only remaining state among the top fifteen gas-producing states that does not impose a tax on drilling, and Hanger believes that such a tax will not hamper the industry because it has not done so in other states that impose such a tax.¹⁵⁷ Preferential tax treatment for the natural gas industry extends to exemption from property taxes to deductions for the cost of locating gas, drilling, research and development, tools, and royalty payments, which would usually be non-deductible as capital

¹⁵⁰ Urbina, *supra* note 148.

¹⁵¹ *Id.*

¹⁵² *Id.*

¹⁵³ Allen, *supra* note 8, at 74.

¹⁵⁴ *Id.* at 77, 79.

¹⁵⁵ *Id.* at 81.

¹⁵⁶ *Id.*

¹⁵⁷ *Id.*

expenditures.¹⁵⁸ With lack of regulation at the state level, the local governments and municipalities have attempted to regulate as best they can.

Local regulation of the oil and gas industry in Pennsylvania starts with § 601.602 of the Oil and Gas Act.¹⁵⁹ This section stated, “all local ordinances and enactments purporting to regulate oil and gas well operations regulated by this act are hereby superseded.”¹⁶⁰ This provision preempted local governments from imposing “conditions, requirements, or limitations on the same features” of the Act and any local regulations that accomplished the same purposes of the Act.¹⁶¹ The features of the oil and gas production that the Act addressed include protection of water supplies, plugging of wells, permitting, well site restoration, location relative to other structures, and the use of safety devices.¹⁶² The Act did not require operators to give notice to the local municipalities about where the drilling would take place, nor did it require a driller to obtain a permit.¹⁶³ The Act, however, did not touch issues such as noise, fencing, security, traffic, and dust. Thus the Act leaves some space for municipality regulation.

In this regulatory context, local officials, in began to enact local regulations to ascertain the practical implications of the Act’s preemption. With these measures taken by local officials, cases came before the Pennsylvania Supreme Court seeking to define the parameters of preemption under the Act. On one side, the local officials believed the Act left gaps for the

¹⁵⁸ *Id.*

¹⁵⁹ 58 PA. CONS. STAT. ANN. § 601.602 (West 2010).

¹⁶⁰ *Id.*

¹⁶¹ *Id.*

¹⁶² 58 PA. CONS. STAT. ANN. §§ 601.201-.215 (West 2010).

¹⁶³ 58 PA. CONS. STAT. ANN. § 601.201 (e) (2010).

regulation by local municipalities, and on the other side, the gas industry believed the Act wholly preempted any local regulation.¹⁶⁴

Huntley & Huntley, Inc. v. Borough Council of Oakmont was the Pennsylvania Supreme Court's first venture into the issue of preemption under the Oil and Gas Act.¹⁶⁵ In Huntley, the drilling company, Huntley & Huntley, Inc. (H&H), entered into a commercial oil and gas lease with two residents of the Borough of Oakmont.¹⁶⁶ The parcels designated for drilling were located in a single-family residential zoning district, and under the municipality's zoning ordinance, drilling for natural gas was considered the extraction of minerals, which was a conditional use in a residential district.¹⁶⁷ Huntley ceased operations and applied for the conditional use permit, but it was denied because the Borough Council believed that the Act did not preempt the Borough's ordinance.¹⁶⁸ H&H brought the case to the Common Pleas Court, which affirmed the Council's decision, but the Commonwealth Court reversed the Council's decision.¹⁶⁹

The Council argued to the Supreme Court that the essence of zoning is the designation of locations where different uses of land are permitted, which are subject to the appropriate level of municipal review.¹⁷⁰ Thus, zoning does not encroach upon the technical aspects of oil and gas operations, which are providence of the Act.¹⁷¹ Moreover, the Council argued that the Act preserved the local zoning authority under the Municipalities Planning Code (MPC). The

¹⁶⁴ Smith, *supra* note 130, at 13.

¹⁶⁵ Huntley & Huntley, Inc. v. Borough Council of Oakmont, 964 A.2d 855 (Pa. 2009).

¹⁶⁶ *Id.* at 857.

¹⁶⁷ *Id.*

¹⁶⁸ *Id.* at 857-58.

¹⁶⁹ *Id.* at 859.

¹⁷⁰ *Id.* at 860.

¹⁷¹ *Id.* at 861.

Council also relied on state-preemption provisions in the Solid Waste Management Act, the Surface Mining Act, and the Non-Coal Act—which local authorities maintained the power of site selection.¹⁷²

H&H, however, contended that the Commonwealth Court was correct because the plain language of the Act clearly regulated where natural gas drilling may occur.¹⁷³ The Act explicitly limited municipalities’ authority to enact zoning ordinances that either imposed conditions on the same features of oil and gas operations or accomplished the same purposes as the Act.¹⁷⁴ Therefore, they argued that the location of natural gas wells was explicitly covered under the Act, and the zoning ordinance was preempted.¹⁷⁵

The Supreme Court ruled that the Oil and Gas Act did not preempt the zoning ordinance.¹⁷⁶ The preemption in this case was explicit; thus, the only issues were whether the zoning regulation imposed similar conditions or whether the regulation was enacted with the same purposes. First, the Court held that a well’s placement at specific location is not feature of the well because it is not a characteristic of the manner or method by which the well is created, maintained, or functioned.¹⁷⁷ Furthermore, § 602’s use of “features of oil and gas well operations regulated by this act” related to the technical aspects of well functioning and ancillary issues such as registration, bonding, and well site restoration.¹⁷⁸ Second, the Court ruled that

¹⁷² *Id.*

¹⁷³ *Id.* at 862.

¹⁷⁴ *Id.*

¹⁷⁵ *Id.*

¹⁷⁶ *Id.* at 226.

¹⁷⁷ *Id.* at 864.

¹⁷⁸ *Id.*

challenged zoning restriction did not accomplish the same purposes as the Oil and Gas Act.¹⁷⁹

According to the Court the purposes of the Oil and Gas Act were to:

- (1) 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;
- (2) Protect the safety of personnel and facilities employed in the exploration, development, storage, and production;
- (3) Protect the safety and property rights of person residing in the areas where such activity takes place; and
- (4) Protect the natural resources, environmental rights and values secured by the Pennsylvania Constitution.”¹⁸⁰

The purposes of zoning regulation, however, are both narrower and broader in scope.¹⁸¹ Zoning is narrow in a sense because it relates to matters of local concern and broader because zoning deals with all potential uses of land.¹⁸² The Court went on to express that the core governmental interest involved here is the efficient production and the utilization of the state’s natural resources.¹⁸³ The county, on the other hand, is focused on the organized development and use of land that is consistent with the local environmental and demographic interests.¹⁸⁴ Therefore, the Court ruled that the Oil and Gas Act did not preempt local zoning regulation, and thus local jurisdictions were armed with a new way to mitigate or eliminate the harsh effects of hydraulic fracturing.

¹⁷⁹ *Id.* at 865.

¹⁸⁰ 58 PA. CONS. STAT. ANN. § 601.102 (West 2010).

¹⁸¹ *Huntley*, 964 A.2d at 865.

¹⁸² *Id.*

¹⁸³ *Id.*

¹⁸⁴ *Id.*

The companion case, Range Resources-Appalachia, LLC v. Salem Township, however limited the ability of local governments to use zoning regulations to contain fracturing in their jurisdiction.¹⁸⁵ The Pennsylvania Supreme Court ruled against the Township and their local ordinance, which required a permit for all drilling activities, regulated location, design, and construction of ancillary components of fracturing operations and gave the ability to declare drilling a public nuisance.¹⁸⁶ The Court believed that Salem Township's regulations were overreaching and directly sought to regulate oil and gas production, which was preempted by the Oil and Gas Act.¹⁸⁷ In addition, Range Resources argued that local ordinances should be preempted because in order to maximize the economic benefits of the natural gas reserves. Oil producers should have to comply with a uniform regulatory scheme and not a scheme that varies from municipality to municipality.¹⁸⁸ The court found these arguments persuasive and ruled in favor of the oil and gas producers.¹⁸⁹ The gas and oil companies in Pennsylvania, however, did not stop there, but went to the legislature to provide a stronger solution to the zoning strategy employed by local municipalities.

On February 14, 2012, Governor Corbett signed into law an amendment to the Oil and Gas Act, Act 13, which served to be a game-changer in the regulation of natural gas in Pennsylvania. Section 3303, a key provision of Act 13, provides that the Commonwealth preempts and supersedes local ordinances or regulation of oil and gas operations.¹⁹⁰ The statute expressly occupies the field of natural gas regulation and gives the oil and gas companies the

¹⁸⁵ Range Resources-Appalachia, LLC v. Salem Township, 964 A.2d 869, 877 (2009),

¹⁸⁶ *Id.* at 871.

¹⁸⁷ *Id.* at 874.

¹⁸⁸ *Id.* at 874.

¹⁸⁹ *Id.* at 877.

¹⁹⁰ 58 PA. CONS. STAT. ANN. § 3303 (West 2012).

uniform regulatory scheme that they argued for in *Range Resources*. Act 13 allows for drilling operations to be conducted in all zoning districts, including residential districts.¹⁹¹ Effectively, under Act 13, oil and gas companies can drill anywhere they desire. Section 3304 also provides that local ordinances that attempt to regulate oil and gas production should allow for the reasonable development of the industry.¹⁹² The one win for local municipalities and the citizens of Pennsylvania is that the law imposed a severance tax.¹⁹³ Currently, however, a legal battle is being waged challenging the constitutionality of Act 13 under the Pennsylvania state constitution.

B. New York

New York, with an estimated ten trillion cubic feet of natural gas,¹⁹⁴ has taken the most aggressive approach in the regulation of hydraulic fracturing. In 2010, both the New York State Assembly and Senate enacted legislation that imposed a moratorium on new drilling in the Marcellus Shale in New York.¹⁹⁵ The Senate bill's sponsor, Antoine Thompson, identified the risks of fracturing fluids entering the water supply and endangering the health of citizens of the state as the justification for the moratorium on any new drilling.¹⁹⁶ Lawmakers believed that the moratorium would provide time for more research to be conducted and to allow environmental expert input into the proposed regulations.¹⁹⁷ Former Governor David Patterson, however,

¹⁹¹ 58 PA. CONS. STAT. ANN. § 3304(b)(5) (West 2012).

¹⁹² *Id.*

¹⁹³ *Id.* at § 2303(a)-(a.3).

¹⁹⁴ N. Y. St. Dep't of Env'tl. Conservation, Draft Supplement Generic Environmental Impact Statement on the Oil, Gas, And Solution Mining Regulatory Program 5-32 (2009).

¹⁹⁵ S. 8129 233rd Sess. (N.Y. 2010)

¹⁹⁶ Press Release, N.Y. State Sen. Antoine Thompson (Former), Sen. Antoine Thompson, Residents & Advocates Urge Moratorium on Gas Drilling Which Could Pollute New York's Drinking Water (Aug. 17, 2010), available at <http://www.nysenate.gov/press-release/senator-antoine-thompson-residents-advocates-urge-moratorium-gas-drilling-which-could->.

¹⁹⁷ *Id.*

vetoed the legislation and instead issued Executive Order 41, which served as a de facto moratorium because the Executive Order prohibited the State Department of Environmental Conservation (DEC) from issuing permits using “high-volume” hydraulic fracturing until the completion of a report addressing how fracking should be regulated in the state.¹⁹⁸ Current Governor Andrew Cuomo continued the policy of Executive Order 41, by issuing his own executive order and the de-facto moratorium continues to be in place today.¹⁹⁹

The presence of the de-facto moratorium has not lessen the pressure upon the local communities to either ban hydraulic fracturing or pass a local moratorium on fracking. In New York, local governments are empowered to enact or amend any local laws that are contrary to the state constitution or general laws related to their property, affairs, and government.²⁰⁰ The statute in question in New York is the Mined Land Reclamation Law (MLRL) or title 23 of the Environmental Conservation Law.²⁰¹ MLRL specifies that, “ the provisions of this article shall supersede all local laws or ordinances relating to the regulation of oil, gas and solution mining industries; but shall not supersede local government jurisdiction over local roads or local governments under the real property tax law.”²⁰² The courts that have interpreted MLRL § 23-2703 have ruled that the MLRL does not preempt local land use regulation, notwithstanding an incidental impact on mineral extraction.²⁰³ Those cases that have been before the court, however, have dealt with mining, and up until recently, there has been no case law related to the extraction of oil and gas and preemption under the MLRL.

¹⁹⁸ N.Y. Exec. Order No. 41 (Dec. 13, 2010).

¹⁹⁹ N.Y. Exec. Order No. 2. (Jan. 1, 2011), *available at* <http://www.governor.ny.gov/executiveorder/2> (The ban on fracturing in New York reached its six year anniversary July 2013).

²⁰⁰ N.Y. MUN. HOME RULE LAW § 10 (Mckinney 2011).

²⁰¹ N.Y. ENVTL. CONSERV. LAW § 23-2703.2 (Mckinney 2011).

²⁰² N.Y. ENVTL. CONSERV. LAW § 23-0303(2) (McKinney 2011).

²⁰³ *Frew Run Gravel Prods. V. Town of Carroll*, 71 N.Y.2d 126, 131 (N.Y. 1987).

In February 2012, two lower courts in New York, encountered for the first time the question of whether a local municipality may use its zoning authority to prohibit the exploration for and the production of oil and natural gas.²⁰⁴ To assess the interaction between ECL §23 and the local regulation, the courts' examined the legislative intent and history.²⁰⁵ The courts' found that ECL-23 was concerned with regulating the manner and method by which drilling occurs.²⁰⁶ Moreover, the courts' found that ECL-23-0301 must be construed in a fashion that does not intrude upon local land use regulation authority.²⁰⁷ Similar to the Pennsylvania case, Huntley, the court here believed that zoning ordinances are not the type of regulation that the Legislature foresaw as preempted by the MLRL.²⁰⁸ Thus, municipalities are fully empowered to prohibit the exploitation of natural resources if limiting drilling is a reasonable exercise of their police powers. Therefore, the court ruled that ECL-23 does not preempt local zoning ordinances.²⁰⁹ The rulings were challenged and the Appellate Division affirmed the lower court ruling's that zoning laws are not superseded by ECL-23.²¹⁰ There is no doubt, however, that these decisions will be challenged in the future because fifty percent of the New York Marcellus Shale would be off-limits because of the combination of local ordinances and the DEC's proposed rules.²¹¹

²⁰⁴ *Anschutz Exp. Corp. v. Town of Dryden*, 904 N.Y.S.2d 450, 452 (N.Y. Sup. Ct. 2012); *Cooperstown Holstein Corp. v. Town of Middlefield*, 943 N.Y.S.2d 722 (N.Y. Sup. Ct. 2012).

²⁰⁵ *Middlefield*, 943 N.Y.S.2d.

²⁰⁶ *Id.*

²⁰⁷ *Dryden*, 940 N.Y.S. at 465.

²⁰⁸ *Id.* at 462.

²⁰⁹ *Id.* at 472, 474.

²¹⁰ *Cooperstown Holstein Corp. v. Town of Middlefield*, 2013 NY Slip Op 03148, http://scholar.google.com/scholar_case?case=16467895547677015756&hl=en&as_sdt=2&as_vis=1&oi=scholar

²¹¹ Brandon H. Barnes & James Pardo, *Recent Court Decisions May Affect Hydraulic Fracturing in New York and Ohio*, National Law Review.com, available at <http://www.natlawreview.com/article/recent-court-decisions-may-affect-hydraulic-fracturing-new-york-and-ohio>.

C. West Virginia

Morgantown, West Virginia also has experimented with the use of zoning to constrain the expansion of hydraulic fracturing in West Virginia. In June 2011, Morgantown adopted an ordinance that prohibited fracturing within Morgantown and one mile outside its corporate limits.²¹² Morgantown officials believed that their authority to enact the ordinances stems from the authority to regulate nuisances, but the holders of well permits believed that state of West Virginia occupied the field of oil and gas regulation.²¹³ The West Virginia Oil and Gas Act does not expressly supersede local regulation, but the court believed that the Oil and Gas Act is part of bigger state interest in protecting the environment, and municipalities only responsibility is to support the state in this interest.²¹⁴ In West Virginia, the Supreme Court has construed state preemption in favor of the state, by only allowing a municipality to act on an issue if there is no doubt of the local municipality's authority.²¹⁵ Thus, the local ordinances were preempted because of the broad interpretation of the scope of the statute favored preemption jurisprudence.²¹⁶ After the ruling, however, the Morgantown City Council has proposed to use a zoning regulation as opposed to a broad ban on hydraulic fracturing within the city's limits in the future.²¹⁷

²¹² Pam Kasey, *Fracking Ban Overturned, Morgantown Considers Zoning Instead*, The State Journal, Feb. 22, 2012, available at <http://www.statejournal.com/story/16580946/fracking-ban-overturned-morgantown-considers-zoning-instead>.

²¹³ *Id.*

²¹⁴ *Id.*

²¹⁵ *Id.*

²¹⁶ *Id.*

²¹⁷ *Id.*

III. Analysis

As noted in the previous section, local municipalities in the Marcellus Shale states Pennsylvania, New York, and West Virginia have employed zoning regulation or local ordinances to prevent the harmful effects of hydraulic fracturing from reaching their doorsteps. Since the U.S. Supreme Court's decision in Village of Euclid v. Ambler Realty Company, courts have recognized the right of local municipalities to plan and structure the development of their communities through use of land use regulations, such as zoning.²¹⁸ The effectiveness of zoning to prevent or constrain the expansion of hydraulic fracturing depends on the preemption jurisprudence within the state. This variation from state-to-state can be witnessed among the Marcellus Shell states. New York and Pennsylvania employ an analytical approach that examines the legislative intent and the policy behind the statute and whether the proposed local regulation would frustrate either of those agendas. In comparison, West Virginia applies a straightforward approach to preemption that only allows local municipalities to act in areas where there is no doubt of the local government's authority. Moreover, even without an express preemption clause in its state's Oil and Gas Act, the West Virginia court read into the statute an implicit preemption clause. In sum, the Marcellus Shale states employing zoning as an instrument to restrict the expansion of the hydraulic fracturing exhibits local municipalities' belief that the courts can do a better job at balancing the competing interests that hydraulic fracturing presents than the legislature.

The utilization of zoning to control fracturing has its advantages, but as Pennsylvania's Act 13 has shown prohibiting the extraction of lucrative natural gas can lead to drastic consequences.

²¹⁸ Village of Euclid v. Ambler Realty Co., 272 U.S. 365 (1926).

The Pennsylvania cases, Huntley and Range Resources, provided a framework of how to regulate fracturing through land use regulations, but the rulings of both cases spurred the oil and gas producers to seek legislation to counteract such measures.

Act 13 is a result of a lack of coordination between that state and local governments in Pennsylvania. The state wants to benefit economically from hydraulic fracturing, but the local governments observing the adverse effects of fracturing do not view the economic gains as positively. The state legislature, however, is not to blame because the lack of federal regulation has left both state and local governments with limited resources to compete with the powerful oil and gas industry.

A shocking observation of the development of hydraulic fracturing is its effect on economically disadvantaged communities throughout the Marcellus Shale states. Hydraulic fracturing involves major environmental justice issues. Most of hydraulic fracturing occurs in Susquehanna County, which constantly ranks among the ten poorest (often in the top three) counties in the state of Pennsylvania.²¹⁹ Hydraulic fracturing in New York also occurs in the most depressed areas of the state.²²⁰ In those areas, money is not the only issue; education is an issue as well. Thus the decision to allow drilling is often uninformed or one of necessity. With the amount of money from leasing or selling one's land to the oil or gas company, there is great pressure to sell or lease your land before fracturing has occurred because it becomes virtually impossible to sell the property, as the value decreases tremendously.²²¹ The individuals who remain in the area are at a significant disadvantage due to a lack of access to financial and legal

²¹⁹ *Desperate Measures in Desperate Times*, Pennsylvania From Below.info, (lasted visited May, 13, 2012), <http://pafrombelow.info/content/desperate-measures-desperate-times>.

²²⁰ Powers, *supra* note 4, at 928.

²²¹ *Id.*

resources. The poorest members of our nation already breathe the worst air and drink the worst water, and hydraulic fracturing is only contributing to that problem. Thus, there is even more of a need for Federal regulation to protect the most vulnerable communities of our nation.

IV. Recommendations

A. Need for federal regulation:

1. Arguments against a federal program.

There is drastic need for federal regulation of hydraulic fracturing, but as of the writing of this paper, no federal regulation of fracturing exists. Thus the best place to start is arguments for state primacy over federal regulation of hydraulic fracturing. First, proponents believe hydraulic fracturing is a land-based activity without any apparent interstate impacts, thus outside the federal regulation authority.²²² Moreover, the techniques of hydrofracking vary based on the region and the geologic profile of the region.²²³ Hence, variations of fracturing may differ not just from state to state, but intrastate as well. Therefore, individuals in favor of state regulation believe that state officials are generally more informed about local and regional production techniques, and thus better equipped than federal lawmakers to promulgate rules for state oil and gas development.²²⁴ Opponents of Federal regulation also argue that Federal officials are free from political accountability, which may cause Federal officials to be less responsive to local concerns.²²⁵

²²² Powers, *supra* note 4, at 955.

²²³ Willie, *supra* note 75, at 1772,

²²⁴ *Id.*

²²⁵ *Id.* at 1773.

Proponents of state regulation believe the cost of federal regulation will be too costly and will bog down the development and extraction of natural gas.²²⁶ In 2005, Victor Carrillo, Chairperson of the Texas Railroad Commission, argued that stricter federal regulation would not lead to cleaner water, but only serve to impede the development of natural gas.²²⁷ To show the potential cost, supporters point to the \$4.3 million requested by the EPA to research hydraulic fracturing in the Fiscal Year 2011 as an example of the potential cost of a federal fracking program.²²⁸ They assert that this additional economic burden will not only be spread to taxpayers, but the oil and gas companies will feel the effects as well. A report prepared by the American Petroleum Institute (API) estimates that a national fracking program will increase the cost of a shale play by \$47,333 per well and non-shale plays by \$109,833 per well.²²⁹ API asserts that this increased cost coupled with additional obstacles, such as paperwork, and increased opportunity for litigation will not only raise the price of natural gas, but will also raise the price paid by the consumer for natural gas.²³⁰

2. Arguments for federal regulation of hydraulic fracturing.

Federal environmental law is not a new concept, and these laws have been around since late sixties with the enactment of series of environmental statute that expressed national policy goals concerning air, water, human health, and ecological integrity. Protecting waterways that flow between one state to another and provide drinking water to citizens of more than one state is

²²⁶ *Id.* at 1778; Powers, *supra* note 4, at 953.

²²⁷ Wille, *supra* note at 75, at 1778.

²²⁸ *Id.*

²²⁹ HIS Global Insight, Measuring the Economic and Energy Impacts of Proposals to Regulate Hydraulic Fracturing 10 (2009), available at http://www.api.org/policy/exploration/hydraulicfracturing/upload/IHS_GI_Hydraulic_Fracturing_Exec_Summary.pdf (A shale play is a geographic area which has been targeted for exploration due to favorable geo-seismic survey results, well logs or production results from a new or “wildcat well” in the area).

²³⁰ *Id.*

exactly the providence of the SDWA. The federal government has resources to implement and enforce a regulatory program. The states or local municipalities, however, do not have the work force or the resources to conduct adequate oversight or to enforce their regulations.²³¹ Energy companies have the resources to absorb the state’s penalties without missing a beat.²³² Another dangerous product of state primacy in regulation is concept of the “race to the bottom.”²³³ The theory posits that state governments will lower their environmental standards to attract industry and jobs to their state, shifting the environmental cost to others.²³⁴ Today, the “race to the bottom” is more of a threat because of the weakness of the national economy.

B. Cooperative Federalism

The federal approach to hydraulic fracturing regulation should regulate the oil and gas companies while remaining sensitive to the different situations involved in each state that employs fracking. Cooperative federalism captures the benefit of a flexible policy within a federal framework.²³⁵ Cooperative federalism programs set forth uniform federal standards—but leave state agencies with the option of implementing the federal law, supplementing it with more stringent standards, or in some circumstances, receiving an exemption from federal requirements.²³⁶ This authority allows the states to adapt federal law to local conditions and to experiment with different approaches.²³⁷ Cooperative federalism is not a new concept; the government has employed this scheme in several of legislative acts. The Telecommunications

²³¹ Powers, *supra* note 4, at 951.

²³² *Id.*

²³³ David B. Spence & Paula Murray, The Law, Economics and Politics of Federal Preemption Jurisprudence: A Quantitative Analysis 87 Cal. L. Rev. 1125, 1137 (1999).

²³⁴ *Id.*

²³⁵ Patricia E. Salkin & Ashira P. Ostrow, Cooperative Federalism and Wind: A New Framework For Achieving Sustainability 37 Hofstra L. Rev. 1049, 1084 (2009).

²³⁶ *Id.*

Act of 1996 (TCA), the Surface Mining Control and Reclamation Act (SMCRA), and the regulation of concentrated or confined animal feeding operations (CAFOs) all involve the approach of cooperative federalism.

1. The Telecommunications Act of 1996

The TCA utilized cooperative federalism to ensure that anyone had the opportunity to enter the field of intrastate and interstate telecommunication.²³⁸ The statute gives the FCC the power to preempt any state or local statute that acts as a barrier in the provision of a telecommunication service.²³⁹ The TCA, however, leaves the primary authority in the hands of the states, but places explicit substantive and procedural constraints on the decision-making process.²⁴⁰ North Carolina, for example, complements the TCA with its own statutory standards.²⁴¹ The law in North Carolina preserves local zoning authority, but also prohibits actions that prevent the expansion of wireless coverage in the state.²⁴² The Federal law sets the parameters of state review of telecommunication applications by forbidding application reviewers from evaluating the applicant's business expect in the review related to public safety, land development, or zoning issues, requiring reasonable fees and setting time limits for application review.²⁴³

2. Surface Mining Control and Reclamation Act

The SMCRA established minimum national standards for regulating surface coal mining and encouraged states to enact their own laws incorporating the minimum standards as well any

²³⁸ 47 U.S.C.A. § 253 (1996).

²³⁹ *Id.* at § 253(d).

²⁴⁰ *Id.* at § 253(b)-(d).

²⁴¹ Salkin, *supra* note 234, at 1089(citing N.C. Gen Stat. Ann. § 160-400.50 (West 2007)).

²⁴² *Id.*

²⁴³ *Id.*

more stringent, but not inconsistent standards.²⁴⁴ Under the statute, a state can either elect to implement the state or federal regulation, but not both.²⁴⁵ If a state elects to promulgate its own rules, the Secretary of the Interior must approve them, and the Secretary is required to ensure that the state program is no less stringent or effective than the federal regulation.²⁴⁶ Once the state program has been approved and the state has achieved primacy,²⁴⁷ the Secretary role becomes one of oversight and federal intervention is now an extraordinary remedy.²⁴⁸ Regulation under both the TCA and the SMCRA are examples of cooperative federalism but the regulation of CAFOs is federally dominated.

3. Concentrated Animal Feeding Operations

CAFOs are regulated under the Clean Water Act National Pollution Discharge Elimination Systems (NPDES) as a point source.²⁴⁹ CAFOs have the unique honor of being the only point source distinguished under the Clean Water Act.²⁵⁰ CAFOs gained this distinction because the EPA believed that large CAFOs produce pollutants that are extremely hazardous to both human health and environment, more specifically water sources; and the use of any water system as waste treatment system was unacceptable.²⁵¹ Thus, the federal regulation system for CAFOs dominated the sphere rather than working in cooperation with state regulation.

²⁴⁴ 30 U.S.C.A. § 1251-53 (1977).

²⁴⁵ *Id.*

²⁴⁶ *Id.*

²⁴⁷ *Ohio River Valley Env'tl. Coalition, Inc. v. Kempthorne*, 473 F.3d 94 (4th Cir. 2006).

²⁴⁸ *U.S.-Pennsylvania Federation of Sportsmen's Clubs, Inc. v. Hess*, 297 F.3d 310 (3d Cir. 2002).

²⁴⁹ Hannah Connor, *Comprehensive Regulatory Review: Concentrated Animal Feeding Operations Under the Clean Water Act From 1972 to the Present* 12 *Vt. J. Env'tl. L.* 275, 286 (2011).

²⁵⁰ *Id.* at 287.

²⁵¹ *Id.*

Regulation of CAFO's under the NPDES has gone through several revisions as a result of changes in industry practices and litigation.²⁵² The latest revision in 2008 requires CAFOs that "discharge or propose to discharge from their production area or land application area must seek coverage under a NPDES permit."²⁵³ If it is determined, based on an objective assessment, that a CAFO does not discharge or propose to discharge, the CAFO can apply for an optional certificate.²⁵⁴ The agriculture industry, which is as important as the oil industry, has still thrived even with the federal regulation of CAFOs. The biggest lesson to be learned from CAFOs is the constant revisions the regulatory programs has undergone to keep up with changes in the industry and to protect water systems from those developments.²⁵⁵

C. Potential Federal Regulation

Environmentalists, oil and gas producers, and policymakers are anticipating the release of the new EPA study concerning hydraulic fracturing. Confirmation of the negative impacts of fracturing in the new report would correct the 2004 report, which was impetus for prohibiting federal regulation. In March 2012, state officials in Wyoming asked the EPA to postpone the release of the report to give the state a chance to debunk the findings in the report that fracturing had led to contamination of ground water.²⁵⁶ There is an expectation that the new report will confirm that hydraulic fracturing is directly responsible for water source contamination and that the regulation of fracking under the SDWA should be reconsidered.

²⁵² *Id.* at 294, 304-06.

²⁵³ *Id.* at 313.

²⁵⁴ *Id.* at 316.

²⁵⁵ *Id.*

²⁵⁶ Mead Gruver, EPA Fracking Study Announcement was Delayed by Wyoming Officials Huffingtonpost.com Mar. 3, 2012, available at http://www.huffingtonpost.com/2012/05/03/epa-fracking-study-wyoming-delayed_n_1475270.html.

The optimal federal regulatory approach for hydraulic fracturing should incorporate cooperative federalism as its framework with the TCA and the SMCRA serving as models. Cooperative federalism would be more appropriate for fracturing, as opposed to complete federal occupation of the field, because of the different situations faced by each state. Federal standards should be established concerning the technical aspects of hydraulic fracturing to make it as safe as possible. Moreover, the natural gas drilling companies should be required to disclose the dangerous if not all of the chemical components of its fracturing fluid. States should have the choice of either electing the federal minimum standards or enacting their own standard, and if a state elects to promulgate its own rules, the state program should be required to receive approval from the EPA. States need the flexibility to adapt the federal standards to conditions of their individual states, and programs structured in the same manner as SMCRA would give the states an opportunity to do just that.

The development of actual regulations should be the result of a collaborative effort from members of the oil and gas industry, environmentalists, the legal community, engineers, and policymakers. Including the members of the oil and gas industry within the group will enhance the likelihood of buy-in by the industry. The public, however, should have the ability to comment on the proposed regulation, so more importantly, a reporting system for the public should be setup for potential spills and contaminations of water supplies to ensure prompt solution to any problem.

Research should continue to develop and improve current fracturing techniques. A taskforce should be commissioned to investigate improvements in natural gas extraction. As with regulation of CAFOs, the federal standards should be periodically reviewed as techniques

improve and the industry changes to ensure that water systems are always protected. There is no doubt that federal regulation of hydraulic fracturing will be a daunting task, but the cooperation of the states should ensure the success of the program.

D. Potential State Remedies

Until the federal government enacts a federal regulatory program, local governments will need to become creative in the regulation of fracturing. The common law remedies, such as nuisance, negligence, and trespass are available, but new approaches are needed to regulate fracturing. One idea is to apply strict liability case law to fracturing.²⁵⁷ Strict liability applies when the defendant is engaged in an abnormally dangerous activity and because of the dangerous nature of the activity; the defendant should reasonable expect to compensate any individual harm by the carrying on of the activity, regardless of intent. Proving carelessness in environmental contamination cases is often difficult and expensive, but strict liability relieves that burden.²⁵⁸ The downside of applying strict liability to hydraulic fracturing is that this legal standard will raise the transaction cost. The oil and gas, however, producers will take additional precautions, knowing that they are subject to strict liability. As the federal government continues to avoid regulation of fracturing, local municipalities have to develop common law remedies to combat the negative effects of fracturing.

²⁵⁷ Coman, *supra* note 13, at 154.

²⁵⁸ *Id.* at 146.

V. Conclusion

The question of to ask before the promulgation of any legislation is always whom should incur the burden of regulation. The current state of regulation of hydraulic fracturing places the burden on the states and local municipalities, which in turn shifts the burdens to the citizens, who are directly affected by fracturing. These affected citizens more often than not are the economic disadvantaged and the underrepresented because hydraulic fracturing would never take place on within the Carnegie Hill of neighborhood of Manhattan no matter the amount of natural gas trapped under its streets. States do not have the resources to regulate hydraulic fracturing, thus local governments are alone to combat the negative associated with hydraulic fracturing. Zoning regulations have been successful, but with the potential financial gain from natural gas, zoning will not be enough. Act 13 should be warning to municipalities that fail to realize that importance and benefits natural gas, but instead elect to regulate it to the brink of non-existence.

The federal government has to assist in the regulation of the natural gas drilling industry. The “look the other way” approach to hydraulic fracturing has to stop because the danger of drinking water contamination is real. Federal environmental law is not a new concept, and the statutes TCA and SMCRA provided a model of cooperative federalism that can be adapted to the regulation of hydraulic fracturing. Going forward, natural gas is the fossil fuel of the future, so the states, local municipalities, the federal government, the oil and gas industry, and environmentalist have to work together to ensure that both our nation’s energy and drinking water futures are secure.