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# Hydraulic Fracturing and “Spotty” Regulation: Why the Federal Government Should Let States Control Unconventional Onshore Drilling

## I. INTRODUCTION

Recent years have witnessed a shift of focus in the oil and gas industry. Conventional sources of energy are drying up.<sup>1</sup> Global demand is on the rise.<sup>2</sup> And offshore drilling, though potentially extremely lucrative, has proven to be a risky endeavor.<sup>3</sup> As many experts see it, solutions for developers must now come in the form of unconventional onshore extraction techniques, which allow operators to tap reserves previously thought uneconomical or even impossible to produce.<sup>4</sup> While developers have traditionally focused on cheap, vertical wells and shallow pools of oil and gas, future economic success will likely require expensive directional drilling and unconventional sources of energy.<sup>5</sup>

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1. *See, e.g.*, ENERGY PORTFOLIOS 81 (U. Aswathanarayana & Rao S. Divi eds., 2009) (“The world’s production of conventional hydrocarbons will soon decline.”).

2. *See, e.g., id.* at 82 (“[W]orld energy consumption is projected . . . to expand by 50 percent from 2005 to 2030.”).

3. The 2010 catastrophe involving BP’s *Deepwater Horizon* rig is, of course, the classic example. As stated by a national commission formed in response to the incident:

The BP *Deepwater Horizon* disaster undermined public faith in the oil and gas industry, in government regulators, and even in America’s ability to respond to crises. . . . The development of offshore energy resources contributes substantially to local economies, supporting business small and large and employing tens of thousands of workers. But any sensible energy policy must recognize the substantial risks that accompany these real benefits . . . .

NAT’L COMM’N ON THE BP DEEPWATER HORIZON OIL SPILL & OFFSHORE DRILLING, REPORT TO THE PRESIDENT, DEEP WATER: THE GULF OIL DISASTER AND THE FUTURE OF OFFSHORE DRILLING 293–95 (2011) [hereinafter BP COMM’N].

4. *See, e.g.*, ROBERT L. EVANS, FUELING OUR FUTURE: AN INTRODUCTION TO SUSTAINABLE ENERGY 65 (2007) (“There is a need . . . to develop new or ‘non-conventional’ sources of fossil fuels to supplement the traditional crude oil supplies. . . . In the near-term these ‘new’ sources . . . include the unlocking of ‘synthetic oil’ from the extensive oil sands and oil shale deposits found in many parts of the world, and the extraction of natural gas from unused coal seams, known as ‘coal-bed methane.’”).

5. *See, e.g.*, AARON M. AZELTON & ANDREW S. TEUFEL, FISHER INVESTMENTS ON ENERGY 7–8 (2009) (“[M]any believe the largest, most easily accessible conventional oil and gas deposits in the world are already tapped. As a result, companies must search for oil and gas in increasingly harsh environments like deep offshore or rugged, remote terrains. The advancement of technology has enabled firms to tap into increasingly remote areas and at

The Barnett Shale play in Texas offers an illustrative example. One of the largest natural gas discoveries in the world, the field sits directly below the city of Fort Worth, Texas, where gas extraction is only possible at a price of \$2–3 million per well.<sup>6</sup> Even then, drilling would not be economical without the use of hydraulic fracturing<sup>7</sup> (often referred to as “fracking” or “hydrofracking”), a technique used to break up source rock by injecting large amounts of water and other substances into a well at such high pressures that the rock cracks, or fractures.<sup>8</sup> The injected fluid usually contains a propping agent (normally sand or artificial ceramic beads), which “props open” the fracture and allows oil and gas to flow to the wellhead.<sup>9</sup>

Hydrofracking in the Barnett Shale is often combined with horizontal drilling, a technique that extends a well’s reach and allows operators to produce gas in urban areas where population concerns complicate the drilling process.<sup>10</sup> These methods are also employed in rural regions. In the Williston Basin of western North Dakota and eastern Montana, for example, fracking and horizontal drilling enable developers to target tight shale plays where oil could not be efficiently produced only a decade or two ago.<sup>11</sup> In fact, such well-stimulation techniques have become so efficient and so lucrative for

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greater depths. Moreover, technology and high oil and gas prices may also make it economically viable to tap unconventional hydrocarbons, which were previously too expensive to recover profitably.”).

6. Billie Ann Maxwell, Note, *Texas Tug of War: A Survey of Urban Drilling and the Issues an Operator Will Face*, 4 TEX. J. OIL GAS & ENERGY L. 337, 338, 341 (2009).

7. Coastal Oil & Gas Corp. v. Garza Energy Trust, 268 S.W.3d 1, 16 (Tex. 2008) (“[T]he Barnett Shale in north Texas . . . is entirely dependent on hydraulic fracturing.”).

8. U.S. ENVTL. PROT. AGENCY, EVALUATION OF IMPACTS TO UNDERGROUND SOURCES OF DRINKING WATER BY HYDRAULIC FACTURING OF COALBED METHANE RESERVOIRS STUDY app. A-1 (U.S. Dep’t of Energy: Hydraulic Fracturing White Paper) (2004), *available at* [http://www.epa.gov/ogwdw/uic/pdfs/cbmstudy\\_attach\\_uic\\_append\\_a\\_doe\\_whitepaper.pdf](http://www.epa.gov/ogwdw/uic/pdfs/cbmstudy_attach_uic_append_a_doe_whitepaper.pdf).

9. *Id.*

10. *See, e.g.*, Lisa Vaughn, *New Facets of Old Alternatives for Unleased Mineral Interests*, 16 TEX. WESLEYAN L. REV. 113, 114 (2009) (“[A] horizontal well’s bore site [can] be placed far from where the reservoir will actually be tapped, thus allowing operators to comply with municipal regulations and public policy issues by placing drilling activities further from homes.”).

11. *See, e.g.*, Clifford Krauss, *Drilling Boom Revives Hopes for Natural Gas*, N.Y. TIMES, Aug. 25, 2008, at A1, *available at* <http://www.nytimes.com/2008/08/25/business/25gas.htm> (explaining that much of the shale in the U.S. “has been known for more than a century to contain gas, but it was considered virtually worthless until a decade ago” because companies lacked the technologies, like fracking, needed to extract the gas economically).

oil producers in the U.S. that most of the country's oil and gas billionaires have made their fortunes investing in onshore, not offshore, drilling.<sup>12</sup>

At the same time, few onshore operations pose more concerns than hydraulic fracturing. The debate regarding its potential negative environmental effects has morphed into an outright firestorm in recent years, with drilling advocates staunchly defending the practice<sup>13</sup> but facing fierce opposition from environmental groups and even politicians.<sup>14</sup> New York Attorney General Eric Schneiderman, for example, has promised to sue to keep hydrofracking out of his state until more information is available regarding its environmental effects.<sup>15</sup>

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12. Christopher Helman, *America's Richest Oilmen*, FORBES.COM (June 17, 2010, 1:00 PM), <http://www.forbes.com/2010/06/17/koch-hamm-bass-kaiser-business-energy-oil-billionaires.html>.

13. See, e.g., INDEP. PETROL. ASS'N OF AM., HYDRAULIC FRACTURING: EFFECTS ON ENERGY SUPPLY, THE ECONOMY, AND THE ENVIRONMENT 2 (2008), available at <http://www.energyindepth.org/PDF/Hydraulic-Fracturing-3-E%27s.pdf> (“[H]ydraulic fracturing has never presented an environmental risk.”).

14. See, e.g., Jennifer Goldman, *Hydraulic Fracturing Myths and Facts*, OIL & GAS ACCOUNTABILITY PROJECT/EARTHWORKS 1 (April 23, 2009), available at [http://www.earthworksaction.org/pubs/FS\\_hydraulic-fracturing\\_myths-factsFINAL.pdf](http://www.earthworksaction.org/pubs/FS_hydraulic-fracturing_myths-factsFINAL.pdf) (“Hydraulic fracturing fluids contain toxic chemicals and are being injected into and near drinking water supplies.”).

15. Jon Campbell, *Attorney General-Elect Schneiderman Staunchly Opposes Hydraulic Fracturing*, STARGAZETTE.COM (Nov. 7, 2010, 3:55 PM), <http://www.stargazette.com/article/20101107/NEWS01/11070359/1113/Attorney-General-elect-Schneiderman-staunchly-opposes-hydraulic-fracturing>. The fracking controversy inspired David Pursell, a research analyst at an energy investment bank, to pen the following lines, borrowing from a famous scene in *A Few Good Men*:

You want the truth? You can't handle the truth! We live in a world that needs clean natural gas, and gas wells have to be frac'd by men with rigs and pumps. Who's gonna do it? Microsoft? Apple? The energy industry has greater responsibility than you could possibly fathom. You weep for your i-phone app, and you curse the frac crews. You have that luxury. You have the luxury of not knowing what we know. That fossil energy fuels economic growth. And the existence of frac'ing, while grotesque and incomprehensible to you, powers our economy. You don't want the truth because deep down in places you don't talk about on Facebook, you want them on that frac, you need them on that frac. We use words like pressure, proppant, conductivity. We use these words as the backbone of a life spent producing gas. You use them as a punchline. We have neither the time nor the inclination to explain ourselves to someone who takes a hot shower every morning using the natural gas that we provide, and then questions the manner in which we provide it. We would rather you just said thank you, and went on your way. Otherwise, we suggest you pick up a pipe wrench, and meet us on location. We have wells to frac!

John McFarland, *More on the Frac'ing Controversy*, OIL AND GAS LAWYER BLOG (Oct. 1,

Although hydraulic fracturing has been widely employed by the energy industry for more than sixty years, the last decade has witnessed an intense push for more government regulation, especially from the federal level.<sup>16</sup> This Comment will discuss the various legal issues implicated by this enormously lucrative practice, as well as evaluate the desirability of additional federal controls.

Ultimately, this Comment argues that regulatory decisions in this realm are best left to the states. While environmental concerns over hydrofracking should not be ignored, in many cases they have been overstated. More importantly, the characteristics of reserves (and therefore specific hydraulic fracturing techniques) vary from state to state, making the success of any regulatory system highly dependent on regulators' knowledge of local and regional industry realities. Each of the nation's major oil- and gas-producing states have effectively grappled with both the environmental and legal challenges posed by the practice since its inception more than half a century ago, and they have done so in a way that has not only generally protected public health but also encouraged economic growth and preserved state common law theories regarding oil and gas development and tort liability. At this late stage, adding an extra layer of federal control will not only fail to diminish fracking's environmental effects but will also create unnecessary inefficiencies that could cripple operators' ability to meet domestic energy demand.

This Comment begins, in Part II, with a background section discussing the history and regulation of hydraulic fracturing and highlighting the predominantly positive effects the practice has had on the economics of the oil and gas industry. Part III then analyzes both the legal problems and the environmental concerns created by fracking, outlining how various states have addressed them and

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2010, 3:50 PM), <http://www.oilandgaslawyerblog.com/2010/10/more-on-the-fracing-controvers.html>.

16. See Hannah Wiseman, *Untested Waters: The Rise of Hydraulic Fracturing in Oil and Gas Production and the Need to Revisit Regulation*, 20 *FORDHAM ENVTL. L. REV.* 115, 182–87 (2009) (arguing that the federal government should complete a comprehensive study of fracking's effects and consider regulating it under the Safe Drinking Water Act); Angela C. Cupas, Note, *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). Professor Wiseman's article is by far the most comprehensive review of hydraulic fracturing published by a legal scholar in recent years. This Comment is intended, at least in part, to offer counterarguments to several of her main points.

discussing the recent push for additional federal controls. Part IV argues that hydrofracking solutions should be enacted at the state and local levels, avoiding the costs and conflicts created by federal regulation of issues traditionally left to the domain of state and local governments. Finally, Part V concludes.

## II. BACKGROUND

### *A. Brief History of Hydraulic Fracturing and Its Economic Effects*

The first hydraulic fracturing job was completed in 1947 on the Klepper No. 1 well in western Kansas.<sup>17</sup> At the time, fracking fluid consisted of “a gasoline-based napalm gel,”<sup>18</sup> which obviously made the fracturing process hazardous for rig workers.<sup>19</sup> The Klepper operators’ goal was to compare fracking with acidizing,<sup>20</sup> a technique that involves injecting either hydrofluoric or hydrochloric acid (depending on the type of source rock) into the well to eat away production-impeding material.<sup>21</sup> As it turned out, acidizing was more effective on the Klepper,<sup>22</sup> but fracking eventually developed into “a standard treatment” for well stimulation in the U.S.<sup>23</sup> Since the Klepper No. 1 was drilled, U.S. developers have completed almost a million frack jobs.<sup>24</sup>

Today, fracking companies work in every major oil- and gas-producing state, often stimulating wells near metropolitan areas and in densely-populated states where oil and gas extraction has a more limited history.<sup>25</sup> And just as drilling challenges vary by location, so

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17. CARBONATE RESERVOIR CHARACTERIZATION: A GEOLOGIC – ENGINEERING ANALYSIS, PART II 296–97 (George V. Chilingarian et al. eds., 1996) [hereinafter ENGINEERING ANALYSIS].

18. *Id.* at 296.

19. EVAN K. NYER ET AL., *IN SITU* TREATMENT TECHNOLOGY 444 (2d ed. 2001).

20. ENGINEERING ANALYSIS, *supra* note 17, at 297.

21. *Oil Well Stimulation*, OILPRIMER.COM (2008), <http://www.oilprimer.com/oil-well-stimulation.html> (last visited February 21, 2011).

22. ENGINEERING ANALYSIS, *supra* note 17, at 297.

23. U.S. ENVTL. PROT. AGENCY, *supra* note 8, at A-1.

24. MARY TIEMANN, CONG. RESEARCH SERV., RL 34201, SAFE DRINKING WATER ACT (SDWA): SELECTED REGULATORY AND LEGISLATIVE ISSUES 22 (2010).

25. *Id.* Gas discoveries in formations like the Marcellus Shale (located in parts of New York, West Virginia, and Pennsylvania), for example, have spurred increased hydraulic fracturing in eastern states. As Tiemann explains, with the increase in drilling come “new concerns about possible gas development threats to underground sources of drinking water.” *Id.*

too do fracking methods. In many places, companies routinely perform multistage fracks along horizontal<sup>26</sup> wellbores.<sup>27</sup> This technique has been especially popular in Texas's prolific Barnett Shale,<sup>28</sup> as well as in the Bakken Shale of North Dakota and Montana, where experts estimate nearly four billion barrels of oil could still be recovered.<sup>29</sup>

As fracking technologies have improved, fracking's popularity—and its importance to the energy industry—has seen extraordinary growth. As Professor Wiseman describes:

In 2000, the Railroad Commission of Texas issued 273 permits for drilling in the Barnett Shale. In 2004 it issued 1,112 permits, and by 2007 the number . . . had skyrocketed to 3,653. In Montana, every oil well in the Bakken Shale formation is frac[k]ed, with more than 600 wells drilled to-date, while local newspapers report that operators in New York's Marcellus Shale may drill and frac[k] more than 1,500 wells annually.<sup>30</sup>

Of course, the growth in drilling has turned hydraulic fracturing into big business. The Independent Petroleum Association of America estimates that 90% of all U.S. wells undergo some form of fracturing, which accounts for 30% of the country's recoverable

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26. Horizontal drilling is the process of drilling vertically to a target formation and then turning the wellbore horizontally along the formation to complete the well. This is essentially the definition adopted by the Department of Energy:

Horizontal drilling is the process of drilling and completing, for production, a well that begins as a vertical or inclined linear bore which extends from the surface to a subsurface location just above the target oil or gas reservoir called the "kickoff point," then bears off on an arc to intersect the reservoir at the "entry point," and, thereafter, continues at a near-horizontal attitude tangent to the arc, to substantially or entirely remain within the reservoir until the desired bottom hole location is reached.

ENERGY INFO. ADMIN., U.S. DEP'T OF ENERGY, DRILLING SIDEWAYS – A REVIEW OF HORIZONTAL WELL TECHNOLOGY AND ITS DOMESTIC APPLICATION 1 (1993), available at [http://www.eia.doe.gov/pub/oil\\_gas/natural\\_gas/analysis\\_publications/drilling\\_sideways\\_well\\_technology/pdf/tr0565.pdf](http://www.eia.doe.gov/pub/oil_gas/natural_gas/analysis_publications/drilling_sideways_well_technology/pdf/tr0565.pdf).

27. See Rocky Seale, *Open-Hole Completion System Enables Multi-Stage Fracturing and Stimulation Along Horizontal Wellbores*, DRILLING CONTRACTOR, July/Aug. 2007, at 112.

28. See Maxwell, *supra* note 6, at 340 ("Development of natural gas in the Barnett Shale requires horizontal drilling and a technique called hydraulic fracturing.").

29. U.S. GEOLOGICAL SURVEY, ASSESSMENT OF UNDISCOVERED OIL RESOURCES IN THE DEVONIAN-MISSISSIPPIAN BAKKEN FORMATION, WILLISTON BASIN PROVINCE, MONTANA AND NORTH DAKOTA 1 (2008), available at [http://pubs.usgs.gov/fs/2008/3021/pdf/FS08-3021\\_508.pdf](http://pubs.usgs.gov/fs/2008/3021/pdf/FS08-3021_508.pdf).

30. Wiseman, *supra* note 16, at 123–24 (citations omitted).

reserves.<sup>31</sup> Experts say that, from shales alone, developers could produce nearly 850 trillion cubic feet of gas, "enough to supply about forty years' worth of natural gas, at today's consumption rate."<sup>32</sup> In order to extract it, thousands of wells will have to be drilled<sup>33</sup>—and, of course, fracked.

Developers' ability to produce oil and gas from previously ignored formations has resulted in huge economic rewards, not only for well owners and operators, but also for rig workers, local governments, and community members. Lease bonuses from Barnett Shale producers, for example, have already generated over \$100 million for the city of Fort Worth, which "expects to receive more than \$1 billion in natural gas revenues over the next 20 years."<sup>34</sup> A 2009 study predicts that operations in the area will create 70,000 jobs and add \$6.5 billion annually to the Texas economy.<sup>35</sup> School districts with mineral interests in the area have even begun using well revenues to create scholarship programs.<sup>36</sup>

Production from other shale formations has led to similar economic rewards. As a 2008 *New York Times* article described:

In the United States, real estate speculators are becoming overnight millionaires in Pennsylvania, Louisiana and Texas by buying up parcels of land and flipping them to companies that drill for natural gas. Wildcatters are ordering every rig they can get their hands on, and paying signing bonuses of \$25,000 an acre to drill below houses, schools and churches. Pipeline companies are building as fast as they can to get the new gas to market.<sup>37</sup>

Production from the Bakken has added so many jobs to North Dakota's economy that the state now has by far the country's lowest unemployment rate at 3.3 percent.<sup>38</sup> In some cities, like Williston,

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31. INDEP. PETROL. ASS'N OF AM., *supra* note 13.

32. Krauss, *supra* note 11.

33. *Id.*

34. Barnett Shale Energy Educ. Council, *Facts About Barnett Shale*, BSEEC.ORG <http://www.bseec.org/stories/BarnettShale> (last visited Sept. 20, 2011).

35. *Id.*

36. *Id.*

37. Krauss, *supra* note 11.

38. Bureau of Labor Statistics, *Local Area Unemployment Statistics: Unemployment Rates for States*, BLS.GOV, <http://www.bls.gov/web/laus/laumstrk.htm> (last modified Sept. 16, 2011). See also Monica Davey, *A State with Plenty of Jobs but Few Places to Live*, N.Y. TIMES, Apr. 21, 2010, at A1, available at <http://www.nytimes.com/2010/04/21/us/21ndakota.html> ("While the rest of the country was sinking into recession, North Dakota



the growth happened so quickly that workers could not find housing—even in motels and mobile home parks.<sup>39</sup>

All this prosperity is the result of a major change in the oil and gas industry. With easily accessible formations beginning to water out, developers are concentrating on far deeper, tighter plays where source rock is less permeable. This change, a necessary one if the United States wishes to avoid significant decreases in domestic production, is only possible because of hydraulic fracturing.<sup>40</sup>

### *B. Minimal Federal Regulation*

Regulation of hydraulic fracturing has traditionally been left to states and local governments, and, until recently, federal agencies have shied away from including it within the scope of their control.<sup>41</sup>

In 1997, the Eleventh Circuit issued an opinion in a suit brought by the Legal Environmental Assistance Foundation (LEAF), which argued that fracking should be regulated by the Environmental Protection Agency (EPA) under the Safe Drinking Water Act.<sup>42</sup> The Act requires states wishing to retain control of their underground injection control (UIC) programs to regulate any “underground injection” of fluid not allowed by permit or rule.<sup>43</sup> LEAF petitioned the EPA to withdraw its approval of an Alabama UIC program that did not regulate the injection of fracking fluids, but the EPA refused, determining that the definition of “underground injection” encompassed “only those wells whose ‘principal function’ is the underground placement of fluids.”<sup>44</sup> Since the principal function of fracked wells is gas production, the EPA decided that regulation was

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never did. . . . A rise in oil production here, especially, served as an antidote to any whiff of what the rest of the nation was witnessing.”).

39. Davey, *supra* note 38.

40. *See* Coastal Oil & Gas Corp. v. Garza Energy Trust, 268 S.W.3d 1, 29 (Tex. 2008) (Willett, J., concurring) (“We are more and more over a barrel as ‘our reserves of fossil fuels are becoming harder and more expensive to find.’ Given this supply-side slide, maximizing recovery via frac[k]ing is essential.” (quoting Bruce Write, *The Texas Portfolio*, FISCAL NOTES: SPECIAL ENERGY ISSUE, Apr. 2008, at 1, available at <http://www.window.state.tx.us/comptrol/fnotes/fnEnergy08/fnEnergy08.pdf>)).

41. Wiseman, *supra* note 16, at 146 (“[A]side from the possibility of sporadic application of federal statutes, control [of hydraulic fracturing] lies in the states.”).

42. Legal Envtl. Assistance Found., Inc. v. U.S. Envtl. Prot. Agency, 118 F.3d 1467, 1469 (11th Cir. 1997).

43. *Id.* at 1469–70 (citing 40 C.F.R. § 145.11(a)(5) (1997); 42 U.S.C. § 300h(d)(1) (1994)).

44. *Id.* at 1471.

not required.<sup>45</sup> The Eleventh Circuit disagreed, citing the dictionary definition of "injection," meaning "the act of 'forc[ing] (a fluid) into a passage, cavity, or tissue.'"<sup>46</sup> In the court's view, it did not matter that the wells were used primarily for producing gas; they "injected" fluids underground and so should be regulated under the statute.<sup>47</sup>

LEAF won the suit, but the victory was short-lived. In 2005, Congress "conclusively withdrew frac[k]ing from the realm of federal regulation" by passing the Energy Policy Act, which "exempted all frac[k]ing with the exception of diesel fuel from the definition of underground injection in Section 1421 of the Safe Drinking Water Act."<sup>48</sup>

Since Congress passed the Act, fracking has remained almost entirely state-regulated. Calls for more federal control, however, appear to have hit home with some politicians. At the direction of Congress, EPA scientists have commenced a study of hydraulic fracturing's potential effects on groundwater and drinking water.<sup>49</sup> The study's purpose "is to understand the relationship between hydraulic fracturing and drinking water resources" and will include "the full lifespan of water" in the fracking process.<sup>50</sup>

The EPA's conclusions could prompt other federal agencies to take regulatory action. The Department of Energy is already in the process of drafting consensus advice to federal regulators on best practices for shale extraction,<sup>51</sup> and Department of Interior Secretary Ken Salazar has indicated his Agency may adopt a chemical disclosure requirement for all fracking fluids used on public lands.<sup>52</sup>

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45. *Id.*

46. *Id.* at 1474.

47. *Id.* at 1475.

48. Wiseman, *supra* note 16, at 145.

49. U.S. ENVTL. PROT. AGENCY, *EPA's Draft Hydraulic Fracturing Study Plan*, <http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/index.cfm> (last visited Oct. 1, 2011).

50. *Id.*

51. See Natural Gas Subcomm. of the Sec'y of Energy Advisory Bd., Dept. of Energy, *Improving the Safety & Environmental Performance of Hydraulic Fracturing* (Sep. 2, 2011), <http://www.shalegas.energy.gov/index.html>.

52. See Matthew H. Ahrens et al., *Client Alert: Hydraulic Fracturing: Potential for Increased Federal and State Oversight*, LATHAM & WATKINS ENVTL., LAND & RES. DEP'T (Dec. 6, 2010), available at [http://www.lw.com/upload/pubContent/\\_pdf/pub3832\\_1.pdf](http://www.lw.com/upload/pubContent/_pdf/pub3832_1.pdf).

### III. LEGAL AND ENVIRONMENTAL CONCERNS AND STATE RESPONSES

#### *A. Legal Issues*

Despite the financial rewards to developers, hydrofracking does implicate several legal issues, including questions about trespass, pooling, ownership, and damages.<sup>53</sup>

##### *1. Trespass*

Although few courts have addressed the issue in full, one widely debated question is whether fracking that extends across property lines should be considered an actionable trespass. The Texas Supreme Court essentially said no in *Coastal Oil & Gas Corp. v. Garza Energy Trust*,<sup>54</sup> the seminal case on the subject.

In *Coastal Oil*, the plaintiffs, a group of mineral owners, brought suit against their lessee, Coastal, after it drilled and fracked a producing well on an adjacent property.<sup>55</sup> The well was drilled just 467 feet from the boundary of the owners' tract, and they thought it was draining gas from under their lands.<sup>56</sup> Coastal admitted that its fracking fluids and proppants probably reached beyond the boundary line, but the parties disagreed on whether the owners suffered any actual drainage.<sup>57</sup> The Texas Supreme Court held that the owners' trespass claim was barred by the rule of capture, which "gives a mineral rights owner title to the oil and gas produced from a lawful well bottomed on the property, even if the oil and gas flowed to the well from beneath another owner's tract."<sup>58</sup> Thus, the court concluded, any gas that the owners supposedly lost did not actually belong to them.<sup>59</sup>

The court went further than any other in actually addressing the fracking-trespass question, though one observer has complained that "[b]y using the rule of capture . . . the court avoided directly answering whether hydraulic fracturing resulted in a claim for

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53. Wiseman, *supra* note 16, at 146.

54. 268 S.W.3d 1 (Tex. 2008).

55. *Id.* at 6.

56. *Id.*

57. *Id.* at 7.

58. *Id.* at 13.

59. *Id.*

trespass.”<sup>60</sup> This point is arguably moot, however, since every oil- and gas-producing state adheres to the rule.<sup>61</sup> Because Texas is the standard-bearer on oil and gas issues, it seems likely that other courts facing that question will follow the *Coastal Oil* analysis.<sup>62</sup> Some states may even go a step further. States like Louisiana and California, for example, follow a “non-ownership” theory of oil and gas interests.<sup>63</sup> In such jurisdictions, no owner holds title to any oil and gas, but merely a right to drill for it.<sup>64</sup> Assuming statutory provisions have not altered the common law theory,<sup>65</sup> these states seem highly unlikely to ever uphold a trespass claim against a fracking company.<sup>66</sup>

## 2. Pooling

Hydraulic fracturing can also raise pooling issues. Pooling refers to the combining of small tracts to create a single tract large enough to obtain a well permit.<sup>67</sup> The purpose of pooling “is to prevent the physical and economic waste that accompanies the drilling of unnecessary wells.”<sup>68</sup> A leading opinion that addresses pooling issues related to fracked wells is *Hegarty v. Board of Oil, Gas & Mining*, a complicated case involving the proper allocation of production from

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60. Maxwell, *supra* note 6, at 355.

61. Patrick H. Martin, Campanile Professor of Mineral Law, Law Ctr., La. State Univ., Presentation at University of Texas School of Law, First Oil, Gas and Mineral Law “Boot Camp,” The Rule of Capture, Correlative Rights, and Principles of Conservation 1 (March 26, 2009), available at [http://www.utcle.org/eLibrary/preview.php?asset\\_file\\_id=20109](http://www.utcle.org/eLibrary/preview.php?asset_file_id=20109) (partial version).

62. See Maxwell, *supra* note 6, at 362 (“Ultimately, other states and operators will likely look to Texas for guidance . . . as Texas has always been at the forefront of oil and gas law.”).

63. Martin, *supra* note 61, at 1.

64. John G. Sprankling, *Owning the Center of the Earth*, 55 UCLA L. REV. 979, 1009 (2008). Sprankling compares this right to that of a fisherman. The fisherman may have a license to fish but does not acquire title to any particular fish until reeling it in. *Id.*

65. See *id.* at 1010 (“Today these common law rules are increasingly modified by statutes that promote governmental intervention in oil and gas production at the expense of traditional property rights.”).

66. Ironically, Texas is among the states that follow an “ownership-in-place” theory, which allows an owner to actually hold title to oil and gas and consider it part of the real property lying below the surface. *Id.* at 1009. The owner’s title is nonetheless held subject to the rule of capture, *id.*, which helps explain the court’s ruling in *Coastal Oil*. Theoretically, ownership-in-place states would be more likely than non-ownership states to uphold trespass claims, although the *Coastal Oil* opinion shows the kind of uphill battle plaintiffs will likely face in any jurisdiction.

67. PATRICK MARTIN & BRUCE M. KRAMER, WILLIAMS & MEYERS OIL AND GAS LAW § 901 (2010).

68. *Id.*

coalbed methane wells.<sup>69</sup> Coalbed methane is produced by extracting gas through cracks in coal seams, making hydraulic fracturing an integral part of the drilling process.<sup>70</sup> *Hegarty* is useful not simply as a discussion of pooling as it relates to fractured wells, but also as an illustration of the complications that can arise when federal and state oil and gas laws overlap.

In *Hegarty*, a methane gas company obtained approval from the State of Utah to drill a well on state land.<sup>71</sup> The well's spacing unit<sup>72</sup> was to be 160 acres, 65.7% of which lay under one family's property located across the boundary line of the state land.<sup>73</sup> The company tried unsuccessfully to lease the family members' mineral interests but never offered them a chance to participate in drilling the well.<sup>74</sup> The company continued to drill other wells, one of which also drained gas from under the family's property.<sup>75</sup> Before the wells were drilled, a federal unit had been formed which encompassed both the family's and the state's land.<sup>76</sup> The unit allowed mineral owners to voluntarily pool their interests,<sup>77</sup> giving each owner participating in the unit a proportionate share of production from all unit wells.<sup>78</sup> The family members had initially elected "not to commit their lands to the unit," but when they suspected that drainage was occurring they petitioned the Utah Board of Oil, Gas, and Mining for

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69. 57 P.3d 1042 (Utah 2002).

70. *Id.* at 1044.

71. *Id.* at 1045.

72. The spacing unit, or "drainage field," is the area, allocated by regulation, from which a single well can be expected to drain gas. *See id.* at 1044.

73. *Id.* at 1045.

74. *Id.*

75. *Id.* at 1046.

76. *Id.* at 1044. Although many of the lands in the unit were privately or state-owned, 30 U.S.C. § 226 allows for "tracts containing sufficient federal lands" to be developed as a federal unit. *Id.* at 1047.

77. The federal unitization and pooling statute makes participation in the unit completely voluntary on the part of nonfederal owners. Thus, "if a non-federal owner chooses not to commit his land to a federal exploratory unit, then that owner must on his own find other ways of protecting his correlative rights." *Id.* The term "correlative rights" is defined as "the opportunity of each owner in a pool to produce his just and equitable share of oil and gas in a pool without waste." *Id.* at 1048 (quoting UTAH CODE ANN. § 40-6-2(2) (West 2010)).

78. *Id.* at 1044, 1048. The share of each owner is based on the number of acres he or she owns in relation to all acreage in the unit, meaning that in federal units each owner shares in the production from all unit wells. *Id.* at 1048. The Utah pooling statute, on the other hand, gives owners "their percentage of the drainage field of an individual well," meaning it is designed to allow "for participation on an individual well basis." *Id.* at 1048-49.

retroactive spacing and pooling orders.<sup>79</sup> The board issued the orders but denied retroactivity.<sup>80</sup> On appeal, the Utah Supreme Court upheld the board’s denial, noting that “parties in possession of the necessary information to act in protection of their own rights bear the responsibility for doing so.”<sup>81</sup> Since the family members had sufficient knowledge of the two wells to seek pooling long before they petitioned the board, it would be unjust to grant them “the share of production that they failed to secure for themselves by timely action.”<sup>82</sup>

As in *Coastal Oil*, the draining in *Hegarty* was partly a product of hydraulic fracturing,<sup>83</sup> which makes the questions of how far onto the family’s land the fractures extended and exactly how much gas migrated across the tract’s boundary difficult to answer. Perhaps the more interesting aspect of the case, however, is the interplay of state and federal law.<sup>84</sup>

Utah law allows for forced pooling of mineral interests, but only if an interested party first asks the board for a spacing order.<sup>85</sup> The federal pooling statute, on the other hand, is completely voluntary.<sup>86</sup> In *Hegarty*, the company naturally saw no need to seek either voluntary or forced pooling because, as a unit participant, it could do nothing and still receive a proportionate share of the proceeds from all unit wells while sharing its own drilling costs with other unit participants.<sup>87</sup> As the court put it, the company “had no duty to act contrary to its own interests by seeking another layer of

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79. *Id.* at 1044, 1046.

80. *Id.* at 1046.

81. *Id.* at 1051–52.

82. *Id.* at 1051.

83. *See id.* at 1044.

84. “The interaction of federal and state law on a single oil and gas field” was a topic that neither the Utah Supreme Court nor any “other court in the United States” had previously addressed. *Id.* at 1047. The conflicts between federal and state law in *Hegarty* are indicative of the types of questions that additional federal regulation of hydrofracking would undoubtedly create as states struggle to reconcile conflicting and overlapping federal and state rules.

85. *Id.* at 1048.

86. *Id.* at 1047.

87. *See id.* at 1048 (“[T]he Federal Act does not formally mandate uniform spacing throughout the field. Therefore, participants share in production based on their percentage of acreage ownership of the committed lands in the whole unit, rather than their percentage of the drainage field of an individual well.”).

regulation.”<sup>88</sup> Theoretically, if there had been no federal unit, the company would still not have been required to apply for spacing and pooling orders for its two wells, but Utah operators commonly seek spacing orders before drilling in order “to prevent uncommitted owners from riding the well down free without paying a share of [the] costs.”<sup>89</sup> Thus, without the federal statute and federal unit, the family would probably not have missed out on initial production from the two wells. In this case, the presence of federal lands made the statutory conflict arguably unavoidable. It is not difficult, however, to imagine less necessary federal-state conflicts arising should Congress decide to promulgate more fracking regulations.

### 3. Ownership

Fracking-related ownership questions usually focus on who owns the oil or gas targeted by drilling operations.<sup>90</sup> However, because operators often contract with other parties for fracking services, tax and related liability issues also arise.

In *BJ-Titan Services v. State Tax Commission*, for example, the Utah Supreme Court held that well operators do not purchase tangible personal property, and therefore incur no sales or use tax liability, when they pay another company to frack a well.<sup>91</sup> The court acknowledged that fracking requires chemicals to be “injected into the well to stimulate well flow and returned as part of production when oil and other fluids are taken from the well.”<sup>92</sup> But since the value of such injection to the operator “lies purely in the service, not in the chemicals,” the court concluded that “there is no real transfer of possession or ownership of the chemicals.”<sup>93</sup>

Though the opinion focused on ownership for tax purposes, it may have implications for lawsuits against well operators. If operators who do not frack their own wells fail to acquire ownership of fracking fluids for tax purposes, they may argue that only fracking companies should be liable for any damage to water or surface lands

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88. *Id.* at 1052.

89. ABA Oil and Natural Gas Exploration and Prod. Comm., *Annual Report*, 2002 ENV'T ENERGY & RES. L. YEAR REV. 90, 114.

90. *See, e.g.*, *U.S. Steel Corp. v. Hoge*, 450 A.2d 162 (Pa. Super. Ct. 1982) (determining ownership of coalbed gas), *rev'd*, 468 A.2d 1380 (Pa. 1983).

91. 842 P.2d 822, 828 (Utah 1992).

92. *Id.*

93. *Id.*

caused by the fluids (absent, of course, any negligence on the part of the operator after the frack job has been completed).<sup>94</sup>

#### 4. Damages

Establishing damages can get particularly complicated when hydraulic fracturing is involved. As the Texas Supreme Court explained:

[D]etermining the value of oil and gas drained by hydraulic fracturing is the kind of issue the litigation process is least equipped to handle. One difficulty is that the material facts are hidden below miles of rock, making it difficult to ascertain what might have happened. Such difficulty in proof is one of the justifications for the rule of capture.<sup>95</sup>

Perhaps equally important, however, is the desire of some judges to avoid discouraging fracking operations, which have become a crucial element of many producing states' economies. Thus, for both evidentiary and economic reasons, suits against fracking companies and their operators may be slightly less likely than other tort claims to result in large damage awards. This is a reality the *Coastal Oil* court applauded:

[S]ocial policies, industry operations, and the greater good . . . are all tremendously important in deciding whether frac[k]ing should or should not be against the law. . . The experts in this case agree on two important things. One is that hydraulic fracturing is not optional; it is essential to the recovery of oil and gas in many areas . . . . The other is that hydraulic fracturing cannot be performed both to maximize reasonable commercial effectiveness and to avoid all drainage. Some drainage is virtually unavoidable. In

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94. Admittedly, courts may view this argument as a stretch, and either way it would depend on whether the fracking company was acting as the operator's agent. *See* RESTATEMENT (SECOND) OF TORTS § 409 (1965) (“[T]he employer of an independent contractor is [generally] not liable for physical harm caused to another by an act or omission of the contractor or his servants.”).

95. *Coastal Oil & Gas Corp. v. Garza Energy Trust*, 268 S.W.3d 1, 16 (Tex. 2008); *see also* *Ryan Consol. Petroleum Corp. v. Pickens*, 285 S.W.2d 201, 235 (Tex. 1955) (Wilson, J., dissenting) (“Under our law no one has a right simply to capture the property of someone else. But because of early difficulty in determining the source of oil produced from a well we stopped judicial inquiry at the mouth of the well, called it the rule of capture, and said that adjoining landowners could protect themselves by going and doing likewise. Admittedly this was a matter of expediency, and in the then state of the oil business and the then knowledge of reservoir dynamics, it reached a practical result.”).



this context, common law liability for a long-used practice essential to an industry is ill-advised . . . .<sup>96</sup>

Each of these legal issues presents a challenge for courts and offers fodder for academic discussion. By and large, however, proponents of federal regulation appear far more motivated by environmental concerns than by a desire to bring states into alignment on fracking-related legal questions like trespass and pooling. In fact, some scholars view additional federal controls as necessary only because common law claims like trespass and nuisance often fail, in their opinion, to fully address fracking's far more dangerous environmental effects.<sup>97</sup>

### *B. Environmental Concerns*

Much of the research regarding the potential environmental concerns arising from hydraulic fracturing focuses on water issues. A 2004 EPA study outlined various production activities having the potential to injure water quality and quantity, including “surface discharge of fracturing and production fluids, aquifer/formation dewatering, water withdrawal from production wells, methane migration through conduits created by drilling and fracturing practices, or any combination of these.”<sup>98</sup> Since the most challenging fracking questions deal with contamination that cannot be observed, this Section limits its discussion to fracking fluids and methane migration.

#### *1. Fracking fluids*

Environmental groups are especially concerned with the fracking fluids being used by developers, which the Natural Resource Defense Council asserts “are likely to contain toxic and carcinogenic chemicals.”<sup>99</sup> A question generating much debate is whether these

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96. *Coastal Oil*, 268 S.W.3d at 16.

97. See Wiseman, *supra* note 16, at 156.

98. U.S. ENVTL. PROT. AGENCY, EVALUATION OF IMPACTS TO UNDERGROUND SOURCES OF DRINKING WATER BY HYDRAULIC FRACTURING OF COALBED METHANE RESERVOIRS, EPA 816-R-04-003 at 6-16 (2004) [hereinafter EPA 2004 Study], available at [http://www.epa.gov/ogwdw/uic/pdfs/cbmstudy\\_attach\\_uic\\_ch06\\_water\\_qual\\_incidents.pdf](http://www.epa.gov/ogwdw/uic/pdfs/cbmstudy_attach_uic_ch06_water_qual_incidents.pdf).

99. NATURAL RESOURCES DEF. COUNCIL, HYDRAULIC FRACTURING OF COALBED METHANE WELLS: A THREAT TO DRINKING WATER 2 (2002), available at [http://www.earthworksaction.org/pubs/200201\\_NRDC\\_HydrFrac\\_CBM.pdf](http://www.earthworksaction.org/pubs/200201_NRDC_HydrFrac_CBM.pdf).

chemicals regularly make their way into sources of drinking water. Fracking opponents argue that they do, and that the effects on those using the water are appalling.<sup>100</sup>

One Colorado resident, for example, testified before a congressional committee in 2007 that when gas wells were drilled near his home, a water well on a neighbor’s property exploded, and sand built up in his own water filter.<sup>101</sup> “If we set a glass of water out overnight,” the man testified, “a thin oily film would float on top. We stopped drinking it.”<sup>102</sup> The water contamination allegedly gave his wife “burning eyes and nosebleeds,” as well as “fatigue, headaches, hand numbness, bloody stools, rashes, welts and blisters on her skin.”<sup>103</sup>

Perhaps the most troublesome of all hydrofracking practices involves the use of diesel fuel as a fracturing fluid.<sup>104</sup> Diesel “may contain known carcinogens,” including benzene, toluene, ethylbenzene, and xylenes.<sup>105</sup> Such compounds make the use of diesel fuel especially dangerous because, as the EPA noted, they exceed the maximum contaminant levels allowed in underground sources of drinking water under federal law “at the point-of-injection (i.e. the subsurface location where fracturing fluids are initially injected).”<sup>106</sup>

As a result, diesel fuel is the only fracking fluid regulated by the EPA under the Safe Drinking Water Act.<sup>107</sup> In addition, the three major U.S. fracturing companies (who together perform ninety-five percent of all fracking jobs in the country) entered into an agreement with the EPA “to eliminate diesel fuel from hydraulic fracturing fluids injected directly into [underground sources of drinking water]

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100. Wiseman, *supra* note 16, at 138.

101. Curtis Hewston, *A Death in Colorado*, THE BLUE HIGHWAY (Jan. 26, 2011, 2:17 PM), <http://thebluehighway.com/?p=2125> (last visited Sep. 9, 2011).

102. *Id.*

103. *Id.* See also Wiseman, *supra* note 16, at 138–39 (summarizing this same testimony).

104. See Wiseman, *supra* note 16, at 139 (“[T]here is a strong consensus against one practice: frac[k]ing with diesel fuel.”).

105. EPA 2004 Study, *supra* note 98, at 4-4, 4-11, available at [http://www.epa.gov/ogwdw/uic/pdfs/cbmstudy\\_attach\\_uic\\_ch04\\_hyd\\_frac\\_fluids.pdf](http://www.epa.gov/ogwdw/uic/pdfs/cbmstudy_attach_uic_ch04_hyd_frac_fluids.pdf).

106. *Id.* at 4-11.

107. See 42 U.S.C. §300h(d)(1) (2006) (“The term ‘underground injection’ . . . excludes . . . the underground injection of fluids or propping agents (*other than diesel fuels*) pursuant to hydraulic fracturing operations related to oil, gas, or geothermal production activities.” (emphasis added)).

to stimulate coalbed methane production.”<sup>108</sup> In early 2011, several members of Congress accused the companies of violating the agreement when disclosures showed that diesel is still being used as a fracking fluid.<sup>109</sup> It is unclear, however, whether it has been used in any fracturing applications in or near drinking water sources.<sup>110</sup>

## 2. Methane contamination

Fracking fluids are not the only potential source of contamination. A number of critics fear that hydraulic fracturing causes “connections between coal formation[s] and underground water sources.”<sup>111</sup> Articles in recent years have revealed a “string of documented cases of gas escaping into drinking water,”<sup>112</sup> which some local governments say can be linked to increased gas drilling (though studies are not conclusive).<sup>113</sup> Investigators found methane in the drinking water of a Pennsylvania resident’s home in 2009, for example, after an explosion occurred in her basement when she was not home.<sup>114</sup> Gas operators had been drilling just a few hundred yards from her house at the time.<sup>115</sup> Other residents in the area reported water well explosions, and the Pennsylvania Department of Environmental Protection eventually charged a gas operator with regulatory violations involving faulty well casings.<sup>116</sup>

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108. EPA 2004 Study, *supra* note 98, at 4-19, available at [http://www.epa.gov/ogwdw/uic/pdfs/cbmstudy\\_attach\\_uic\\_ch04\\_hyd\\_frac\\_fluids.pdf](http://www.epa.gov/ogwdw/uic/pdfs/cbmstudy_attach_uic_ch04_hyd_frac_fluids.pdf).

109. See, e.g., Mike Soraghan, *Fracking Companies Injected 32M Gallons of Diesel, House Probe Finds*, CITIZENS FOR A HEALTHY COMMUNITY (Jan. 31, 2011), <http://citizensforahealthycommunity.org/news/news-fracking-companies-injected-32m-gallons-of-diesel-house-probe-finds>.

110. *Id.*

111. Wiseman, *supra* note 16, at 142.

112. Abrahm Lustgarten, *Officials in Three States Pin Water Woes on Gas Drilling*, PROPUBLICA (Apr. 26, 2009, 7:00 AM), <http://www.propublica.org/article/officials-in-three-states-pin-water-woes-on-gas-drilling-426>.

113. See, e.g., GEOFFREY THYNE, REVIEW OF PHASE II HYDROGEOLOGIC STUDY FOR GARFIELD COUNTY 2-3 (2008), available at [http://s3.amazonaws.com/propublica/assets/methane/thyne\\_review.pdf](http://s3.amazonaws.com/propublica/assets/methane/thyne_review.pdf) (Garfield County, Colorado study noting a trend of increasing methane and chloride levels in groundwater “coincident with [an] increased number of gas wells” but also noting that values are still “below regulatory limits” and that “[t]he number of water wells . . . and their spatial distribution is inadequate to monitor and locate potential source of contamination from the more than 1400 potential point sources . . .”).

114. Lustgarten, *supra* note 112.

115. *Id.*

116. *Id.* As Lustgarten’s article describes, “drilling companies insert as many as three concentric rings of steel pipes inside the well bore to isolate what flows through them. . . .”

In its 2004 study, the EPA noted that citizens in Wyoming, Montana, Alabama, Virginia, West Virginia, Colorado, and New Mexico had contacted the Agency with concerns that coalbed methane production had affected their water wells.<sup>117</sup> Many of the complaints were limited to water loss, but citizens also described water well contamination and increased methane levels inside homes.<sup>118</sup>

The environmental concerns have prompted a push among legal scholars and interest groups for more federal regulatory intervention.<sup>119</sup> One group, for example, calls the exemption of fracking fluids from the Safe Drinking Water Act "bad environmental policy."<sup>120</sup> And EarthWorks has criticized the decision as "making oil and gas the only industry allowed to inject toxic fluids directly into good quality groundwater without oversight by the U.S. Environmental Protection Agency."<sup>121</sup>

What is conspicuously missing from many of these groups' arguments, however, is an explanation of how and why federal regulation will actually diminish fracking's environmental risks. In fact, a closer look at much of the rhetoric against a state-centric regulatory system reveals not so much a push for federal *regulation*, but rather for federal *prohibition* of hydraulic fracturing.<sup>122</sup> Perhaps

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[W]here extra protection is needed . . . concrete is pumped into the gap between the rings of pipe to ensure an impenetrable seal." *Id.* When this casing and cementing is done correctly, "the issue of groundwater contamination, whether from gas or hydraulic fracturing, goes away." *Id.* Thus, it appears these Pennsylvania incidents had more to do with the operator's violations of standard casing regulations than with anything related specifically to hydraulic fracturing.

117. EPA 2004 Study, *supra* note 98, at 6-1, 6-2, available at [http://www.epa.gov/ogwdw/uic/pdfs/cbmstudy\\_attach\\_uic\\_ch06\\_water\\_qual\\_incidents.pdf](http://www.epa.gov/ogwdw/uic/pdfs/cbmstudy_attach_uic_ch06_water_qual_incidents.pdf).

118. *Id.* at 6-2 to 6-5, 6-9 to 6-11, 6-13.

119. *See, e.g.,* Wiseman, *supra* note 16, at 145 ("Several environmental groups have continued to push for federal regulation . . ."); Cupas, *supra* note 16.

120. Wiseman, *supra* note 16, at 145 (quoting THE WILDERNESS SOCIETY, TOO WILD TO DRILL: HYDRAULIC FRACTURING THREATENS DRINKING WATER).

121. EARTHWORKS, OIL & GAS ACCOUNTABILITY PROJECT, HYDRAULIC FRACTURING, available at <http://www.earthworksaction.org/pubs/Fracking.pdf>.

122. *See, e.g.,* *Hydraulic Fracturing, 'Fracking,' Banned In Buffalo, NY*, REUTERS, Feb. 9, 2011, available at [http://www.huffingtonpost.com/2011/02/09/hydraulic-fracturing-bann\\_n\\_820647.html](http://www.huffingtonpost.com/2011/02/09/hydraulic-fracturing-bann_n_820647.html) (reporting that opponents have succeeded in getting fracking banned in several U.S. cities, including Buffalo and Pittsburgh); Brian Tumulty, 'Gasland' director calls for natural gas moratorium, PRESSCONNECTS.COM (Feb. 18, 2011, 4:00 AM), <http://www.pressconnects.com/article/20110218/NEWS01/102180305/-Gasland-director-calls-natural-gas-moratorium> (reporting that Josh Fox, the director of "Gasland," an Academy Award-nominated documentary about fracking, has asked President Obama for a

this is because, by and large, state control of hydrofracking is already relatively expansive.

### C. Increasing State Controls

As fracking has become more widespread, state regulation of the practice has intensified, although specific rules vary widely.<sup>123</sup> Some see this variation as a reason for more federal control.<sup>124</sup> But as the following discussion illustrates, every producing state has promulgated a considerable amount of fracking regulation, whether through general permitting processes or more directly.<sup>125</sup>

Wyoming, for example, was the first state to require companies to fully disclose the chemicals used in their fracking fluids.<sup>126</sup> The state also requires drillers to give notice to surface owners of planned oil and gas operations on their lands and make good faith efforts to enter into “surface use agreements” that will protect surface resources, provide for reclamation of disturbed areas, and determine a payment for any damages caused by the operations.<sup>127</sup> Developers must show that they have complied with this requirement before the

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nationwide fracking moratorium).

123. MARK ZOBACK ET AL., BRIEFING PAPER 1: ADDRESSING THE ENVIRONMENTAL RISKS FROM SHALE GAS DEVELOPMENT 13 (2010), available at <http://efdsystems.org/Portals/25/Hydraulic%20Fracturing%20Paper%20-%20World%20Watch.pdf>.

124. See, e.g., Wiseman, *supra* note 16, at 167 (“The varying complexity and breadth of state oil and gas regulations suggests that some states are not adequately protecting underground sources of drinking water – sources that are of federal concern – from the impacts of frac[k]ing.”). Professor Wiseman comes dangerously close to mischaracterizing the current state of fracking regulation in her article. “[S]ome [states] decline to regulate,” she states in her introduction. *Id.* at 116. As support for this assertion, she quotes a line from the *Coastal Oil* opinion, which, in reality, refers, not to a general lack of fracking regulation in the U.S., but rather to a single state agency’s decision to regulate fracking indirectly through general permitting procedures. *Id.* (quoting *Coastal Oil & Gas Corp. v. Garza Energy Trust*, 268 S.W.3d 1, 17 (Tex. 2008)). She acknowledges this fact much later in her article, *id.* at 157, but her original statement seems inappropriately misleading in light of the numerous provisions adopted in every producing state that significantly limit what fracking companies can do.

125. The purpose of this Section is not to provide a comprehensive review of every producing state’s oil and gas regulations. Rather, what follows is intended to illustrate both the variety of state approaches to fracking issues and the heightened scrutiny with which most state regulatory bodies now view the practice.

126. See Dustin Bleizeffer, *Wyoming Approves ‘Fracking’ Disclosure Rules*, TRIB.COM, Jun. 9, 2010, [http://trib.com/news/state-and-regional/article\\_069139a4-5b9b-51c3-a599-a38f788e8ff4.html](http://trib.com/news/state-and-regional/article_069139a4-5b9b-51c3-a599-a38f788e8ff4.html) (reporting that state regulators in 2010 approved rules “requiring oil and gas companies to disclose chemicals used in hydraulic fracturing”).

127. WYO. STAT. ANN. § 30-5-402 (2010).

Wyoming Oil and Gas Commission will grant a permit to drill<sup>128</sup> or a permit to construct a pit for retaining fluids.<sup>129</sup> Moreover, before any well can be used for injection activities, an operator must demonstrate to the Commission that its casing is leak-proof and able to withstand pressures of at least 300 pounds per square inch.<sup>130</sup>

New York has perhaps the nation’s strictest fracking controls. Shortly before leaving office in late 2010, former governor David Paterson “issued an executive order imposing a moratorium on permits for horizontal wells and instruct[ed] the [Department of Environmental Conservation] to revise its draft of standards governing the use of high-volume fracking.”<sup>131</sup> In July of 2011, the Agency released a revised Draft Supplemental Generic Environmental Impact Statement (SGEIS) which recommended that the moratorium be kept in place in certain areas and lifted in others, subject to strict regulation.<sup>132</sup>

Even without the moratorium, the state’s rules are far from lenient. An operator seeking to drill needs to submit an application for a permit, pay a permit fee, offer a description of the planned drilling project, provide three copies of a plat, and complete an Environmental Assessment Form.<sup>133</sup> This form “provides information about the physical setting of the proposed project, the general character of the land and land use, the projected size of the area that will be disturbed and the length of time the drilling rig will be on the

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128. 055-003 WYO. CODE R. § 8(d) (2011).

129. 055-004 WYO. CODE R. § 1(d) (2011).

130. *Id.* at § 8.

131. Bonner R. Cohen, *Outgoing New York Governor Fires Final Shot on Fracking*, HEARTLANDER, Feb. 7, 2011, [http://www.heartland.org/full/29294/Outgoing\\_New\\_York\\_Governor\\_Fires\\_Final\\_Shot\\_on\\_Fracking.html](http://www.heartland.org/full/29294/Outgoing_New_York_Governor_Fires_Final_Shot_on_Fracking.html).

132. N.Y. STATE DEP’T OF ENVTL. CONSERVATION, FACT SHEET: 2011 RECOMMENDATIONS FOR PERMITTING HIGH-VOLUME HYDRAULIC FRACTURING IN NEW YORK STATE (July 2011), *available* at [http://www.dec.ny.gov/docs/materials\\_minerals\\_pdf/sgeisgens092011.pdf](http://www.dec.ny.gov/docs/materials_minerals_pdf/sgeisgens092011.pdf). Specifically, the SGEIS recommends prohibiting drilling within the Syracuse and New York City watersheds, and within 2000 feet of public drinking water supplies, among other areas. Where fracking is allowed, the report recommends requiring additional well casing to prevent gas migration and imposing limits on withdrawals from surface water bodies. It also recommends new rules governing chemical disclosure and requires operators to get DEC approval before disposing of flowback water. *Id.*

133. N.Y. STATE DEP’T OF ENVTL. CONSERVATION, WELL PERMITTING PROCESS: WELL PERMITTING REQUIREMENTS TO DRILL, DEEPEN, PLUG BACK AND CONVERT FOR OIL, GAS, SOLUTION SALT MINING AND OTHER REGULATED WELLS (2011), *available* at <http://www.dec.ny.gov/energy/1772.html>.

site.”<sup>134</sup> A Supplemental Environmental Impact Statement and additional permits may also be necessary.<sup>135</sup> Even Professor Wiseman calls the state’s fracking rules “relatively comprehensive.”<sup>136</sup>

She says the same about Pennsylvania, even though the state uses general oil and gas rules to regulate fracking.<sup>137</sup> Strong permitting requirements compel operators to account for any water sources or coal seams near drilling sites,<sup>138</sup> and the Department of Environmental Protection may deny permits that would violate any applicable environmental law.<sup>139</sup> The state also has separate rules for exploration activities in the Marcellus Shale.<sup>140</sup>

Likewise, Colorado has adopted comprehensive fracking regulations. In 2009, the state overhauled its rules, providing more protections against methane contamination.<sup>141</sup> Even before the overhaul, the Colorado Oil and Gas Conservation Commission (COGCC) instituted a “mitigation program” to seal improperly abandoned wells. The program resulted in a reduction of methane concentrations in close to 30% of all sampled water wells.<sup>142</sup> More recently, the Commission has begun investigating the use of diesel fuel in fracking operations and regularly testing groundwater wells for contamination.<sup>143</sup> The COGCC also requires operators to maintain a “Chemical Inventory” of all chemicals used in drilling and completion, including fracturing, at each well site.<sup>144</sup>

The Alabama Oil and Gas Board claims that it “investigates every complaint it receives.”<sup>145</sup> A unique feature of its investigations is that each one includes research regarding “historical water quality

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134. N.Y. STATE DEP’T OF ENVTL. CONSERVATION, DIVISION OF MINERAL RESOURCES ENVIRONMENTAL ASSESSMENT FORM (EAF) FOR WELL PERMITTING (2011), *available at* <http://www.dec.ny.gov/energy/1777.html>.

135. *Id.*

136. Wiseman, *supra* note 16, at 116.

137. *Id.* at 116, 163.

138. 58 PA. CONS. STAT. ANN. § 601.201(b) (2010).

139. *Id.* at 201(e)(1).

140. Wiseman, *supra* note 16, at 163.

141. Lustgarten, *supra* note 112.

142. EPA 2004 Study, *supra* note 98, at 6-5.

143. Press Release, Dep’t of Natural Res., State of Colo. Oil & Gas Conservation Comm’n, New Website to Provide Data on Hydraulic Fracturing Chemicals in Colorado (Apr. 7, 2011), *available at* <http://dnr.state.co.us/SiteCollectionDocuments/News/Fracking%20disclosure.pdf>.

144. 2 COLO. CODE REGS. § 404-1:205.c (2011).

145. EPA 2004 Study, *supra* note 98, at 6-11.

data.”<sup>146</sup> As the EPA explains, this “information is important because the coal-bearing Pottsville Formation often contains high concentrations of iron.”<sup>147</sup> The symptoms of iron staining, which can occur suddenly and “in water with a history of good quality,” are apparently similar to those of methane contamination.<sup>148</sup> Such observations show the importance of accounting for regional characteristics in fracking regulations.

Perhaps more than any other state, Texas has been criticized for its fracking regulations, primarily because until recently no rule addressed the practice specifically.<sup>149</sup> That changed in June of 2011, when Texas governor Rick Perry signed into law H.B. 3328, which requires operators to publicly disclose chemicals used in fracturing applications.<sup>150</sup> Even without the legislation, much of the criticism of Texas is misplaced, since, as Professor Wiseman herself admits, many of the state’s general oil and gas regulations “apply to various components of the frac[k]ing process.”<sup>151</sup> Like other states, operators cannot drill without a permit,<sup>152</sup> and they must obtain a Water Board Letter from the state Commission on Environmental Quality setting out “the depth to which fresh water must be protected” for each well.<sup>153</sup> No operator in the state “may dispose of any oil and gas wastes [which would include fracking fluids] by any method without obtaining a permit.”<sup>154</sup> In addition, the state has extensive casing and cementing regulations, including requirements that all casing be

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146. *Id.* at 6-11.

147. *Id.*

148. *See id.* at 6-10 to 6-12. The EPA study does not explicitly compare the symptoms of iron staining to that of methane contamination. It notes, however, that complaints about methane contamination have included reports of “black coal fines,” unpleasant odors, oily substances, and “jelly-like grease.” *Id.* at 6-10–6-11. Conversely, iron staining can result in black stains, unpleasant odors, oily films, and “gelatinous material.” *Id.* at 6-12. The symptoms seem sufficiently similar that misplaced complaints are at least possible (if not probable in some cases).

149. *See, e.g.,* Wiseman, *supra* note 16, at 116 (“In Texas . . . ‘neither the Legislature nor the [Railroad] Commission has ever seen fit’ to regulate hydrofracturing.” (quoting Coastal Oil & Gas Corp. v. Garza Energy Trust, 268 S.W.3d 1, 17 (Tex. 2008))).

150. H.B. 3328, 82d Leg., Reg. Sess. (Tex. 2011).

151. Wiseman, *supra* note 16, at 157.

152. 16 TEX. ADMIN. CODE § 3.5(a) (2011).

153. *Barnett Shale Information: Top Questions Asked About the Barnett Shale*, R.R. COMM’N OF TEX., <http://www.rrc.state.tx.us/barnettshale/index.php#faqs> (last updated Aug. 4, 2011) (follow “Is an oil or gas operator required to perform an environmental study or something similar?” link).

154. 16 TEX. ADMIN. CODE § 3.8(d)(1) (2011).



made of steel and “hydrostatically pressure tested,” and that “all usable-quality water zones be isolated and sealed off to effectively prevent contamination or harm.”<sup>155</sup>

Despite the peculiarities of each state’s regulatory system, almost all share several common features. Every producing state, for example, has “permitting requirements governing the locating, drilling, completion, and operations of wells.”<sup>156</sup> Almost all have casing and cementing requirements designed to isolate ground water from production zones.<sup>157</sup> Every state but one requires regulatory authorization before operators can leave a well idle.<sup>158</sup> And all twenty-seven producing states have regulations regarding the proper plugging of wells.<sup>159</sup>

Given the level of scrutiny most states are already applying to hydraulic fracturing, it is difficult to see how federal agencies could significantly curb any of the few environmental effects left unaddressed. Congress’s decision in 2005 to exempt most aspects of fracking from federal regulation has been criticized as a “loophole” for developers.<sup>160</sup> But as the Independent Petroleum Association of America states, “This characterization is entirely inaccurate; Congress’ action merely keeps in place a system that has worked for half a century.”<sup>161</sup>

#### IV. STATE-CENTRIC SOLUTIONS ARE BEST

##### *A. Exaggerated Environmental Concerns*

An initial reason to avoid the excesses of additional federal regulation is that many of the environmental effects of hydraulic fracturing appear to be overblown. As the EPA acknowledged, the same water problems for which fracking is often blamed could easily be caused by “naturally occurring conditions, population growth and

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155. *Id.* at § 3.13(a)(1), (b)(1)(A).

156. U.S. DEP’T OF ENERGY, STATE OIL AND NATURAL GAS REGULATIONS DESIGNED TO PROTECT WATER RESOURCES 17 (2009), *available at* <http://www.gwpc.org/e-library/documents/general/State%20Oil%20and%20Gas%20Regulations%20Designed%20to%20Protect%20Water%20Resources.pdf>.

157. *Id.* at 19.

158. *Id.* at 25.

159. *Id.* at 26.

160. *See, e.g.*, Editorial, *The Halliburton Loophole*, N.Y. TIMES, Nov. 3, 2009, at A28, *available at* <http://www.nytimes.com/2009/11/03/opinion/03tue3.html>.

161. INDEP. PETROLEUM ASS’N OF AM., *supra* note 13.

historical practices.”<sup>162</sup> In fact, a specialist with the State Department of Environmental Conservation in New York has argued that complaints regarding fracking stem more from “surface mismanagement of frac[k]ing fluid than the actual fracturing of the formation.”<sup>163</sup>

### *1. Fluid dilution*

In its 2004 study, the EPA concluded that “the injection of hydraulic fracturing fluids into coalbed methane wells poses little or no threat to [underground sources of drinking water].”<sup>164</sup> In fact, “the largest portion of fracturing fluid constituents is nontoxic (>95% by volume).”<sup>165</sup> Of the portion that does contain contaminants, “dilution and dispersion, adsorption, and potentially biodegradation, minimize the possibility that chemicals included in the fracturing fluids would adversely affect [underground sources of drinking water].”<sup>166</sup> The Agency was so confident in its findings that it dismissed proposals for additional study of fracking as not worth the expense.<sup>167</sup>

Part of the reason for the EPA’s confidence is the significant amount of dilution that occurs before fracking fluids are ever injected into a well. The EPA found that for every four to ten gallons of fracking gel (which could include diesel fuel and other potentially hazardous fluids as well as nonhazardous fluids) used in the drilling process, companies mix in approximately 1,000 gallons of water.<sup>168</sup> Such a mixture makes toxic substances like benzene, which has a negligible presence in relation to the entire amount of fracking fluid used,<sup>169</sup> almost nonexistent by the time an operator finishes pumping much of the fluid back to the surface.<sup>170</sup>

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162. EPA 2004 Study, *supra* note 98, at 6-16.

163. Wiseman, *supra* note 16, at 141 (footnote omitted).

164. EPA 2004 Study, *supra* note 98, at 7-5, available at [http://www.epa.gov/ogwdw/uic/pdfs/cbmstudy\\_attach\\_uic\\_ch07\\_conclusions.pdf](http://www.epa.gov/ogwdw/uic/pdfs/cbmstudy_attach_uic_ch07_conclusions.pdf).

165. *Id.* at 7-3.

166. *Id.*

167. *Id.* at 7-5.

168. *Id.* at 4-4, available at [http://www.epa.gov/ogwdw/uic/pdfs/cbmstudy\\_attach\\_uic\\_ch04\\_hyd\\_frac\\_fluids.pdf](http://www.epa.gov/ogwdw/uic/pdfs/cbmstudy_attach_uic_ch04_hyd_frac_fluids.pdf).

169. *Id.* (Benzene can comprise “between 0.003 percent to 0.1 percent by weight of diesel fuel.”).

170. *Id.* at 4-14. At least one study predicted that between 68% and 82% of all fracking fluids are eventually pumped back out of the well. *Id.* at 4-15.

Moreover, aside from diesel fuel, the EPA does not consider most fracking fluids to be environmentally hazardous. Often, fracking gels consist of nothing more than “water or nitrogen foam”; in some cases, “[w]ater with a simple sand proppant can be adequate to achieve a desired fracture.”<sup>171</sup> Numerous fracturing fluids contain only harmless ingredients, and (other than diesel) even those with potentially toxic additives simply do not contain contaminants “in concentrations high enough to pose a significant threat.”<sup>172</sup>

## 2. Deep formations

Even if fracking fluids were highly toxic, they would still not affect drinking water in many places because shales are generally located thousands of feet below aquifers. The EPA found that “[o]ften, a high stress contrast between adjacent geologic strata results in a barrier to fracture propagation.”<sup>173</sup> In other words, fractures generally tend to remain within an operator’s target formation. What this means in terms of most shale drilling is that the chance of a fracture extending from the a well’s bottom hole location to near-surface drinking water sources is infinitesimally small. As Zoback notes, with only a few exceptions, “many thousands of feet of rock separate most major gas-bearing shale formations in the United States from the base of aquifers that contain drinkable water.”<sup>174</sup> In Ohio, for example, gas is often produced from nearly 3700 feet underground,<sup>175</sup> and developers in Pennsylvania and Colorado commonly drill down more than two miles to reach their target depths.<sup>176</sup>

Of course, this is not always the case. Some shales, like the Antrim in Michigan and the New Albany in Illinois, are relatively shallow formations.<sup>177</sup> Even then, methane migration can often be traced to natural, preexisting cracks in underground rock.<sup>178</sup> Such

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171. *Id.* at 4-19, available at [http://www.epa.gov/ogwdw/uic/pdfs/cbmstudy\\_attach\\_uic\\_ch04\\_hyd\\_frac\\_fluids.pdf](http://www.epa.gov/ogwdw/uic/pdfs/cbmstudy_attach_uic_ch04_hyd_frac_fluids.pdf).

172. *Id.* at 4-17.

173. *Id.* at 7-5, available at [http://www.epa.gov/ogwdw/uic/pdfs/cbmstudy\\_attach\\_uic\\_ch07\\_conclusions.pdf](http://www.epa.gov/ogwdw/uic/pdfs/cbmstudy_attach_uic_ch07_conclusions.pdf).

174. ZOBACK, *supra* note 123, at 7.

175. Lustgarten, *supra* note 112.

176. *Id.*

177. ZOBACK, *supra* note 123, at 7.

178. EPA 2004 Study, *supra* note 98, at 7-5, available at [http://www.epa.gov/ogwdw/uic/pdfs/cbmstudy\\_attach\\_uic\\_ch07\\_conclusions.pdf](http://www.epa.gov/ogwdw/uic/pdfs/cbmstudy_attach_uic_ch07_conclusions.pdf).

natural connections might create concern about fracking fluid contamination, but, as the EPA noted, the effects of dilution, recovery, and other factors significantly mitigates this threat.<sup>179</sup>

*3. Individual complaints about fracking may be better explained by other conditions*

Despite the numerous complaints of water contamination included in the EPA’s 2004 study, the Agency was not convinced that they were all fracking-related.<sup>180</sup> Other possible causes include surface spills of drilling fluids and badly sealed or deserted wells.<sup>181</sup> The COGCC, for example, believes that at least some of its methane contamination problems have been caused by “old, improperly abandoned” wells rather than by fracturing.<sup>182</sup>

Moreover, contamination can easily occur without any oil or gas production. In many places, shallow water wells were already producing methane or emitting strong sulfur odors before drilling operations began.<sup>183</sup> Past documented methane occurrences have led the EPA to conclude that “natural fractures” rather than (or perhaps in addition to) man-made fractures “probably serve as conduits” from shallow coal formations to even shallower aquifers.<sup>184</sup>

Such findings should not be read to imply that every hydrofracking complaint should be dismissed. On the contrary, documented cases of methane contamination (like those in Pennsylvania<sup>185</sup>) show signs of disturbing problems that only an irresponsible operator would ignore. But while such incidents are illustrative of the potential dangers involved in drilling near methane deposits, they also serve as examples of what appear to be swift, effective, appropriate, and, as far as can be determined, typical state responses to the dangers.<sup>186</sup> These state responses further indicate

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179. *Id.*

180. *Id.* at 6-1, available at [http://www.epa.gov/ogwdw/uic/pdfs/cbmstudy\\_attach\\_uic\\_ch06\\_water\\_qual\\_incidents.pdf](http://www.epa.gov/ogwdw/uic/pdfs/cbmstudy_attach_uic_ch06_water_qual_incidents.pdf).

181. *Id.* at 6-1 to 6-2.

182. *Id.* at 6-5.

183. *Id.* at 6-6.

184. *Id.* at 6-8.

185. See *supra* Part III.B.2.

186. See Lustgarten, *supra* note 112 (describing how, after several methane explosions in Pennsylvania, the state’s “Department of Environmental Protection charged Cabot Oil & Gas with two violations [of state rules] that it says caused the contamination”; and, after methane levels rose in western Colorado, a county conducted an “exhaustive” study of the problem, and

that additional federal intervention, while sure to be costly and potentially problematic, would probably not contribute more than state regulators already provide.

#### 4. *Defending the EPA's 2004 study*

With so much evidence in the EPA's study pointing to both the relative safety of hydraulic fracturing as well as the admirable work of state regulatory bodies in dealing with its environmental concerns, it seems only natural that fracking opponents would look for ways to attack the report's legitimacy. Some were less reasoned than others, of course. Alan Septoff, writing for an EarthWorks blog, simply declared that "[t]here's ample reason to believe the 2004 study got it wrong."<sup>187</sup> He called the report "a 'get-out-of-enforcement-free-card' for the drilling industry" and as support cited EarthWork's own review of the study, which, not surprisingly, also concluded that the EPA got it wrong.<sup>188</sup>

Other critiques were more scholarly. Professor Wiseman, for example, has attacked the EPA report as "too general to provide adequate data,"<sup>189</sup> possibly biased,<sup>190</sup> possibly based on "bent" or outcome-driven science,<sup>191</sup> and possibly suffering from hidden or omitted information.<sup>192</sup> The operative word, of course, is "possibly," since there is little evidence to back up the accusations. She admits, for example, that "there is no information suggesting that the [EPA's scientific and peer-review] panel was in fact biased."<sup>193</sup> And the only instance of possible data "hiding" mentioned in her article appears to be nothing more than a minor revision in the EPA report.<sup>194</sup>

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the state "overhauled" its oil and gas regulations).

187. Alan Septoff, *EPA to Study Hydraulic Fracturing, Again. This Time (Hopefully) with Science*, EARTHWORKS EARTH BLOG (Mar. 19, 2010, 12:48 PM), <http://earthblog.org/content/epa-study-hydraulic-fracturing-again-time-hopefully-science>.

188. *Id.*

189. Wiseman, *supra* note 16, at 176.

190. *Id.* at 173.

191. *Id.* at 171.

192. *Id.* at 173.

193. *Id.*

194. *See id.* at 173–75. As the EPA explained, after industry feedback revealed an inaccuracy in the Agency's initial measures of fracking gel-water mixtures, it revised its point-of-injection concentration figures. Democrat Henry Waxman, then the ranking minority member of the House Committee on Government Reform, attacked the revision as an

In truth, the study was never designed to be scientifically meticulous. Rather, as a “Phase I” analysis, evaluations of fracking’s effect on drinking water were “conducted to provide the Agency with information on whether a Phase II study [was] warranted.”<sup>195</sup> Professor Wiseman acknowledges this, admitting that the details she believes are lacking in the report “may have been too specific for an EPA ‘Phase I study.’”<sup>196</sup> What she and other critics ignore, however, is that such a detailed study could only be financially justified if the EPA’s “Phase I” evaluation had uncovered fracking problems significant enough to warrant a second look. That was simply not the case, yet fracking opponents continue to insist on conducting what essentially amounts to another expensive<sup>197</sup> fishing expedition. At this point, it seems unlikely that even a second study that revealed no new significant environmental concerns would satisfy those who favor stricter federal controls.

Of course, not every complaint about fracking should be dismissed. The legitimacy of environmentalists’ concerns about the practice, however, does not demand, or even justify, additional federal regulation.

*B. Federal v. State: Why “Spotty” Regulation is Better Regulation*

The push for more federal control of hydraulic fracturing seems at least partly motivated by differences in state approaches to the issue. Professor Wiseman, for example, argues that “[t]he varying complexity and breadth of state oil and gas regulation suggests that some states are not adequately protecting underground sources of drinking water.”<sup>198</sup> The flaw in such arguments, however, is that they

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“alteration of the data,” complaining that the EPA’s explanation only exacerbated his concerns that the agency was “altering, misusing, or ignoring technical data in a manner that benefits Halliburton.” Letter from Rep. Henry A. Waxman, Ranking Minority Member, H. Comm. on Gov’t Reform, to Christine Todd Whitman, Adm’r, EPA (Oct. 8, 2002), *available at* [http://waxman.house.gov/UploadedFiles/Letter\\_to\\_EPA\\_Oct\\_8.pdf](http://waxman.house.gov/UploadedFiles/Letter_to_EPA_Oct_8.pdf). In reality, the most significant change effected by the revision was an adjustment of the high estimate of benzene levels at the edge of a fracture zone from 8.46 µg/L to 2.62 µg/L—a reduction of less than 5 millionths of a gram per liter. *Id.*

195. EPA 2004 Study, *supra* note 98, at 4-1, *available at* [http://www.epa.gov/safewater/uic/pdfs/cbmstudy\\_attach\\_uic\\_ch04\\_hyd\\_frac\\_fluids.pdf](http://www.epa.gov/safewater/uic/pdfs/cbmstudy_attach_uic_ch04_hyd_frac_fluids.pdf).

196. Wiseman, *supra* note 16, at 176.

197. A new EPA fracking study, for example, would cost “more than \$1.9 million.” Septoff, *supra* note 187.

198. Wiseman, *supra* note 16, at 167.

ignore the fact that the depth, accessibility, extraction techniques, and characteristics of oil and gas reserves vary from state to state. In fact, that fracking regulation in the United States has been “spotty”<sup>199</sup> may actually be a good thing.

### *1. Regional differences*

In many respects, the more local and specialized the regulation, the better. This is true primarily because oil and gas extraction methods, and therefore hydrofracking techniques, are almost always geologic- and region-specific.<sup>200</sup> This fact makes additional federal regulation unnecessary at best and potentially extremely problematic if it conflicts with local and state land use controls.

The Texas Supreme Court hinted at this idea in the *Coastal Oil* opinion.<sup>201</sup> A major basis for the court’s decision was the desirability of deferring to the Texas Railroad Commission on oil and gas matters, especially where they involve questions of property boundaries and extraction techniques within specific reserves.<sup>202</sup> The Commission has the luxury of focusing all its time and manpower on oil and gas regulation (something the court lacks) and has sufficient remedial authority to enforce its rules in a way that both protects landowners<sup>203</sup> and promotes “the state’s goals of preventing waste and conserving natural resources.”<sup>204</sup> Such realities make the Commission, not the court, the appropriate entity for formulating effective regulatory provisions.

For similar reasons, federal intervention into state regulation of fracking seems unnecessary. Just as a commission’s staff of experts is better equipped than judges to promulgate rules for state oil and gas development, state officials are generally more informed about local and regional production techniques than federal regulators.<sup>205</sup> Not

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199. *Id.* at 142.

200. *See, e.g.*, PHI NGUYAN, WASHINGTON INTERNSHIPS FOR STUDENTS OF ENGINEERING, REGULATORY OPTIONS & CHALLENGES IN HYDRAULIC FRACTURING 7 (2010) (“Shale deposits can be found throughout the United States—each in its own basin, which is why operational criteria vary with each location.”).

201. *Coastal Oil & Gas Corp. v. Garza Energy Trust*, 268 S.W.3d 1 (Tex. 2008).

202. *Id.* at 38–39.

203. As the court noted, “[n]o one suggests that these various remedies provide inadequate protection against drainage.” *Id.* at 14.

204. *Id.* at 15 (internal quotation marks omitted).

205. *See* Robert L. Glicksman & Richard E. Levy, *A Collective Action Perspective on Ceiling Preemption by Federal Environmental Regulation: The Case of Global Climate Change*,

only do many energy-producing states operate under somewhat conflicting theories of oil and gas law,<sup>206</sup> but the state commissions that design rules that conform to those theories must be aware of the location, form, and accessibility of their hydrocarbon reserves in order to effectively regulate.

Of course, federal agencies can set up regional offices, and federal regulators can familiarize themselves with local industry realities, but federal employees will never be subject to the same kind of political accountability as state officials, and this may make them less receptive to local concerns. Perhaps more importantly, federal officials remain bound by federal directives drawn up by bureaucrats who reside far from most of the reserves their regulations affect.

Ironically, even proponents of federal regulation acknowledge the need for region-specific fracking rules. Professor Wiseman notes that, "[i]nvariably, effects will differ by region, by the type of operation and disposal methods used, and the type of formation frac[k]ed."<sup>207</sup> State officials are arguably more familiar with these variables than federal employees, yet she promotes an additional, potentially burdensome layer of federal control.<sup>208</sup> This seems shortsighted simply because what works well in one state may work poorly in another.

This reality has long been a burr in the side of would-be federal mining regulators. Despite widespread expansion of national environmental protections throughout the twentieth century,<sup>209</sup> Congress struggled to craft effective mining legislation. This was primarily because geological and regional differences encouraged a

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102 Nw. U. L. REV. 579, 592 (2008) ("Because state governments are more directly accountable and more familiar with regional conditions, they are generally in a better position than the federal government to make policy judgments for their constituencies.").

206. For example, not all states adhere to the ownership-in-place theory. *See supra* notes 63–66 and accompanying text.

207. Wiseman, *supra* note 16, at 141.

208. *Id.* at 194.

209. This expansion began in the early 1900s, largely at the urging of Theodore Roosevelt, who "did far more for the long-term protection of wilderness than all of his White House predecessors combined." DOUGLAS BRINKLEY, *THE WILDERNESS WARRIOR: THEODORE ROOSEVELT AND THE CRUSADE FOR AMERICA* 20 (2009). The federal environmental movement picked up steam once again in the 1960s and 1970s with the passage of the National Environmental Policy Act (1969), Clean Air Act (1970), Clean Water Act (1972), Endangered Species Act (1973), Safe Drinking Water Act (1974), and Resource Conservation and Recovery Act (1976), among others. ENCYCLOPEDIA OF ENVTL SCI. 217 (David E. Alexander & Rhodes W. Fairbridge eds., 1999).



state-centric regulatory scheme.<sup>210</sup> A former government attorney who helped draft the Surface Mining Control and Reclamation Act of 1977 pointed out that coal regulation “differs significantly from other federal environmental regulatory statutes” primarily because of “the ‘diversity’ in coal mining areas.”<sup>211</sup> This concern eventually resulted in Congress admitting that “the primary governmental authority for developing, authorizing, issuing, and enforcing [mining] regulations . . . should rest with the States.”<sup>212</sup>

Such diversity is even more apparent among oil and gas formations. A comparison of operations in the Bakken Shale with those in the Barnett Shale is illustrative. Bakken companies primarily drill for oil,<sup>213</sup> while Barnett operators produce gas.<sup>214</sup> Typical spacing in the Bakken can be as much as 1280 acres per well,<sup>215</sup> as opposed to Barnett spacing, which rarely exceeds 100 acres.<sup>216</sup> This, of course, creates far fewer wells in the Bakken states and thus a better opportunity to avoid drilling near communities. Likewise, Bakken states (Montana and North Dakota) are largely rural to begin with, making land use decisions simpler and disputes regarding property lines and leasehold interests less common.

Even the use of fracking fluids varies widely by field and formation. As the EPA noted, “[o]n any one fracturing job, different fluids may be used in combination or alone at different stages in the fracturing process. Experienced service company engineers will devise the most effective fracturing scheme, based on formation

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210. Edward M. Green, *State and Federal Roles Under the Surface Mining Control and Reclamation Act of 1977*, 21 S. ILL. U. L.J. 531, 535–36 (1997).

211. *Id.* at 535.

212. *Id.* at 535–36 (internal quotation marks omitted) (quoting 30 U.S.C. § 1201(f) (1994)).

213. Press Release, U.S. Geological Survey, 3 to 4.3 Billion Barrels of Technically Recoverable Oil Assessed in N.D. & Mont.’s Bakken Formation—25 Times More Than 1995 Estimate (Apr. 10, 2008), *available at* <http://www.usgs.gov/newsroom/article.asp?ID=1911>.

214. Marc Airhart, *The Barnett Shale Gas Boom*, GEOLOGY.COM, <http://geology.com/research/barnett-shale-gas.shtml> (last visited Mar. 1, 2011).

215. See *FAQ’s*, N.D. PETROLEUM COUNCIL, <http://www.ndoil.org/?id=77&offset=55> (under question “How does horizontal drilling affect the environment?”) (last visited Mar. 1, 2011) (“The typical new Bakken well uses a 5 acre surface location that is reclaimed to about two acres for production to develop 1,280 acres of minerals.”).

216. See JEFF HAYDEN & DAVE PURSELL, PICKERING ENERGY PARTNERS, INC., *THE BARNETT SHALE: VISITORS GUIDE TO THE HOTTEST GAS PLAY IN THE US 27* (2005), *available at* <http://www.tudorpickering.com/Websites/tudorpickering/Images/Reports%20Archives/TheBarnettShaleReport.pdf>.

characteristics, using the fracturing fluid combination they deem most effective.”<sup>217</sup> Fracking companies in Montana, for example, “have been using relatively non-intrusive fluids—mostly a gel water sand frac[k], with the gel consisting of a drilling mud or a polymer.”<sup>218</sup> In Pennsylvania’s Marcellus Shale, on the other hand, there have been reports of higher than expected levels of radiation in wastewater from fracked wells.<sup>219</sup>

Arguments for more federal intervention consistently fail to account for these realities. Professor Wiseman writes, for example, that an “absence of regulation [would] not [be] of great concern if frac[k]ing [were] a relatively benign practice that c[ould] be sufficiently controlled through the general permitting process; but if frac[k]ing has significant environmental and public health impacts, the lack of regulation is problematic.”<sup>220</sup> The problem with such an all-or-nothing analysis is that fracking is *both* benign and environmentally hazardous—depending on its location.<sup>221</sup> In some states, the general permitting process provides adequate environmental protections; in others, more stringent rules are justified.<sup>222</sup> But these are decisions that ought to be left to state policymakers and state regulatory agencies, not federal employees who may be ignorant to specific local and regional practices and may thus rely on articles like Wiseman’s, which downplay the importance of geological dissimilarities and variations in fracking technique.

With state regulations already providing extensive environmental protections, additional federal fracking controls, in all likelihood, can

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217. EPA 2004 Study, *supra* note 98, at 4-2, available at [http://www.epa.gov/ogwdw/uic/pdfs/cbmstudy\\_attach\\_uic\\_ch04\\_hyd\\_frac\\_fluids.pdf](http://www.epa.gov/ogwdw/uic/pdfs/cbmstudy_attach_uic_ch04_hyd_frac_fluids.pdf).

218. Wiseman, *supra* note 16, at 141 (citations omitted).

219. Don Hopey & Daniel Malloy, *Radiation in Fracking Fluid Is a New Concern*, PITTSBURGH POST-GAZETTE, Mar. 1, 2011, at A.1.

220. Wiseman, *supra* note 16, at 116.

221. Of course, this is not the only problem with Professor Wiseman’s statement. As noted above, to characterize any producing state’s approach to fracking as an “absence” of regulation borders on bold-faced propaganda. *See supra* Part III.C.

222. In states such as Pennsylvania, for example, where permitting rules incorporate other environmental regulations and require operators to account for water resources near drill sites, additional fracking-specific requirements would arguably be unnecessary. *See supra* notes 137–39 and accompanying text. The same could be said for states like Montana, where urban drilling is rarely a concern and operators use nonintrusive fracking fluids. *See supra* notes 215, 218 and accompanying text. On the other hand, in areas where fracturing could significantly interfere with crucial land and water use plans—as it might within the New York and Syracuse watersheds—public health concerns may demand separate rules for fracked wells. *See supra* note 132 and accompanying text.

have only one of two effects: either (1) they will “have little impact,” representing “no more than ideological tinkering with state law”;<sup>223</sup> or (2) they will alter the entire state-centric system, essentially voiding many workable state rules, creating overlapping controls that slow down domestic oil and gas production, and producing uniform standards for fracking techniques that ought to vary by field and region.

Should Congress opt for such a uniform system, the safest route would be to force all states to adopt stringent fracking rules. The problem is that while such regulations might be appropriate and welcomed in New York, they could be unnecessarily restrictive in states like Montana and North Dakota. At the same time, crafting a middle-of-the-road national standard could send the message that stricter requirements are unnecessary.<sup>224</sup>

## 2. *Federal regulatory failures*

Obviously, only a shortsighted system would fail to account for at least some regional and geological differences. But even if each state’s reserves were identical, no evidence suggests that federal fracking regulation would be superior to state control. In fact, the BP spill and other recent energy industry problems have created concerns that the entire federal energy regulatory machine is simply too large, and too politically dominated, to be effective.<sup>225</sup>

As the National Commission on the BP Deepwater Horizon Spill and Offshore Drilling described, from its outset “federal regulation of offshore drilling awkwardly combined” two competing priorities—environmental protection and energy independence—which were often difficult to reconcile “as a series of Congresses,

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223. *Fuentes v. Shevin*, 407 U.S. 67, 102 (1972) (White, J., dissenting).

224. Similarly, some commentators have questioned the desirability of allowing states that prefer more stringent regulation to ratchet up their rules beyond federal minimum standards but at the same time prohibiting those that prefer less regulation to ratchet down their own. See, e.g., William L. Andreen, *Federal Climate Change Legislation and Preemption*, 3 ENVTL. & ENERGY L. & POL’Y J. 261, 292–93 (2008) (noting that the problems created by overlapping regulatory systems constitute “the strongest point in favor of ceiling preemption”). For a thorough discussion of this debate, see William W. Buzbee, *Asymmetrical Regulation: Risk, Preemption, and the Floor/Ceiling Distinction*, 82 N.Y.U. L. REV. 1547 (2007).

225. See BP COMM’N, *supra* note 3, at 55–86 (describing various federal regulatory oversights that led to the BP explosion and oil spill). As the Commission explains, “[t]he rig’s demise signals the conflicted evolution—and severe shortcomings—of federal regulation of offshore oil drilling in the United States, and particularly of Minerals Management Service oversight of deepwater drilling in the Gulf of Mexico.” *Id.* at 55–56.

Presidents, and Secretaries of the Interior” moved in and out of power.<sup>226</sup> The result was an odd, and often irrational, set of rules. “In some offshore regions,” for example, “oil drilling was essentially banned in response to environmental concerns. Elsewhere, most notably in the Gulf, some environmental protections and safety oversight were formally relaxed or informally diminished so as to render them ineffective.”<sup>227</sup> As drilling moved further offshore and more money poured into federal coffers, safety and environmental risks increased. Unfortunately, these risks “were not matched by greater, more sophisticated regulatory oversight.”<sup>228</sup>

Some problems were due to the fact that the same federal agency, the Minerals Management Service (MMS), was “responsible for regulatory oversight of offshore drilling—and for collecting revenue from that drilling.”<sup>229</sup> A 2008 study by the Interior Department revealed numerous ethical scandals involving MMS employees, “including allegations of financial self-dealing, accepting gifts from energy companies, cocaine use and sexual misconduct.”<sup>230</sup> Another Interior Department report prepared after the BP spill cited communication problems at the Agency as well as unevenly staffed offices and inadequate training.<sup>231</sup> As the National Commission put it:

[T]he overall picture of MMS that has emerged since [the spill] is distressing. MMS became an agency systematically lacking the resources, technical training, or experience in petroleum engineering that is absolutely critical to ensuring that offshore

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226. *Id.* at 56.

227. *Id.*

228. *Id.*

229. *Id.* at 65.

230. Charlie Savage, *Sex, Drug Use and Graft Cited in Interior Department*, N.Y. TIMES, Sep. 11, 2008, at A1, available at <http://www.nytimes.com/2008/09/11/washington/11royalty.html>.

231. See WILMA A. LEWIS ET AL., OUTER CONTINENTAL SHELF SAFETY OVERSIGHT BD., U.S. DEP’T OF THE INTERIOR, REPORT TO SEC’Y OF THE INTERIOR KEN SALAZAR (Sep. 1, 2010), available at <http://www.noia.org/website/download.asp?id=40069>. The report revealed that MMS “[e]mployee performance plans and monetary awards . . . [were sometimes] based on meeting deadlines for leasing or development approvals—financial incentives that could distort balanced decision-making.” *Id.* at 20. In the Agency’s Pacific Region, where far less offshore drilling takes place, the ratio of inspectors to facilities was 1-to-5, yet in the Gulf of Mexico, it was an astonishing 1-to-54. *Id.* at 13. Inspectors often lacked necessary tools, such as laptops, and many complained of a lack of support from management. *Id.* at 15.

drilling is being conducted in a safe and responsible manner. For a regulatory agency to fall so short of its essential safety mission is inexcusable.<sup>232</sup>

In light of such failures, it is puzzling that critics of fracking believe so adamantly in the superiority of national controls over a state-centric system that has worked with relatively few problems for six decades.

### *C. Financial Costs of Federal Regulation*

Even if fracking regulators were somehow immune from the failures that have plagued other agencies, additional federal regulation should not be adopted without a realistic assessment of its price tag. Testifying before the House Committee on Energy and Commerce in 2005, Victor Carrillo, chairman of the Texas Railroad Commission, argued that stricter federal fracking standards “would not result in cleaner water but only in adding significant cost. Such unnecessary regulation and the concomitant cost can only serve to retard the development of much needed natural gas in this country.”<sup>233</sup> This statement seems even more appropriate six years later, as additional research has revealed just how significant those costs could be.

Merely studying the issue at the federal level can be expensive. As part of its Science to Achieve Results Program, the EPA requested \$4.3 million for fracking research alone in fiscal year 2011.<sup>234</sup> The amount constitutes a \$2.5 million increase from 2010.<sup>235</sup> The costs of actually administering a federal fracking regulatory program, after research is completed and rules are drafted, would undoubtedly be astronomically higher.

Compounding this concern is the serious potential for federal financial waste. According to a study completed in early 2011 by the Government Accountability Office, “overlapping and duplicative

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232. BP COMM’N, *supra* note 3, at 57.

233. Victor Carrillo, Chairman, Tex. R.R. Comm’n Representing the Interstate Oil and Gas Compact Comm’n, Testimony Submitted to the H. Comm. on Energy and Commerce (Feb. 10, 2005), <http://archives.energycommerce.house.gov/reparchives/108/Hearings/02102005hearing1428/Carrillo.pdf>.

234. U.S. ENVTL. PROT. AGENCY, FY 2011 BUDGET IN BRIEF 13–14 (Feb. 2010), available at <http://nepis.epa.gov/Adobe/PDF/P10069PG.PDF>.

235. *Id.* at 14.

[federal] programs . . . cost taxpayers billions of dollars each year.”<sup>236</sup> The nonpartisan office uncovered a staggering number of federal inefficiencies, including “82 federal programs to improve teacher quality; 80 to help disadvantaged people with transportation; 47 for job training and employment; and 56 to help people understand finances.”<sup>237</sup> It seems unlikely that additional federal hydraulic fracturing regulation, if enacted, would not suffer from similar financial inefficiencies.

Of course, state regulatory agencies could be just as wasteful. Nevertheless, citizens are arguably more equipped to hold local and state government officers politically accountable for their waste.<sup>238</sup> This is so not only because citizens generally have greater access to local and state leaders, but also because they can compare government spending in their state with that of neighboring states.<sup>239</sup> In contrast, selecting appropriate foreign governments for comparisons of federal spending seems a much more daunting task.

Regardless of the cost to taxpayers, additional federal regulation would put a significant financial burden on developers. A 2009 report prepared for the American Petroleum Institute estimates that national fracking legislation could increase the costs of shale plays by \$47,333 per well and non-shale plays by \$109,833 per well.<sup>240</sup> Perhaps even more troubling is that such “added costs raise the economic threshold . . . at which a play can be developed,” decreasing the total number of wells operators who are willing to drill.<sup>241</sup> As the report explains:

Experience suggests that a 20% reduction in the number of wells completed each year due to increased regulation is a valid

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236. Damian Paletta, *Billions in Bloat Uncovered in Beltway*, WSJ.COM (March 1, 2011), <http://online.wsj.com/article/SB10001424052748703749504576172942399165436.html?mod&mg=com-wsj>.

237. *Id.*

238. See Glicksman & Levy, *supra* note 205, at 592 (“[S]tate governments are more directly accountable and more familiar with regional conditions . . . than the federal government.”).

239. See Timothy Besley & Anne Case, *Incumbent Behavior: Vote-Seeking, Tax-Setting, and Yardstick Competition*, 85 AM. ECON. REV. 25 (1995).

240. IHS 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-Natl-impacts.pdf>.

241. *Id.*

assumption due to the additional time needed to file permits, push-back of drilling schedules due to higher costs, increased chance of litigation, injunction or other delay tactics used by opposing groups and availability of fracturing monitoring services.<sup>242</sup>

Such costs would undoubtedly be passed along to consumers, compounding government waste with higher prices at the pump.

#### V. CONCLUSION

The tremendous economic impact of hydraulic fracturing should not be understated. As the need to replace conventional sources of energy becomes more pressing, the United States' dependence on foreign oil and the risks of offshore drilling may combine to make the debate about fracking and other unconventional forms of drilling one of the most important energy-related issues of the twenty-first century.

Special interest groups insist that fracking's impact on the environment is disastrous, but decades of study have revealed only minor concerns. In light of federal regulatory failures such as those that led to the BP disaster in the Gulf, leaving control of hydraulic fracturing with the states seems to be a far more prudent course. Local and regional industry realities should guide energy regulation in the United States, and state officials are far more equipped than federal employees to successfully account for the geological and human variables that shape onshore development. State regulation of such development has intensified as unconventional methods of drilling have increased. In the process, courts have properly addressed the legal aspects of hydraulic fracturing while giving appropriate deference to agency regulations based on state common law theories, legislative directives, environmental needs, and local practices.

Hydraulic fracturing has played an important role in the oil and gas industry for more than sixty years. Regulatory intrusions by the federal government at this point will only create unnecessary financial burdens and hinder developers' ability to efficiently extract hydrocarbons.

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242. *Id.*

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As the Groundwater Protection Council warned more than a decade ago: “If additional federal regulations were to be imposed they would not be based on scientific observation of associated contamination, and there would be little if any increase in protection of public health and the environment.”<sup>243</sup> With so little to gain, the costs of additional federal controls are simply unjustifiable.

*Matt Willie\**

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243. GROUND WATER PROT. COUNCIL, SURVEY RESULTS ON INVENTORY AND EXTENT OF HYDRAULIC FRACTURING IN COALBED METHANE WELLS IN THE PRODUCING STATES 10 (1998), *available at* <http://www.energyindepth.org/PDF/hydraulic-fracturing-inventory.pdf>.

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