Controlling the Local Impacts of Hydrofracking

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Hydrofracking: State Preemption, Local Power, and Cooperative Governance

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Abstract

Advocates for the gas drilling technology known as hydraulic fracturing, or fracking, argue that it will bring significant economic benefits to the private and public sectors. Its opponents dispute these claims and point to significant environmental and public health risks associated with fracking—risks that must be considered in adopting government regulations needed to protect the public interest. One of the many issues raised by fracking is which level of government should regulate which aspects of the practice. This debate is complicated by the fact that the risks associated with fracking raise concerns of federal, state, and local importance and fit within existing regulatory regimes of each of these levels of government. This Article begins by describing the limited aspects of fracking that are currently regulated by the federal government, which leaves many of the risks unaddressed, opening the door for state and local regulation. This Article describes the legal tension between state and local governments in regulating fracking in the four states that contain the immense Marcellus shale formation. Its particular focus is on court decisions that determine whether local land use regulation, which typically regulates local industrial activity, has been preempted by state statutes that historically regulate gas drilling operations. This investigation suggests that the broad scope and durability of local land use power as a key feature of municipal governance tends to make courts reluctant to usurp local prerogatives in the absence of extraordinarily clear and express language of preemption in state statutes that regulate gas drilling. The Article concludes with an examination of how the legitimate interests and legal authority of all three levels of government can be integrated in a system of cooperative governance.

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INTRODUCTION: FRACKING RAISES JURISDICTIONAL ISSUES

Hydraulic fracturing, or fracking, is a gas well stimulation and extraction technique designed for areas underlain by large shale formations found often a mile or more below the surface. Vertical fracking has been done for decades, but relatively recent technology enables directional drilling, which allows the drill stem and borehole to follow the horizontal structure of the shale formations and proceed thousands of feet to exploit gas reserves far from the well head.[1] In horizontal fracking, millions of gallons of water are pumped at high pressure into the well bore—water that contains thousands of gallons of proprietary chemical slurries and a propping agent, such as sand.[2]

1. Marianne Levelle, *Forcing Gas Out of Rock with Water*, NAT'L GEOGRAPHIC DAILY NEWS (Oct. 17, 2010), http://news.nationalgeographic.com/news/2010/10/101022-energy-marcellus-shale-gas-science-technology-water.

2. Between one million and five million gallons, or more, of water is needed for a typical gas well in the Marcellus shale. MICHELE RODGERS ET AL., MARCELLUS SHALE: WHAT LOCAL GOVERNMENT OFFICIALS NEED TO KNOW 5 (2009), *available at* http://pubs.cas.psu.edu/FreePubs/pdfs/ua454.pdf. About 99.5% of this fluid is composed of water and proppant (usually sifted sand) and about 0.5% consists of chemical additives. *See* GROUNDWATER PROT. COUNCIL, MODERN SHALE GAS DEVELOPMENT IN THE UNITED STATES: A PRIMER 61–62 (April 2009), *available at* http://www.gwpc.org/sites/default/files/Shale%20Gas%20Primer%2020

The pressure creates fractures in the hydrocarbon-bearing shale and the propping agent keeps the fissures open.[3] This releases the natural gas that the shale contains and allows it to be pumped to the surface.[4] Some of the fluid mixture, known as "flowback water," returns to the surface, where it is either trucked off site to injection wells or released into water treatment facilities.[5] This raises complications in some states, particularly those in the Marcellus region, where the geology is not favorable to injection wells.[6] This, in turn, leads to a search for appropriate injection wells in other states and for treatment plants that can handle this wastewater, which are often in short supply.[7] Horizontal fracking operations also emit volatile organic compounds and methane during the completion of the wells, raising both public health and climate change concerns.[8] Additional air pollution is caused by the thousands of truck trips that each well may generate—trips that require improved or new roads, that can cause landscape fragmentation, and that create congestion, noise, and the need for expensive road repairs, thus burdening local tax payers.[9]

09.pdf (noting that chemicals used include biocides, gels, friction reducers, and other agents that reduce corrosion, thus easing the process of fracking the shale). For a graphic representation, see *A Fluid Situation: Typical Solution Used in Hydraulic Fracturing*, ENERGY IN DEPTH, http://www.energyindepth.org/frac-fluid.pdf (last visited Apr. 9, 2013).

3. N.Y. STATE DEP'T OF ENVTL. CONSERVATION, REVISED DRAFT, SUPPLEMENTAL GENERIC ENVIRONMENTAL IMPACT STATEMENT ON THE OIL, GAS AND SOLUTION MINING REGULATORY PROGRAM 5-5 (2011) [hereinafter REVISED DRAFT SGEIS], *available at* http://www.dec.ny.gov/data/dmn/rdsgeisfull0911.pdf; John A. Harper, *The Marcellus Shale—An Old "New" Gas Reservoir in Pennsylvania*, 38 PA. GEOLOGY 1, 10 (2008), *available at* http://www.dcnr.state.pa.us/cs/groups/public/documents/document/dcnr_006811.pdf.

4. *See* REVISED DRAFT SGEIS, *supra* note 3, at 5-5 (describing how hydrocarbons are retrieved after fluids are injected and recovered).

5. *See id.* at 5-131 (noting the disposal options for flowback water).

6. Joanna Zelman, *New York Fracking Debate Focuses on Wastewater*, HUFF POST GREEN (Feb. 20, 2012 8:27 AM), http://www.huffingtonpost.com/2012/02/20/new-york-fracking_n_1288696.html ("Other geologists have said New York doesn't have the right geology for such wells.").

7. *See* REVISED DRAFT SGEIS, *supra* note 3, at 5-132 to 5-133.

8. Press Release, EPA, EPA Proposes Air Pollution Standards for Oil and Gas Production (Jul. 28, 2011), http://yosemite.epa.gov/opa/admpress.nsf/1e5ab1124055f3b28525781f0042ed40/8688682fbbb1ac65852578db00690ec5!OpenDocument.

9. *See* REVISED DRAFT SGEIS, *supra* note 3, at 6-303 (estimating that each permitted well generates about 6,800 truck trips).

Advocates for the gas drilling industry argue that fracking will bring significant economic benefits to the private and public sectors.[10] The opponents of fracking dispute these claims and point to environmental and public health risks associated with fracking—risks that must be considered in government regulation needed to protect the public interest. The debate on both sides yields differing projections of supplies, jobs created, tax revenues, water needed, wastewater created, and the extent of groundwater and surface water pollution. Fracking's proponents and opponents argue over the effect of fracking on community character, climate change, the nation's balance of payments, and whether or not it will help the United States become less dependent on oil imports or retard the development of renewable energy sources.

Those who object to fracking point also to a variety of environmental risks that they fear are associated with the technology: air pollution, groundwater depletion and contamination, surface-water pollution, soil erosion and sedimentation, visual blight, noise pollution, road congestion and destruction, and the deterioration of community character.[11] They worry as well about a variety of public health concerns, including escaped methane and other volatile organic compounds, exposure to ground-level ozone causing respiratory illness, chemical fires, lung disease in workers caused by the inhalation of silica dust, benzene pollution of the air near drilling sites, particulate matter from heavy trucks travelling on dirt roads, personal injury from seeping hydrochloric acid and solvents, earthquakes, and diesel fuel and toxic chemicals in ground water.[12]

One of the many issues raised by fracking is which level of government should regulate which aspects of the practice. This debate is complicated by the fact that the benefits associated with fracking are national, regional, statewide, and local in nature and that the risks associated with fracking raise concerns that are within the existing legal jurisdiction of federal, state, and local government. These realities lead, in turn, to further debates about which level of

10. *See* Jared B. Fish, Note, *The Rise of Hydraulic Fracturing: A Behavioral Analysis of Landowner Decision-Making*, 19 BUFF. ENVTL. L.J. 219, 265 (2012) (noting that entry of the natural gas industry can bring jobs to communities and produce quick financial gains for landowners).

11. *See* REVISED DRAFT SGEIS, *supra* note 3, at 2-9 to 2-19.

12. *See* Charlotte Tucker, *Health Concerns of 'Fracking' Drawing Increased Attention*, THE NATION'S HEALTH, Mar. 2012, at 1, 14, *available at* http://thenationshealth.aphapublications.org/content/42/2/1.2.full (noting the EPA's public health concerns related to fracking); *see generally* REVISED DRAFT SGEIS, *supra* note 3 (providing a detailed accounting of the airborne chemicals detected at well sites, water quality measures, seismic activity, traffic effects, and health risks).

government should have the primary role in regulating fracking; indeed, some argue that the federal government should fully preempt the field of fracking regulation, others argue that states should preempt local regulation, and some see benefits in the involvement of all three levels of government in regulating the technology.[13]

If the advocates of either federal or state preemption prevail, the historical role of local governments in controlling local land uses and their impacts will be diminished, if not extinguished.[14] Local governments are created by and derive their powers from the state. They get the power to adopt land use plans and regulations through state planning and zoning enabling acts and home-rule statutes. If the state legislature expressly and in certain terms preempts using that delegated power in order to promote a state interest such as gas exploration, the power of local government is clearly trumped. Where state legislatures do not expressly preempt local zoning, or where their

13. *See* Christopher S. Kulander, *Shale Oil and Gas State Regulatory Issues and Trends*, 63 Case W. Res. L. Rev. ???? (2013) ("[W]hat is being derided as a weakness is actually a strength: each state can rapidly respond to its unique blend of economic, political, hydrological, and geological realities to achieve realistic and functional regulatory oversight. A further weakness alleged by those favoring federal primacy, that states are 'rushing' to create law regulating fracing, is also a strength: the necessary regulations are made in a timely manner, in response to industry activity, and by those more familiar with the challenges faced by an individual state.").

14. The law of preemption is fraught with ambiguity, giving courts leeway to embrace different policies and achieve different results, given the context. The Supremacy Clause can be relied upon to support federal dominance, or the Tenth Amendment to support strong state control; jurists can dissect language in federal or state statutes that seems to express an intent to preempt and still decide that the matter under investigation is not preempted because some aspect of the field regulated is not dealt with in the statutory scheme. When local governmental power is the issue, home-rule statutes and fundamental powers of local government can be relied upon to argue against state law preemption; in Dillon's Rule states, this is more difficult, but the Rule is declining in popularity, and more liberal interpretations of local power are emerging giving more sway to statutes that delegate power to localities. This leeway in the law of preemption gives both parties to disputes over legal power opportunities to make their best case for control of the matter at hand. This Article posits that those favoring local control over fracking have a good case because of the complexity, comprehensiveness, and importance of local land use control in the critical matter of municipal governance. The authors credit Michael Allan Wolf, Richard E. Nelson Chair in Local Government Law, University of Florida, Levin College of Law for this insight, which was offered during his introductory remarks at the 2013 Nelson Symposium. Professor Wolf urged that scholars and lawyers should embrace this ambiguity and make their best case for their desired result in each instance. The argument for a presumption against preemption of local land use control is the authors' own.

intention to do so is ambiguous, it is the job of the courts to determine whether localities are preempted. Courts may find that, by implication, state legislatures intended to preempt local power. Implied preemption may be based on the court finding direct conflicts between general state legislation and local zoning controls (conflict preemption) or by finding that the state legislative scheme is so comprehensive that it intended to occupy the field (field preemption).

In most states, zoning is one of several powers delegated to local governments to serve local and state interests. Zoning determines how property is used, developed, and how valuable it will be; localities have the power to impose property taxes on the land they regulate and they are expected to use those revenues to fund municipal operations, provide municipal infrastructure, and carry on the business of local government, which benefits local citizens and the state in multiple ways. Given the complexity, comprehensiveness, and utility of these linked powers and duties, the judiciary is rightfully cautious about implying that state regulatory enactments, such as those regulating fracking, were intended by the legislature to inhibit local prerogatives. The importance of local land use regulation leads to a presumption against preemption that must be overcome to convince most state judges that, in adopting oil and gas laws, state legislatures intended to preempt local zoning.

This Article begins in Part I by describing the aspects of fracking that are currently regulated by the federal government, which leaves many of the risks untouched for future federal regulation or for state and local governments to consider. Parts II, III, and IV describe the legal tension between state and local regulation in the four states that contain the immense Marcellus shale formation: New York, Pennsylvania, West Virginia, and Ohio. These Parts focus on court decisions that determine whether local regulation to protect the interests, typically governed by land use planning and zoning, have been preempted by state law delegating regulation of the gas industry to one or more state agencies. This investigation suggests that the broad scope and durability of local land use power tends to make courts reluctant to usurp local prerogatives in the absence of clear and express language of preemption in gas regulation statutes. The Article concludes in Part V with an examination of how the legitimate interests and legal authority of all three levels of government can be integrated in a system of cooperative governance.

I. Limited Scope of Current Federal Regulations

Several federal statutes apply, either directly or theoretically, to hydraulic fracturing. But the sprawling federal regulatory structure is rife with ambiguity and is in a state of flux. Mounting political pressure from environmental groups, citizen-activists, academia, and

even Hollywood[15] is forcing federal authorities to explore new avenues of regulation within the existing regulatory structure.[16] Countervailing pressures, however, from conservative members of Congress, industry lobbyists, and environmentalists who advocate for state and local authority, are trying to strip the EPA of its authority or, at a minimum, contain it.

Born out of the statutes discussed in the subsections below, the current federal regulatory system is both fragmented and incomplete. The Safe Drinking Water Act (SDWA), which applies to the injection or reinjection of fracking fluid into groundwater aquifers that provide drinking water, only imposes standards upon drilling operations injecting diesel fuel, but one of myriad concerns surrounding the technology.[17] The Clean Water Act (CWA), which applies to surface water contamination, is powerless to address the potential contamination resulting from water migrating to the surface waters after being injected into the ground.[18] The Clean Air Act (CAA) is currently being used to institute new rules on the release of methane and hazardous air pollutants, but the scope of this relatively successful regulatory scheme is confined to the well pad point source.[19] The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) grants the EPA the authority to hold polluters strictly liable for cleanup costs of hazardous waste sites, but "petroleum . . . [and] natural gas" are exempted from the definitions of "hazardous substances."[20] Likewise, oil and gas waste is exempted from the "cradle-to-grave" waste management scheme of the Resource Conservation and Recovery Act (RCRA).[21] The Endangered Species Act (ESA) grants the Secretary of the Interior the power to protect endangered species from "take," but this approach is rarely used and

15. Mark Fischetti, *Matt Damon's Fracking Movie Depicts Gas Companies as Liars*, Sci. Am. (Jan. 6, 2013), http://blogs.scientificamerican.com/observations/2013/01/06/matt-damons-fracking-movie-depicts-gas-companies-as-liars.

16. In the absence of legislative action, President Obama appears poised to push federal fracking regulations during his second term. *See* Wayne J. D'Angelo, *Hydraulic Fracturing Regulation in President Obama's Second Term*, Fracking Insider, (Nov. 13, 2012), http://www.frackinginsider.com/hydraulic-fracturing-regulation-in-president-obamas-second-term (noting that the Obama administration is surveying the regulatory authority it has within existing statutes and assessing how to issue rules under those statutes).

17. *See* discussion *infra* Part I.A.

18. *See* discussion *infra* Part I.B.

19. *See* discussion *infra* Part I.C.

20. *See* discussion *infra* Part I.D.

21. *See* discussion *infra* Part I.E.

entirely contingent upon the regional concerns of particular species.[22] The Obama administration partially granted a petition to require manufacturers to disclose the chemical makeup of fracking fluids under the Toxic Substances Control Act (TSCA), but even if fully granted, these disclosures do not necessitate any regulation in and of themselves.[23]

A. Safe Drinking Water Act

Enacted in 1972, the Safe Drinking Water Act is designed to ensure the integrity and safety of public water for human consumption, focusing particularly on toxic substances.[24] The SDWA establishes two primary regulatory structures to maintain safe public drinking water, the first of which requires the EPA to set maximum contaminant levels for public water systems.[25] The second, which applies to fracking, mandates that the EPA establish regulatory minima governing underground injection, and prohibits "underground injection" of fluids without a permit.[26] This pertains directly to fracking operations, which involve the underground injection of millions of gallons of water containing proppants and proprietary chemicals.

The SDWA establishes an Underground Injection Control program (UIC), which establishes "inspection, monitoring, recordkeeping, and reporting requirements" designed to protect drinking water sources from contamination due to injection operations.[27] The extent to which a particular site is regulated depends on which of five classifications it receives.[28] The UIC sets minima for "inspection, monitoring, recordkeeping, and reporting requirements."[29] States must implement their own UIC programs, meeting or exceeding the requirements set by the EPA.[30] After the

22. *See* discussion *infra* Part I.F.

23. *See* discussion *infra* Part I.G.

24. 42 U.S.C. §§ 300f–300j-26.

25. *See* 42 U.S.C. §§ 300g-1(a)–(b) (mandating the promulgation of national primary drinking water regulations and maximum contaminant level goals).

26. 42 U.S.C. § 300h(b)(1)(A).

27. 42 U.S.C. § 300h(b)(1)(C)–(b)(2).

28. *See* 42 U.S.C. § 300h-5 (directing the EPA to promulgate regulations and determine the applicability of monitoring methods to provide the earliest possible detection of fluid migration into underground sources of drinking water); 40 C.F.R. § 146.5(a)–(e) (2012) (describing the five classes of injection wells in the UIC program).

29. 42 U.S.C. § 300h(b)(1)(C); *see also* 40 C.F.R. § 145 (covering state UIC program requirements).

30. 42 U.S.C. § 300h-1(b)(1)(A).

EPA approves the state UIC program, the state is responsible for its enforcement.[31] The EPA, however, retains veto power over the state permitting program.[32]

The fight over the EPA's authority to regulate fracking under the SDWA has a relatively long legislative history, beginning with the *Legal Environmental Assistance Foundation, Inc. v. EPA* (*LEAF*) decision of 1997.[33] In *LEAF*, the plaintiff challenged the EPA's decision to approve the Alabama state UIC program, which failed to regulate hydraulic fracturing operations.[34] In 1997, the Eleventh Circuit held that the plain meaning of the SDWA "require[d] the regulation of *all* [underground injection] activities."[35]

Following this 1997 ruling, the EPA conducted a study of the fracking process in order to determine whether the risks were sufficient to warrant regulation under the SDWA.[36] In a 2003 negotiated agreement with the EPA, Halliburton Energy Services, BJ Services, and Schlumberger Technology voluntarily agreed "to eliminate diesel fuel in hydraulic fracturing fluids injected into coalbed methane . . . production wells in underground sources of drinking water (USDWs)."[37]

In 2004, the EPA's study on potential impacts on USDWs found that injection of fracking fluids posed "minimal threat to USDWs," yet admitted that certain chemicals sometimes used in fracking operations caused some "environmental concerns."[38] Following the 2004 study, Congress passed the notorious Energy Policy Act of 2005,

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31. 42 U.S.C. § 300h-1(b)(3).

32. *See id.* (permitting the EPA to promulgate a rule finding that a given state no longer meets the requirements of the program).

33. Legal Envtl. Assistance Found., Inc. v. EPA, 118 F.3d 1467 (11th Cir. 1997). The Eleventh Circuit noted that an EPA report on hydraulic fracturing identified a "growing potential for contamination of drinking water aquifers." *Id.* at 1471 (quoting from a 1990 report by the EPA's Ground Water Study Committee).

34. *Id.* at 1469.

35. *Id.* at 1475.

36. 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, 144 (2009).

37. Memorandum of Agreement Between the EPA and BJ Servs. Co., Halliburton Energy Servs., Inc., and Schlumberger Tech. Corp., at 2 (Dec. 12, 2003), *available at* http://www.epa.gov/ogwdw000/uic/pdfs/moa_uic_hyd-fract.pdf.

38. EPA, Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs (2004), *available at* http://www.epa.gov/ogwdw/uic/pdfs/cbmstudy_attach_uic_final_fact_sheet.pdf.

containing the "Halliburton Loophole," in response to heavy lobbying efforts from the oil and gas industry.[39] The Act amended the SDWA's definition of "underground injection" to exclude "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."[40] Thereafter, states were no longer required to seek permits before engaging in drilling operations as part of their UIC programs, with the exception of when diesel fuel was injected.[41]

Efforts to remove the loophole have been, thus far, unfruitful. The most salient attempt by the federal government to address fracking concerns was the Fracturing Responsibility and Awareness of Chemicals Act of 2011 (FRAC Act). Proposed in both the U.S. Senate[42] and House,[43] the FRAC Act would impose federal regulation in two ways. First, the Amendment would repeal the fracking exemption to the SDWA. It would modify "underground injection" to include "the underground injection of fluids or propping agents pursuant to hydraulic fracturing operations related to oil, gas, or geothermal production activities."[44] The EPA would then have to promulgate "inspection, monitoring, recordkeeping, and reporting requirements" for fracking operations.[45] State UIC programs that did not require a permit before commencing fracking operations would have to modify their UIC programs to require permits and then seek EPA approval.[46] Additionally, the Act would have required fracking operators to disclose hydraulic fracturing chemicals.[47] The FRAC Act

39. Energy Policy Act of 2005, Pub. L. No. 109-58, § 322, 119 Stat. 594, 694 (codified as amended at 42 U.S.C. § 300h(d)(1)(B)(ii) (2006)).

40. *Id.*

41. *Id.*

42. S. 587, 112th Cong. (2011). Pennsylvania Senator Robert Casey Jr., a Democrat, sponsored the bill along with seven original cosponsors. The bill went to the Senate Committee on Environmental and Public Works. On April 12, 2011, the Subcommittee on Water and Wildlife held a hearing on the bill.

43. H.R. 1084, 112th Cong. (2011). Representative Diana DeGette, a Democrat from Colorado, sponsored the bill along with thirty-one original cosponsors. On March 21, 2011, the bill was referred to the House Subcommittee on Environment and the Economy.

44. H.R. 1084, 112th Cong. § 2(a) (2011); *see also* S. 587, 112th Cong. § 2(a) (2011) (using slightly different language to reach the same outcome as the House bill).

45. *See supra* notes 34–39 and accompanying text (describing the requirements for UIC programs).

46. *Id.*

47. H.R. 1084, 112th Cong. § 2(b) (2011); S. 587, 112th Cong. § 2(b) (2011).

faced staunch opposition from the oil and gas industry, from members of Congress, and from some environmental groups that wanted regulatory decisions to be made by local and state governments. Both the House and Senate bills died at the expiration of the 112th Congress in January 2013 and have yet to be reintroduced in the 113th Congress.

B. Clean Water Act

Working in conjunction with the SDWA's regulations regarding underground sources of drinking water, the CWA[48] is designed to "eliminate the discharge of pollutants into navigable waters" and to attain a level of water quality that "provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water."[49] Fracking involves the potential point source discharge of flowback waters produced during drilling operations into nearby surface waters, among other techniques of disposal. The CWA prohibits the discharge of "point source" pollution into the "waters of the United States"[50] without obtaining a permit under the National Pollutant Discharge Elimination System (NPDES).[51] Like it does with the SDWA, the EPA generally grants permitting authority to states under their respective State Pollution Discharge Elimination Systems (SPDES) but reserves the right to institute a federal program in the event that the state fails to submit an adequate program.[52] States are required to consider "technology-based effluent limitations" and water-quality-based limits to achieve water quality goals.[53] The CWA also regulates indirect discharge of wastewater by truck or through

48. 33 U.S.C. §§ 1251–1387 (2006).

49. 33 U.S.C. § 1251(a).

50. 40 C.F.R. §§ 122.2, 230.3(p), (s) (2012) (defining discharges from point sources and permits, "pollution", and "waters of the United States").

51. 33 U.S.C. § 1342(a)(5), (b) (2006) ("The Administrator shall authorize a State, which he determined has the capability of administering a permit program which will carry out the objectives of this chapter to issue permits for discharges into the navigable waters within the jurisdiction of such state.").

52. 33 U.S.C. § 1342(c).

53. *See* 33 U.S.C. § 1311(b)(2)(A) ("[E]ffluent limitations . . . shall require application of the best available technology economically achievable . . . ."); § 1312(a) (effluent limitations "shall assure [the] protection of public health, public water supplies, agricultural and industrial uses, and the protection and propagation of a balanced population of shellfish, fish and wildlife, and allow recreational activities in and on the water"); *see also* 40 C.F.R. § 125.3(a) (2012) ("Technology-based treatment requirements . . . represent the minimum level of control that must be imposed in a permit.").

sewer systems into publicly owned treatment works (POTW), which discharge directly into U.S. waters.[54]

While surface water discharges have been successfully regulated under the CWA,[55] it is unlikely that drillers will need to obtain an NPDES permit until a "solid causal connection can be made between fracking fluid injection and injuries to people and property."[56] Nevertheless, the CWA is the primary source of authority governing the disposal and treatment of flowback water.[57] In many western states, drillers dispose of flowback water in storage wells below layers of impermeable rock, but the particular geological properties of the Marcellus formation make comparable disposal practices physically or economically impossible.[58] Accordingly, fracking companies are much more likely to dispose of flowback fluid through POTWs in the Marcellus region than in other areas of the country.[59] POTW disposal implicates SPDES permits, since they are regulated point sources of potential pollutants.

C. Clean Air Act

Fracking operations involve the emission of a variety of volatile organic compounds (VOCs) and methane: pollutants that are harmful to public health and worsen climate change.[60] The CAA[61] grants the EPA the authority to regulate emissions from stationary sources such as gas wells.[62] With respect to emissions from fracking operations, the

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54. Attachment to memorandum from James Hanlon, Dir. of the EPA's Office of Wastewater Mgmt., to the EPA Regions, Natural Gas Drilling in the Marcellus Shale NPDES Program Frequently Asked Questions, at 6 (March 16, 2011), *available at* http://www.epa.gov/npdes/pubs/hydrofracturing_faq.pdf.

55. Jason Obold, *Leading by Example: The Fracturing Responsibility and Awareness of Chemicals Act of 2011 as a Catalyst for International Drilling Reform*, 23 COLO. J. INT'L ENVTL. L. & POL'Y 473, 486 (2012) ("The CWA has been successful at regulating the surface activities of hydraulic fracturing operations . . . .").

56. *Id.*

57. Rebecca Jo Reser & David T. Ritter, *State and Federal Legislation and Regulation of Hydraulic Fracturing*, THE ADVOCATE: TEX. STATE BAR LITIG. SECTION REPORT, Winter 2011, at 31, 32.

58. *Id.* at 32 n.16.

59. *Id.*

60. *See* REVISED DRAFT SGEIS, *supra* note 3, at 7-46 (defining VOCs and how they affect fracking operations).

61. 42 U.S.C. §§ 7401–7671q (2006).

62. 42 U.S.C. § 7411(a)(3) ("The term 'stationary source' means any building, structure, facility, or installation which emits or may emit any air pollutant.").

EPA has the authority to demand reductions in Hazardous Air Pollutants[63] and VOCs,[64] including methane.[65] The CAA sets National Ambient Air Quality Standards (NAAQS) and seeks nationwide attainment through both technology-based and health-based standards.[66]

On April 17, 2012, the EPA created the first national air quality standards for hydraulically fractured natural gas wells, designed to reduce harmful emissions while allowing for responsible industrial growth.[67] These rules require compliance with new emissions standards for natural gas fracking wells, storage tanks, and other oil and gas equipment, to be achieved through the use of "proven technologies and best practices that are in use today."[68] The EPA anticipates that these regulations, when fully effective, will achieve a 95 percent reduction of VOCs from new or modified wells, accomplished through a process known as "green completion," which utilizes specialized machinery to separate gas and liquid hydrocarbons from flowback fluid.[69] The EPA claims that the new rules will provide the oil and gas industry with savings of up to $15 million in 2015,[70]

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63. EPA, Overview of Final Amendments to Air Regulations for the Oil and Natural Gas Industry 4, *available at* http://www.epa.gov/airquality/oilandgas/pdfs/20120417fs.pdf [hereinafter Overview of Air Regulation Amendments] ("EPA also must set standards for emissions of air toxics, also called hazardous air pollutants. Air toxics are pollutants known or suspected of causing cancer and other serious health effects.").

64. *Id.* ("The Clean Air Act requires EPA to set new source performance standards (NSPS) for industrial categories that cause, or significantly contribute to, air pollution that may endanger public health or welfare. EPA is required to review these standards every eight years. The existing NSPS—for VOCs and SO_2—were issued in 1985.").

65. *Id.* at 2 ("Methane, the primary constituent of natural gas, is a potent greenhouse gas—more than 20 times as potent as carbon dioxide when emitted directly to the atmosphere. Oil and natural gas production and processing accounts for nearly 40 percent of all U.S. methane emissions, making the industry the nation's single largest methane source.").

66. 40 C.F.R. pt. 50 (2012) (setting National Ambient Air Quality Standards for six principal pollutants: carbon monoxide, lead, nitrogen dioxide, ozone, particulate pollution, and sulfur dioxide).

67. Overview of Air Regulation Amendments, *supra* note 70, at 1.

68. Oil and Natural Gas Air Pollution Standards, EPA, http://www.epa.gov/airquality/oilandgas (last visited Apr. 10, 2013).

69. Overview of Air Regulation Amendments, *supra* note 70, at 1.

70. *Id.* ("EPA's analysis of the rules shows a cost savings of $11 to $19 million when the rules are fully implemented in 2015."). The oil and gas industry largely contests these economic projections and expresses concern about overregulation. "While we understand that EPA is required by law to periodically evaluate current standards, this sweeping

created by the recovery of gas and condensate that would have otherwise been lost.[71] The EPA requires that all extraction companies be in compliance with "green completion" requirements by January 1, 2015.[72] Meanwhile, companies are required to utilize combustion devices, or "flaring," to reduce their carbon emissions.[73]

D. Comprehensive Environmental Response, Compensation, and Liability Act

The CERCLA, commonly referred to as the "Superfund," is a retrospective law that grants the EPA authority to require the cleanup of hazardous waste sites.[74] CERCLA creates a federal "Superfund" to support remedial actions taken by government entities, and establishes a process by which federal and state governments, along with private parties, can bring suit against "potentially responsible parties" (PRPs) for the release of a "hazardous substance."[75]

CERCLA explicitly excludes "petroleum, including crude oil . . . natural gas, [and] natural gas liquids" from the definition of "hazardous substance."[76] Despite the "petroleum exception," the EPA may have authority to impose future liability upon oil and gas drillers for remediation costs for contamination because fracking fluid contains nonpetroleum substances.[77] Although the current regulatory

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set of potentially unworkable regulations represents an overreach that could, ironically, undercut the production of American natural gas, an abundant energy resource that is critical to strengthening our nation's air quality." Press Release, Marcellus Shale Coalition, Kathryn Z. Klaber, MSC Statement on Proposed EPA Air Regulations (Jul. 28, 2011), http://marcelluscoalition.org/2011/07/msc-statement-on-proposed-epa-air-regulations.

71. Overview of Air Regulation Amendments, *supra* note 70, at 2.

72. EPA, Summary of Key Changes to the New Source Performance Standards 1, *available at* http://www.epa.gov/airquality/oilandgas/pdfs/20120417changes.pdf.

73. *Id.*; *see also* Timothy Gardner & Ayesha Rascoe, *Fracking Rules Let Drillers Flare Till 2015*, Reuters (Apr. 18, 2012, 4:31 PM), http://www.reuters.com/article/2012/04/18/us-usa-fracking-emissions-idUSBRE83H0UH20120418.

74. 42 U.S.C. §§ 9601–9675 (2006).

75. 42 U.S.C. §§ 9601(14), 9607(a); *see also* EPA, PRP Search Manual (Sept. 30, 2009), *available at* http://www.epa.gov/oecaerth/resources/publications/cleanup/superfund/prpmanual/prp-search-man-cmp-09b.pdf.

76. 42 U.S.C. § 9601(14).

77. John C. Martin et al., *Fractured Fairy Tales: The Context and Regulatory Constraints for Hydraulic Fracturing*, *in* Development Issues in Major Shale Plays 3-1, 3-13 (Rocky Mtn. Min. L. Found. 2010).

scope under CERCLA is ambiguous, it is clear that the EPA possesses the authority to conduct investigations under CERCLA, at the very least, and may be authorized to regulate nonpetroleum pollution under the same act.[78] The difficulty of determining the chemical makeup of fracking fluids may preclude the EPA from determining the requisite nonpetroleum or hazardous classification of the fluid. This difficulty can be overcome by an EPA requirement that gas drilling companies disclose the chemicals used so that the agency can properly discharge its regulatory functions under CERCLA.

E. Resource Conservation and Recovery Act

Passed by Congress in 1976, the RCRA grants the EPA the authority to regulate all aspects of hazardous waste generation, transportation, treatment, storage, and disposal.[79] RCRA is complimentary to CERCLA: the former is a preventative "cradle-to-grave" statute and the latter is a remedial statute. Among other related requirements, RCRA creates disclosure and safety standards meant to encourage the reduction of such waste and the use of nontoxic alternatives.[80] RCRA also established a national framework to manage nonhazardous solid wastes and underground storage tanks.[81] Subchapter III of RCRA grants the EPA authority to establish safeguards and waste management procedures to regulate and prevent hazardous wastes.[82]

Congress and the EPA reached an agreement in 1988 to exempt oil and gas from RCRA regulation in response to heavy industry lobbying efforts.[83] Subchapter III of RCRA explicitly exempts wastes

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78. *See id.* (discussing the EPA's "investigative authority" during a hydraulic fracturing incident in Pavillion, Wyoming).

79. 42 U.S.C. §§ 6901–6992 (2006).

80. *See* 42 U.S.C. §§ 6922(b) (discussing waste minimization programs); *see also* EPA, RCRA: Reducing Risk From Waste 2 (Sept. 1997), *available at* http://www.epa.gov/osw/inforesources/pubs/risk/risk-1.pdf ("The primary goals of RCRA are to: Protect human health and the environment from the potential hazards of waste disposal. Conserve energy and natural resources. Reduce the amount of waste generated. Ensure that wastes are managed in an environmentally sound manner.").

81. 42 U.S.C. §§ 6941–6949a ("State or Regional [nonhazardous] Solid Waste Plans"); § 6991 ("Regulation of Underground Storage Tanks").

82. 42 U.S.C. §§ 6921–6939g ("Hazardous Waste Management").

83. Jennifer Dixon, *EPA Said to Bow to Political Pressure in Oil Wastes Ruling*, Associated Press (July 19, 1988, 12:49 AM), *available at* http://www.apnewsarchive.com/1988/EPA-Said-To-Bow-To-Political-Pressure-In-Oil-Wastes-Ruling/id-87790d67435a0ba3eb1e5ecc5ce86c9c.

generated from oil and gas exploration and production[84] and imposes strict standards upon transporters.[85] This exemption was originally a temporary measure set by Congress but became permanent after the EPA, at Congress's urging, conducted a study that determined that regulation of oil and gas wastes was unwarranted under RCRA.[86] Thus, although fracking fluids may contain toxic chemicals ordinarily regulated under RCRA, the EPA lacks the authority to regulate them.[87]

F. Endangered Species Act

Additional federal authority to regulate fracking may be contained in the ESA.[88] Passed in 1973, the ESA was designed to protect both endangered and threatened species, as well as the habitats on which they depend.[89] The ESA requires the Secretary of the Interior, advised by the Fish and Wildlife Service and the National Marine Fisheries Service, to give the "highest priority" to protecting endangered species.[90] The Secretary of the Interior has the authority to list all terrestrial and freshwater species as either "endangered" or "threatened," and the Secretary of Commerce has the equivalent authority for marine life.[91] All species listed as "endangered" and most species listed as "threatened," or "likely to become an endangered species within the foreseeable future,"[92] are

84. 42 U.S.C. § 6921(b)(2) ("[W]astes associated with the exploration, development, or production of crude oil or natural gas or geothermal energy shall be subject only to existing State or Federal regulatory programs.").

85. 42 U.S.C. § 6923 ("Standards applicable to transporters of hazardous waste.").

86. Clarification of the Regulatory Determination for Wastes from the Exploration, Development and Production of Crude Oil, Natural Gas and Geothermal Energy, 58 Fed. Reg. 15,284 (March 12, 1993) ("[T]his document only further clarifies the status of these wastes under the RCRA . . . hazardous waste exemption . . . and does not alter the scope of the current exemption in any way.").

87. In spite of legislative inaction, the Obama administration is set to review petitions to apply RCRA to produced waters and fracking fluid. *See* D'Angelo, *supra* note 16.

88. 16 U.S.C. §§ 1531–1544 (2006).

89. 16 U.S.C. § 1531(b)

90. TVA v. Hill, 437 U.S. 153, 174 (1978) ("[E]xamination of the language, history, and structure of the [ESA] indicates beyond doubt that Congress intended endangered species to be afforded the highest of priorities.").

91. 16 U.S.C. § 1533(a)(1)–(2).

92. 16 U.S.C. § 1532(6), (20).

protected from "take"[93] by public or private actors.[94] Federal agency actions are not permitted to "take" or jeopardize *any* listed species, not only by autonomous agency actions but also by permitting actions of others[95]—a universal need with respect to hydraulic fracturing. Additionally, the wildlife agencies designate "critical habitats" for each endangered or threatened species listed in the Federal Register, specifying the range of the particular species.[96] Agencies or permitted parties are prohibited from engaging in, funding, or authorizing any action that would modify, adversely affect, or destroy a designated habitat.[97] The Secretary is required to conserve and protect an endangered or threatened species until the species is no longer endangered or threatened.[98]

The fragmentation of the natural landscape caused by road building, heavy road use, pipeline construction, and surface-water pollution may constitute "take" of endangered species, which might be preventable through enforcement of the ESA provisions. In fact, many

93. 16 U.S.C. § 1532(19) ("The term 'take' means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.").

94. *See* 16 U.S.C. § 1538(a) (stating that "taking" endangered animals is "unlawful for any person subject to the jurisdiction of the United States"). Similar to the ESA, the Migratory Bird Treaty Act protects migratory bird species from deliberate or incidental "take." 16 U.S.C. §§ 703–712 (2006). Although the Migratory Bird Treaty Act does not contain a provision to protect a particularized habitat, it imposes strict liability upon any person for the death of a migratory bird, even if the death occurs as a result of the bird drinking water from a legal retaining pond. *See* United States v. FMC Corp., 572 F.2d 902, 908 (2d Cir. 1978) ("[T]he statute does not include as an element of the offense 'wilfully, knowingly, recklessly, or negligently.' . . . Congress recognized the important public policy behind protecting migratory birds; FMC engaged in an activity involving the manufacture of a highly toxic chemical; and FMC failed to prevent this chemical from escaping into the pond and killing birds. This is sufficient to impose strict liability on FMC.").

95. 16 U.S.C. § 1536(a)(2); *see also Hill*, 437 U.S. at 173 ("One would be hard pressed to find a statutory provision whose terms were any plainer than those in . . . the Endangered Species Act. Its very words affirmatively command all federal agencies 'to insure that actions authorized, funded, or carried out by them do not jeopardize the continued existence' of an endangered species or 'result in the destruction or modification of habitat of such species.' " (quoting 16 U.S.C. § 1536)).

96. 16 U.S.C. § 1533(a)(3)(A)–(B) (requiring use of the "best scientific data available" when determining a species's critical habitat).

97. 16 U.S.C. § 1536(a)(2).

98. Carson-Truckee Water Conservancy Dist. v. Clark, 741 F.2d 257, 261 (9th Cir. 1984), *cert. denied*, Nevada v. Hodel, 470 U.S. 1083 (1985).

of the most heavily fracked areas of the country contain some of the most endangered species.[99] The Secretary of the Interior might be able to use the ESA to minimize the effect of fracking on protected species.[100] Indeed, the mere potential of listing the sagebrush lizard of New Mexico afforded Secretary of the Interior Ken Salazar the leverage necessary to secure "unprecedented commitments to voluntary conservation agreements" with the oil and gas industry.[101]

G. Toxic Substances Control Act

TSCA grants the EPA authority to require companies to report the health, safety, and exposure information of chemical substances and mixtures to the EPA.[102] On November 23, 2011, the Obama administration partially granted a section 21 petition from Earthjustice[103] requesting a rulemaking under sections 4 and 8, which would require manufacturers and processors to disclose chemical

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99. *See* Press Release, American Rivers, *Upper Delaware Named America's Most Endangered River* (June 2, 2010), *available at* http://www.americanrivers.org/newsroom/press-releases/2010/teton-river-most-endangered-2010-6-2-2010.html (discussing how fracking around a national park system near the Upper Delaware River is contaminating the water and threatening "several endangered, at risk, or rare species liv[ing] in the river and along its banks").

100. Kalyani Robbins, *Awakening the Slumbering Giant: How Horizontal Drilling Technology Brought the Endangered Species Act to Bear on Hydraulic Fracturing*, 63 CASE W. RES. L. REV. ???? (2013).

101. Following the Fish and Wildlife Service's proposal to list the dune sagebrush lizard in December 2010, the state governments of Texas and New Mexico, private landowners, and oil and gas companies developed an unprecedented 650,000-acre conservation plan to preserve the shinnery oak dune habitat of the lizard. Upon the required "best available science" analysis, Interior Secretary Ken Salazar stated that the lizard faces no imminent threat of becoming endangered. The Service will continually monitor the progress and efficacy of the conservation efforts, retaining the right to reevaluate the listing determination at any time. News Release, U.S. Dept. of the Interior, Landmark Conservation Agreements Keep Dunes Sagebrush Lizard Off the Endangered Species List in NM, TX (June 13, 2012), *available at* http://www.fws.gov/southwest/es/Documents/R2ES/NR_for_DSL_Final_Determination_13June2012.pdf.

102. *See* 15 U.S.C. §§ 2601–2692 (2006) (including the authority under section 2603 to require premanufacture notice for "new chemical substances," and the authority under § 2607 to regulate "inventory" chemicals).

103. Petition from Earthjustice to EPA, Citizen Petition under Toxic Substances Control Act Regarding the Chemical Substances and Mixtures Used in Oil and Gas Exploration and Production (August 4, 2011), *available at* http://www.epa.gov/oppt/chemtest/pubs/Section_21_Petition_on_Oil_Gas_Drilling_and_Fracking_Chemicals8.4.2011.pdf.

mixtures used during all fracking operations and to conduct toxicity testing on named chemicals.[104] The petition cited numerous federal regulatory "gaps," or oil and gas exemptions in the SDWA and RCRA, and demanded further federal oversight on disclosure for chemicals used in fracking operations.[105] Although the EPA claims that the new rulemaking will "complement" current state disclosure requirements, the interplay between the proposed rule and state or other federal regulations is yet to be seen.[106]

II. New York: Localities Win Round One, Escaping Preemption[107]

The legislature in New York, like those in most states where fracking occurs, has adopted comprehensive legislation to regulate oil and gas operations. As opposed to the federal government, whose jurisdiction is somewhat constrained by its limited jurisdiction over matters of property, state governments have plenary authority to regulate their resources. The legislatures of all fifty states have also created local governments and given them legal authority of various types, including the power to adopt comprehensive plans, zoning, and other land use regulations. Under that authority, localities typically regulate industrial land uses, such as gas drilling operations, by either prohibiting them altogether or assigning them to appropriate areas within their jurisdiction where the intensity of industrial activities does not adversely affect neighboring property values or the quality of life in other parts of the community.

New York's oil and gas statute contains language that at first blush seems to preclude the regulation of fracking under local land use authority. The New York Oil, Gas and Solution Mining Law (OGSML)[108] provides that

> [t]he provisions of this article shall supersede all local laws or ordinances relating to the regulation of the oil, gas and solution mining industries; but shall not supersede local government

104. Eric Waeckerlin & Joe Green, *Hydraulic Fracturing & TSCA: EPA's Surprising Move and Its Sweeping Implications*, Legal Backgrounder, Feb. 24, 2012, at 1.

105. *Id.* at 2.

106. The Obama administration is also set to review petitions for increased fracking regulation under RCRA, the Emergency Planning and Community Right to Know Act (EPCRA), and the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). *See* D'Angelo, *supra* note 16.

107. Portions of this Part are adapted from John R. Nolon & Victoria Polidoro, *Hydrofracking: Disturbances Both Geological and Political: Who Decides?*, 44 Urb. Law. 507 (2012).

108. N.Y. Envtl. Conserv. Law § 23-0303 (McKinney 2012).

> jurisdiction over local roads or the rights of local governments under the real property tax law.[109]

Industry attorneys, of course, read this language as expressly preempting local land use control of the location and local impacts of gas wells. Some localities, whose lawyers interpret the language differently, have enacted various controls on the location of gas wells to protect the integrity of their land use plans and their local environment. Landowners and the industry, in turn, have sued two towns that banned gas drilling by amending their local zoning ordinances.[110] Both communities won their cases in the lower courts, which found neither express nor implied preemption of local control of fracking in the OGSML.[111] Deciding the underlying issues in these cases will take years as they wind their way through the New York court system.

The holdings of these first decisions are consistent with the general understanding of local control and state preemption in New York. Zoning authority can be curtailed when the state has demonstrated the intent to preempt an entire field of regulation.[112] This prevents inconsistent local laws from "inhibit[ing] the operation of the State's general law and thereby thwart[ing] the operation of the State's overriding policy concerns."[113] The intent to preempt can be explicit or can be implied through review of the state's regulatory scheme regarding a particular subject.[114]

Article IX, section 3(c) of the New York Constitution, however, provides that "[r]ights, powers, privileges and immunities granted to

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109. *Id.* § 23-0303(2).

110. New York law delegates essentially the same degree of land use power to three of the four types of local government that the state has created: villages, towns, and cities. References in this Article to "towns" refer to all three of these types of localities, unless the reference is to a particular community. Counties in New York are considered to be local governments but do not have the authority to adopt zoning.

111. Anschutz Exploration Corp. v. Town of Dryden, 940 N.Y.S.2d 458, 474 (Sup. Ct. 2012); Cooperstown Holstein Corp. v. Town of Middlefield, 943 N.Y.S.2d 722, 730 (Sup. Ct. 2011). New York's Supreme Court is the state's trial-level court of general jurisdiction.

112. *See* Jancyn Mfg. Corp. v. Cnty. of Suffolk, 518 N.E.2d 903, 905 (N.Y. 1987) ("A local law may be ruled invalid . . . where the State has clearly evinced a desire to preempt an entire field thereby precluding any further local regulation.").

113. *Id.* at 906.

114. *See id.* at 907 (holding that no preemption existed because the regulatory department did not think the statute was meant to preempt local legislation).

local governments by this article shall be liberally construed."[115] This constitutional requirement has also been codified by section 51 of the Municipal Home Rule Law, which provides that home-rule powers "shall be liberally construed."[116] These requirements of liberal construction apply to towns' powers to enact zoning laws, which are derived not only from specific delegations of power contained in the Town Law,[117] but also the Municipal Home Rule Law.[118] The state's highest court has recognized that "[o]ne of the most significant functions of a local government is to foster productive land use within its borders by enacting zoning ordinances."[119] These provisions calling for liberal interpretation of local power and extolling the importance of local land use powers create an implicit presumption against preemption.

The crux of the conflict between state and local power over gas drilling in New York involves the interpretation of the term "regulation" in the OGSML. If zoning laws, which regulate the use of land by, and the location of, gas drilling facilities, are viewed as laws "relating to the regulation of" the industry, they are preempted by the language of the OGSML.[120] If not, municipalities may use their zoning powers to identify appropriate locations in the community for such drilling and impose standards to mitigate local impacts of fracking, or, in proper instances, to prevent fracking altogether.

When faced with a potential conflict between state and local zoning laws, New York courts attempt to harmonize local and state legislative enactments, "thus avoiding any abridgment of the town's powers to regulate land use through zoning powers expressly delegated" in the constitution and implemented through state

115. N.Y. Const. art. IX, § 3(c).

116. N.Y. Mun. Home Rule Law § 51 (McKinney 2012).

117. *See* N.Y. Town Law §§ 261–263 (McKinney 2012) (granting town boards the power to regulate the size, style, density, and use of structures for a variety of purposes); *see also* N.Y. Gen. City Law § 20(24)–(25) (McKinney 2012) (granting this power to cities); N.Y. Village Law §§ 7-700, 7-702 (McKinney 2012) (granting this power to the board of trustees of a village); Robert E. Kurzius, Inc. v. Inc. Vill. of Upper Brookville, 414 N.E.2d 680, 682 (N.Y. 1980) (noting the delegation of zoning power to village boards).

118. *See, e.g.*, Kamhi v. Town of Yorktown, 547 N.E.2d 346, 351 (N.Y. 1989) (recognizing towns' power to enact zoning rules pursuant to section 10 of the Municipal Home Rule Law); Pete Drown, Inc. v. Town Bd. of Ellenburg, 591 N.Y.S.2d 584, 585 (App. Div. 1992) (same).

119. DJL Rest. Corp. v. City of New York, 749 N.E.2d. 186, 191 (N.Y. 2001).

120. N.Y. Envtl. Conserv. Law § 23-0303(2) (McKinney 2012).

statutes.[121] It is well settled that "[t]he mere fact that a state regulates a certain area of business does not automatically pre-empt all local legislation which applies to that enterprise."[122]

The New York courts have experience looking at the distinction between zoning laws and laws that regulate business operations, including mining. The state's Mined Land Reclamation Law (MLRL) contained the following preemption provision, which is similar to the language found in the OGSML:

> For the purposes stated herein, this title shall supersede all other state and local laws relating to the extractive mining industry; provided, however, that nothing in this title shall be construed to prevent any local government from enacting local zoning ordinances or other local laws which impose stricter mined land reclamation standards or requirements than those found herein.[123]

In *Frew Run Gravel Products, Inc. v. Town of Carroll*, the court found that the legislature, in enacting the MLRL, did not intend to preempt the provisions of a town zoning law that limited the areas of town where sand and gravel mines could be established.[124] In making its determination, the court conducted a three-part inquiry, looking first at the plain language of the statute, followed by the legislative history and then finally to the purpose and intent of the statute.[125] Looking at the plain meaning of the phrase "relating to the extractive mining industry," the court "[could not] interpret the phrase . . . as including the Town of Carroll Zoning Ordinance."[126] The purpose of a zoning ordinance is to regulate land use, and in doing so, it "inevitably exerts an incidental control over any of the particular uses or businesses which, like sand and gravel operations, may be allowed in some districts but not in others."[127] The court found that this type of incidental control through zoning was "not the type of regulatory enactment relating to the 'extractive mining industry' which the

121. Frew Run Gravel Prods., Inc. v. Town of Carroll, 518 N.E.2d 920, 924 (N.Y. 1987).

122. Envirogas, Inc. v. Town of Kiantone, 447 N.Y.S.2d 221, 222 (Sup. Ct. 1982), *aff'd*, 454 N.Y.S.2d 694 (App. Div. 1982), *motion for leave denied*, 444 N.Y.2d 1013 (N.Y. 1982).

123. *Frew Run*, 518 N.E.2d at 921 (citing N.Y. ENVTL. CONSERV. LAW § 23-2703(2)).

124. *See id.* at 923 ("There is nothing in the Mined Land Reclamation Law or its history indicating . . . the preemptive effect petitioner urges.").

125. *Id.* at 922.

126. *Id.*

127. *Id.*

Legislature could have envisioned as being within the prohibition of the statute."[128] In so finding, the court recognized the difference between a zoning law and "[l]ocal regulations dealing with the actual operation and process of mining[, which] would frustrate the statutory purpose of [the MLRL's standardized regulations]."[129]

In August, 2011, the Town of Dryden amended its zoning ordinance to prohibit natural gas drilling.[130] The ordinance added definitions for "Natural Gas," "Natural Gas and/or Petroleum Exploration," and "Natural Gas Exploration and/or Petroleum Production Wastes," and then prohibited the "Exploration for or Extraction of Natural Gas and/or Petroleum" anywhere in the town.[131] The law also purports to invalidate any "permit issued by any local, state[,] or federal agency, commission[,] or board for a use which would violate the prohibitions of" the ordinance.[132]

The Town of Middlefield's land uses are predominately agriculture, forests, and low-density residential. After studying the potential impact of heavy industry on its rural environs and water supply,[133] in June 2011 it amended its comprehensive plan and zoning law to prohibit heavy industry throughout the town. Heavy industry is broadly defined and includes "drilling of oil and gas wells" as well as "chemical manufacturing," "petroleum and coal processing," and "steel manufacturing."[134]

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128. *Id.*

129. *Id.* at 923.

130. *See* Minutes, Town of Dryden Special Town Board Meeting, at 1, 5–15 (Aug. 2, 2011), *available at* http://dryden.ny.us/Board_Meeting_Minutes/TB/2011/TB2011-08-02.pdf (voting 5–0 in favor of amendments "clarifying the town's prohibition of natural gas exploration and extraction").

131. Notice, Town of Dryden Notice of Adoption of Amendments to Zoning Ordinance, at 1, 2 (Aug. 3, 2011), *available at* http://documents.foodandwaterwatch.org/doc/Frack_Actions_DrydenNY.pdf ("No land in the Town shall be used: to conduct any exploration for natural gas and/or petroleum; to drill any well for natural gas and/or petroleum; to transfer, store, process or treat natural gas and/or petroleum; or to dispose of natural gas and/or petroleum exploration or production wastes; or to erect any derrick, building, or other structure; or to place any machinery or equipment for such purposes.").

132. *Id.*

133. *See* Greenplan, Inc., Land Use Analysis: Heavy Industry And Oil, Gas or Solution Mining and Drilling 4 (2011), *available at* http://www.otsego2000.org/documents/forwebsiteMiddlefieldLandUseAnalysis-Greenplan.pdf (a land use analysis prepared for the Town Board of the Town of Middlefield that provides information on the potential effects of zoning amendments).

134. Middlefield, N.Y., The Town of Middlefield Zoning Law, Local Law No. 1, art. II, § B(8) (2011), *available at*

The Town of Dryden's law was challenged by Anschutz Exploration Corporation, a Colorado-based driller and developer of natural gas wells. The Town of Middlefield's law was contested by Cooperstown Holstein Corporation, a local dairy operation that has leased approximately 400 acres of its land for natural gas development.[135]

On February 21, 2012, the New York Supreme Court, Tompkins County, upheld the Town of Dryden's total ban on hydrofracking within its borders.[136] The court's holding was straightforward: "In light of the similarities between the OGSML and the MLRL as it existed at the time of *Matter of Frew Run*, the court is constrained to follow that precedent in this case."[137] The court found that the OGSML did not expressly preempt local zoning and that the town's zoning amendment did not regulate gas production; rather, it regulated land use and not the operation of gas mining.

The court noted that "[n]one of the provisions of the OGSML address traditional land use concerns, such as traffic, noise or industry suitability for a particular community or neighborhood."[138] It cited other preemptive statutes with provisions requiring the relevant state agency to consider the traditional concerns of zoning in deciding whether a permit is to be issued. "Under this construction, local governments may exercise their powers to regulate land use to determine where within their borders gas drilling may or may not take place, while [the Department of Environmental Conservation] regulates all technical operational matters on a consistent statewide basis in locations where operations are permitted by local law."[139] The provision of the local law that invalidated any other permits authorizing drilling was found invalid as preempted by the OGSML and was severed from the law, while the other provisions were left in place.[140]

Three days later, on February 24, 2012, the Supreme Court in Otsego County issued a decision in the *Middlefield* case granting

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http://www.middlefieldny.com/uploads/1/2/6/8/12682437/zoning_law_061411_2011_final.pdf.

135. Verified Complaint at 1–2, Cooperstown Holstein Corp. v. Town of Middlefield, 943 N.S.Y.2d 722 (Sup. Ct. 2012) (No. 2011-0930), *available at* http://catskillcitizens.org/learnmore/VsTownOfMiddlefield.pdf.

136. Anschutz Exploration Corp. v. Town of Dryden, 940 N.Y.S.2d 458, 474 (Sup. Ct. 2012).

137. *Id.* at 466.

138. *Id.* at 470.

139. *Id.* at 471.

140. The court found that the provision could be severed without impairing the underlying purpose of the zoning amendment. *Id.* at 474.

summary judgment in favor of Middlefield, upholding the town's zoning law that banned natural gas drilling.[141] After thoroughly reviewing the legislative history of the OGSML, the court found no provision in it to support Holstein's position, stating,

> Neither the plain reading of the statutory language nor the history of [the OGSML] would lead this court to conclude that the phrase "this article shall supersede all local laws or ordinances relating to the regulation of the oil, gas and solution mining industries" was intended by the Legislature to abrogate the constitutional and statutory authority vested in local municipalities to enact legislation affecting land use.[142]

In the court's analysis of the legislative history of the ECL, it found that the intention of the legislature was not to preempt the statutory authority vested in local municipalities to enact legislation affecting land use.[143] Rather, the legislature's intent was to impose uniform statewide oversight to ensure and promote efficient utilization of a state resource.[144] The court analyzed the policy of the state at the time of original enactment of article 3-A of the Environmental Conservation Law in 1963.[145] It found that the provisions "fail to specifically address therein any land use issues which would otherwise be the subject of a local municipality's zoning authority as an exercise of its police powers."[146] Rather, it concluded that the legislation focused the Department of Conservation's (now the Department of Environmental Conservation, or DEC) efforts on matters that were "regulatory in nature" such as spacing units, integration of oil and gas pools and fields, oil and gas leases, and the plugging of old wells.[147] The court also relied on case law interpreting the "strikingly similar" provision of the MLRL, which found that "in the absence of a clear legislative intent to preempt local control over land use, the [MLRL] could not be read as preempting local zoning authority."[148]

Of singular importance in the *Middlefield* decision is the court's understanding of the state legislature's intent when it initially

141. Cooperstown Holstein Corp. v. Town of Middlefield, 943 N.Y.S.2d 722, 730 (Sup. Ct. 2011).

142. *Id.* at 728 (quoting N.Y. Envtl. Conserv. Law § 23-0303(2)).

143. *Id.*

144. *Id.* at 728–29.

145. *Id.* at 724–26.

146. *Id.* at 725.

147. *Id.* at 729 (quoting Gernatt Asphalt Prods., Inc. v. Town of Sardinia, 664 N.E.2d 1226, 1234 (N.Y. 1996)).

148. *Id.*

adopted the Environmental Conservation Law in the early 1960s. At that time, local zoning was forty years old and had been preceded by decades of adopting local nuisance abatement laws prior to the advent of zoning. It seems imprinted in the mind of the legislature to protect local control, except where the legislature expressly states that preemption of local prerogatives is essential to furthering overriding state interests. In the *Dryden* and *Middlefield* decisions, the judiciary in New York followed its trend to harmonize two legislative regimes—one intended to impose uniform regulations on the operation of gas drilling and the other designed to control local land use impacts, honoring the statutes that delegate extensive land use control to towns as well as the home-rule provisions of the State Constitution that promise localities control over their local property, affairs, and government.

III. Pennsylvania: Preemption Thwarted

The tension between local and state control of fracking evident in New York is profoundly evident in recent legislative and judicial decisions in Pennsylvania—the state in the heart of the Marcellus region.[149] Under prior state oil and gas law, the state courts had determined that local governments could regulate but not prevent fracking under local zoning. Following these judicial decisions, the state legislature adopted Act 13, which all but preempted local control.[150] The Act explicitly required local governments to include fracking as a permitted use in all zoning districts. This Act, in turn, was invalidated by *Robinson Township v. Commonwealth*, which held that it failed to protect neighboring property owners from harm and made irrational land use classifications.[151] The power of municipalities to adopt comprehensive plans and to separate land uses through zoning, and the derivative rights of landowners, in the *Robinson* court's view, trumped state oil and gas legislation that, on its face, preempted local regulation.

Under the former Oil and Gas Act in Pennsylvania, municipalities were permitted to regulate the location of wells within their boundaries through zoning, but were not allowed to ban wells outright:

149. Pennsylvania has been called the "Saudi Arabia of Natural Gas." Elizabeth McGowan, *Fracking's Environmental Footprint to Transform Pennsylvania Landscape*, Reuters (Apr. 25, 2011, 3:30 AM), http://www.reuters.com/article/2011/04/25/idUS308837987220110425.

150. *See* 58 Pa. Cons. Stat. Ann. § 3303 (West Supp. 2013).

151. Robinson Twp. v. Commonwealth, 52 A.3d 463, 484–85 (Pa. Commw. Ct. 2012).

> Except with respect to local ordinances adopted pursuant to the . . . Municipalities Planning Code ("MPC") and the . . . Flood Plain Management Act, all local ordinances and enactments purporting to regulate oil and gas well operations regulated by the act are hereby superseded. No ordinances or enactments adopted pursuant to the aforementioned acts shall contain provisions which impose conditions, requirements or limitations on the same features of oil and gas well operations regulated by this act or that accomplish the same purposes as set forth in this act. The Commonwealth, by this enactment, hereby preempts and supersedes the regulation of oil and gas wells as herein defined.[152]

The Pennsylvania courts examined the preemptive scope of this language in two cases decided on the same day in 2009, *Huntley & Huntley, Inc., v. Borough of Oakmont*[153] and *Range Resources-Appalachia, LLC v. Salem Twp.*[154] In *Huntley,*[155] a drilling company, Huntley & Huntley, sought review of a city council decision denying a conditional use permit to allow drilling in a single-family residential zone.[156] The Commonwealth Court held that the locational restrictions imposed by the Borough of Oakmont upon Huntley were on the same topic as addressed in the Oil and Gas Act, and were, therefore, preempted.[157] Upon appeal, the Pennsylvania Supreme Court sought to determine whether the state legislature intended to leave localities any latitude to regulate oil and gas wells.[158] It reversed the lower court by determining that local zoning regulated a different aspect of drilling than the Oil and Gas Act: its location rather than the technical aspects of drilling.[159] The Supreme Court found that the

152. 58 Pa. Cons. Stat. Ann. § 601.602 (West 1996).

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

154. Range Resources-Appalachia, LLC v. Salem Twp., 964 A.2d 869 (Pa. 2009).

155. *Huntley*, 964 A.2d at 855.

156. *Id.* at 858.

157. *Id.* at 859.

158. *Id.* at 863 ("[O]ur interpretive task is to examine the particular wording of this provision, together with any other relevant aspect of the statute, in order to determine whether the Legislature intended to leave room for localities to designate certain zoning districts (such as residential ones) where oil and gas wells may be prohibited as a general matter.").

159. *Id.* at 864 ("[We] conclude that, absent further legislative guidance, Section 602's reference to 'features of oil and gas well operations regulated by this act' pertains to technical aspects of well functioning and matters ancillary thereto (such as registration, bonding, and well site restoration), rather than the well's location." (quoting 58 Pa. Cons. Stat. Ann. § 601.602 (1996))).

particular language of the Act preempts only ordinances that "impose conditions, requirements, or limitations on the same features of oil and gas well operations," or that "accomplish the same purposes."[160] The court accepted the appellants' contention that the "very essence of zoning is the designation of areas where different uses are permitted, subject to the appropriate level of municipal review," and that the legislature explicitly sought to preserve local zoning power by distinguishing the "technical features of oil and gas operations."[161]

The court in *Huntley* found that the state's interest primarily centered on the efficient extraction and utilization of the state's increasingly valuable natural resource.[162] In contrast, it noted that the borough's core interests emanate from police power objectives designed to protect public safety and welfare: "preserving the character of residential neighborhoods, and encouraging 'beneficial and compatible land uses.' "[163] In finding that these interests did not overlap, the court adopted a holding from the Colorado high court:

> While the governmental interests involved in oil and gas development and in land-use control at times may overlap, the core interests in the legitimate governmental functions are quite distinct. The state's interest in oil and gas development is centered primarily on the efficient production and utilization of the natural resources in the state. A county's interest in land-use control, in contrast, is one of orderly development and use of land in a manner consistent with local demographic and environmental concerns. Given the rather distinct nature of these interests, we reasonably may expect that any legislative intent to prohibit a county from exercising its land-use authority over those areas of the county in which oil development or operations are taking place or are contemplated would be clearly and unequivocally stated. We, however, find no such clear and unequivocal statement of legislative intent in the Oil and Gas Conservation Act.[164]

Thus, while the court acknowledges the presence of some overlap in purposes, the salient objectives of the local and state governments, it found, do not conflict.[165]

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160. *Id.* at 863 (quoting 58 Pa. Cons. Stat. Ann. § 601.602 (1996)).

161. *Id.* at 860.

162. *Id.* at 864–65 (quoting 58 Pa. Cons. Stat. Ann. § 601.102 (1996)).

163. *Id.* at 865.

164. *Id.* (quoting Bd. of Cnty. Comm'rs v. Bowen/Edwards Assocs., Inc., 830 P.2d 1045, 1057 (Colo. 1992)).

165. *Id.* at 866.

In *Range Resources*, decided on the same day as *Huntley*, the court invalidated a local law that regulated the operations of drilling rather than its location, holding that this aspect of fracking regulation was preempted by the Oil and Gas Act.[166] The court identified numerous examples of "substantive[] overlap" within the ordinance in question, such as:

> permitting procedures specifically for oil and gas wells, . . . bonding requirements before drilling can begin, . . . regulat[ion of] well heads, including the capping of the same once they are no longer in use, . . . regulat[ion of] site restoration after drilling operations cease, . . . [and] the requirement of restoring nearby streets to their pre-drilling conditions regardless of whether the wear and tear on such roadways was caused by vehicles associated with drilling activities.[167]

Indeed, the court concluded that many of the restrictions imposed by the ordinance were "even more stringent than the corresponding provisions of the Act."[168] Thus, the court found that the ordinance in question was "qualitatively different" from the corresponding ordinance in *Huntley*, which "sought only to control the location of wells consistent with established zoning principles."[169]

Since the ordinance not only sought to regulate the same features as the Oil and Gas Act, but also created regulatory obstacles to effective implementation of the Act, the court held that the doctrine of "conflict preemption" applied.[170] The ordinance "reflect[ed] an attempt by the Township to enact a comprehensive regulatory scheme relative to oil and gas development within the municipality" and, as such, was preempted by the Oil and Gas Act.[171]

Following the *Huntley* and *Range Resources* decisions, the Pennsylvania legislature replaced the Oil and Gas Act with Act 13, containing a revised statutory framework for oil and gas regulation.[172] The Act explicitly preempted local zoning from regulating fracking,

166. Range Res. Appalachia, LLC v. Salem Twp., 964 A.2d 869, 877 (Pa. 2009).

167. *Id.* at 875–76.

168. *Id.* at 875.

169. *Id.* at 876.

170. *Id.* at 877 (citing Nutter v. Dougherty, 938 A.2d 401, 404 (Pa. 2007)).

171. *Id.* at 875.

172. 58 Pa. Cons. Stat. Ann. § 3303 (West Supp. 2013).

except with respect to setback requirements in limited areas.[173] The Act states:

> Notwithstanding any other law to the contrary, environmental acts are of Statewide concern and, to the extent that they regulate oil and gas operations, occupy the entire field of regulation, to the exclusion of all local ordinances. The Commonwealth by this section, preempts and supersedes the local regulation of oil and gas operations regulated by the environmental acts, as provided in this chapter.[174]

While Act 13 ostensibly preserves the municipality's right to enact local zoning ordinances, it prohibits local zoning ordinances from conflicting with chapter 32, which regulates oil and gas operations.[175] Among other restrictions imposed upon municipalities, the Act requires localities to amend zoning to include oil and gas operations in all zoning districts.[176] This conformity requirement creates an obvious and fundamental conflict with the Municipal Planning Code (MPC). The MPC requires municipalities to adopt comprehensive plans and to create zoning districts in accordance with comprehensive plans.[177] Under Act 13, a municipality seeking to shield a residential area, for example, from potentially dangerous fracking operations in the interest of public health and welfare would not be able to do so.

A collection of seven municipalities, private citizens, and environmental groups challenged the constitutionality of Act 13 in *Robinson Township*.[178] The municipalities brought a substantive due process claim, contending that Act 13 prevented them from creating zoning ordinances with a rational connection to their comprehensive plans, as required by the MPC, thus preventing them from fulfilling their constitutional duty to "protect the health, safety and welfare of their citizens."[179]

The court explained that the zoning power was but "an extension of the concept of public nuisance which protects owners from

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173. *Id.*

174. *Id.*

175. *Id.*

176. *Id.*

177. Robinson Twp. v. Commonwealth, 52 A.3d 463, 482 (Pa. Commw. Ct. 2012) ("The MPC requires that every municipality adopt a comprehensive plan which, among other things, includes a land use plan on how various areas of the community are to be used.").

178. *Id.* at 468 n.3.

179. *Id.* at 469.

activities that interfere with use and enjoyment of their property,"[180] citing the seminal *Village of Euclid v. Ambler Realty* case for the idea that "[l]and use restrictions aim to prevent problems caused by the 'pig in the parlor instead of the barnyard.' "[181] Essentially, the Act required municipalities to create zoning incompatible with their comprehensive plans; if mining and gas operations were to be included in all zones, as the Act required, zoning ordinances would inherently not comport with their comprehensive plans.[182] Thus, the court found, the state's interest in regulating fracking processes sits in direct conflict with local zoning interests. When such substantive due process conflicts appear, the court held, the judiciary "must accord substantial deference to the preservation of rights of property owners."[183] The court stated that

> by requiring municipalities to violate their comprehensive plans for growth and development, [Act 13] violates substantive due process because it does not protect the interests of neighboring property owners from harm, alters the character of neighborhoods and makes irrational classifications—irrational because it requires municipalities to allow all zones, drilling operations and impoundments, gas compressor stations, storage and use of explosives in all zoning districts, and applies industrial criteria to restrictions on height of structures, screening and fencing, lighting and noise.[184]

Following the *Robinson* decision, and pending the decision of the Pennsylvania Supreme Court on appeal,[185] fracking regulation in Pennsylvania has reverted to the doctrine established in *Huntley* and *Range Resources*. The courts in Pennsylvania, working with different but seemingly preemptive state oil and gas statutes, came to roughly the same result as the courts in New York. In both states, the judges

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180. *Id.* at 481.

181. *Id.* at 481 (quoting Vill. of Euclid v. Ambler Realty Co., 272 U.S. 365, 388 (1926)).

182. *Id.* at 480–81 ("[T]he municipalities contend that Act 13 . . . forces municipalities to enact zoning ordinances . . . allowing, among other things, mining and gas operations in all zoning districts which are incompatible with the municipalities' comprehensive plans that denominates different zoning districts, making zoning irrational.").

183. *Id.* at 482 (quoting *In re* Appeal of Realen Valley Forge Greenes Assocs., 838 A.2d 718, 728 (Pa. 2003)).

184. *Id.* at 484.

185. Pennslyania appealed the Commonwealth Court's ruling striking down portions Act 13. The Pennsylvania Supreme Court heard oral argument on October 17, 2012. Robinson Twp. v. Commonwealth, No. 63 MAP 2012 (Pa. 2013).

have found ways to harmonize the power of local governments to adopt local land use restrictions on fracking to promote local interests with the power of the state to standardize the regulation of the gas drilling industry.

IV. West Virginia and Ohio: Fracking Law in Limbo

A. West Virginia Gas Regulation and Local Land Use Control

In West Virginia, the power to adopt land use plans and zoning is delegated to counties and incorporated municipalities. Most densely settled incorporated municipalities, such as the City of Morgantown, have adopted land use plans and zoning, and some have used it to prevent or limit fracking. Morgantown, in fact, exercised its extraterritorial jurisdiction under state law and banned fracking within a mile of its borders.[186] In 2011, a lower state court in West Virginia invalidated this local antifracking law, holding that the state had completely preempted the field with respect to oil and gas law.[187] The court noted that "[t]hese regulations do not provide any exception or latitude to permit the City of Morgantown to impose a complete ban on fracking or to regulate oil and gas development and production."[188]

Does this lower court opinion leave open the prospect of local regulation that allows but limits gas drilling, particularly in light of the fact that state gas regulation standards do not consider many of the local impacts traditionally governed by zoning? In 2012, the Morgantown City Council tested this notion by amending its zoning law to prohibit gas drilling within certain distances of schools, houses of worship, hospitals, and residential neighborhoods.[189] This latest amendment raises interesting questions about the exercise of state and local power in West Virginia.

Regarding environmental protection generally, West Virginia statutes indicate that "[t]he state has the primary responsibility for protecting the environment; other governmental entities, public and private organizations and our citizens have the primary responsibility

186. Ne. Nat. Energy, LLC v. City of Morgantown, No. 11-C-411, 2011 WL 3584376, at *1 (W. Va. Cir. Ct. Aug. 12, 2011).

187. *Ne. Nat. Energy*, 2011 WL 3584376, at *9 ("[T]he State's interest in oil and gas development and production throughout the State as set forth in the W. Va. Code § 22-6 *et seq.* (1994), provides for the exclusive control of this area of law to be within the hands of the WVDEP.").

188. *Id.*

189. *Morgantown Will Try to Zone Out Most Gas Drilling*, ShaleReporter (June 4, 2012, 12:15 AM), http://www.shalereporter.com/government/article_7dd089a4-adc0-11e1-8543-0019bb30f31a.html.

of supporting the state in its role as protector of the environment."[190] Statutes provide that the job of the State Department of Environmental Protection is to "consolidate environmental regulatory programs in a single state agency," while also providing a "comprehensive program for the conservation, protection, exploration, development, enjoyment and use of the natural resources of the State of West Virginia."[191] Case law establishes that "where an ordinance is in conflict with a state law the former is invalid."[192] The principle is so fundamental that "citation of authorities is unnecessary."[193]

State statutes delegate responsibility for regulating oil and gas to the Department of Environmental Protection (DEP).[194] The DEP's Office of Oil and Gas (OOG) is "responsible for monitoring and regulating all actions related to the exploration, drilling, storage and production of oil and natural gas."[195] OOG inspectors are authorized to issue orders demanding that wells cease operations if there is a violation or potential violation and imminent danger to humans or freshwater sources.[196] Class II well operators are required to permanently dispose of wastewater,[197] most of which is handled through underground injection regulated under the state's UIC program.[198]

This less than comprehensive regulatory scheme generated criticism of the state's response to fracking, leading the governor to supplement legislative standards with executive requirements. Under Executive Order 4-11, Governor Earl Ray Tomblin instructed the DEP to issue emergency rules requiring certain gas wells to be accompanied by an erosion and sediment control plan as well as a site construction plan, both of which are to be approved by a registered professional engineer.[199] The order also required a site-specific well

190. W. Va. Code Ann. § 22-1-1(a)(2) (LexisNexis 2009).

191. *Id.* § 22-1-1(b)(2)–(3).

192. Vector Co. v. Bd. of Zoning Appeals, 184 S.E.2d 301, 304 (W. Va. 1971).

193. *Id.*

194. W. Va. Code Ann. § 22-6-2(a).

195. W. Va. Dep't of Envtl. Protection, Office of Oil and Gas, http://www.dep.wv.gov/oil-and-gas/Pages/default.aspx (last visited Apr. 3, 2013).

196. W. Va. Code § 22-6-3(a).

197. Press Release, W. Va. Dep't of Envtl. Protection, Industry Guidance, Gas Well Drilling/Completion, Large Water Volume Fracture Treatments, at 1, 4 (Jan. 8, 2010).

198. Pam Kasey, *Pa. W.Va. Address Salt Problems Differently*, The St. J. (Morgantown) (Jan. 8, 2010).

199. W. Va. Exec. Order No. 4-11, ¶ 4(a) (July 12, 2011).

safety plan and set minimum standards for well construction.[200] It further required that an applicant for a well permit submit a water management plan if the well uses more than 210,000 gallons of water monthly.[201] Information required to be submitted with this plan includes the type of water source, the anticipated withdrawal volume, the anticipated months during which withdrawal would occur, the planned management for the processing or disposal of wastewater, and the anticipated additives in the fracking fluid.[202] Operators are also required to record the quantity and method of management of flowback water.[203] Finally, operators must provide public notice for any well to be located within the boundaries of a municipality. The notice is to include the well's location, the expected date that the drilling will begin, and the operator's contact information.[204]

The West Virginia legislature's response to criticism of the regulatory system was to adopt the Marcellus Shale Hydrofracking Rules Bill in 2012, which significantly increased permit fees and required gas wells to be set back at least 250 feet from a water well, 300 feet from a natural trout stream, 625 feet from occupied houses, and 1,000 feet from a public water supply intake.[205] Well operators under this Bill must also maintain at least 100 feet between wells and other water sources.[206] The DEP was given the power to grant variances from these standards under certain circumstances.[207]

In reviewing Morgantown's new regulations on fracking, or those of any other zoning municipality in West Virginia, the judiciary will be challenged to determine whether these enactments of the state legislature, as supplemented by the Governor's executive order, occupy the field and preempt local regulation. Prior case law recognized the different aspects of business that are subject to both state and local regulation.[208] There is a strong argument that the

200. *Id.* ¶ 4(d).

201. *Id.* ¶ 4(c).

202. *Id.*

203. *Id.* ¶ 4(f)(iii)(1)(a).

204. *Id.* ¶ 4(g).

205. W. Va. Code Ann. § 22-6A-12(a)–(b) (LexisNexis Supp. 2012).

206. *Id.*

207. *Id.* ("[T]he well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations.").

208. *See* Longwell v. Hodge, 297 S.E.2d 820, 825 (W. Va. 1982) (upholding regulation of the location of a beer-selling restaurant under zoning, despite the fact that the establishment was regulated by state law; the purposes of the two regulatory regimes were different and no conflict was found).

interests protected by West Virginia planning and zoning statutes extend far beyond the interests protected by existing fracking regulation. This is evident in the language of the legislation adopted by the state legislature delegating planning and zoning authority to incorporated municipalities and counties.[209]

These state statutes provide that the purpose of a comprehensive plan is to guide the local legislature so that it can accomplish the coordinated and compatible development of land and improvements within its jurisdiction.[210] The comprehensive plan is defined as

> a process through which citizen participation and thorough analysis are used to develop a set of strategies that establish as clearly and practically as possible the best and most appropriate future development of the area under the jurisdiction of the planning commission. A comprehensive plan aids the planning commission in designing and recommending to the governing body ordinances that result in preserving and enhancing the unique quality of life and culture in that community and in adapting to future changes of use of an economic, physical or social nature.[211]

Under the statute, additional purposes of the comprehensive plan are to

> (1) Set goals and objectives for land development . . .
>
> (3) Coordinate all governing bodies, units of government and other planning commissions to ensure that all comprehensive plans and future development are compatible;
>
> (4) Create conditions favorable to health, safety, mobility, transportation, prosperity, civic activities, recreational, educational, cultural opportunities and historic resources; . . .
>
> (7) Promote a sense of community, character, and identity; [and]

209. W. Va. Code Ann. § 8A-3-7 (LexisNexis 2012) (setting forth comprehensive requirements for the submission of a comprehensive plan by the planning commission).

210. *Id.* § 8A-3-1(a) ("The general purpose of a comprehensive plan is to guide a governing body to accomplish a coordinated and compatible development of land and improvements within its territorial jurisdiction, in accordance with present and future needs and resources.").

211. *Id.* § 8A-3-1(b).

> (8) Promote the efficient utilization of natural resources, rural land, agricultural land and scenic areas . . . .[212]

Zoning ordinances under these West Virginia statutes are to be adopted to promote the public welfare, health, safety, comfort, and morals of the community, preserve historic landmarks and buildings, preserve agricultural land, and promote the orderly development of the land.[213] These provisions allow local zoning to regulate the use of the land, prohibit specific land uses, protect and enhance the physical qualities of the community, divide the community into different zones for regulating the use of the land, create overlay districts and special design districts within which specific additional development standards will apply, regulate the height, area, bulk, use, and architectural features of buildings, preserve green spaces, and require new green spaces, landscaping, screening, and the preservation of adequate natural light.

It is a fair question to ask whether the same legislature that adopted this detailed and broad legislative regime to provide for the appropriate use of the land at the local level intended to fully preempt its exercise by the adoption of the oil and gas laws, which focus on a much more limited set of impacts. Since the only case law in West Virginia to date involves a complete ban on fracking and is a lower court opinion, it is possible that a full review of both legislative schemes by a higher court will reveal a path for harmonizing them both, as the courts did in New York and Pennsylvania. This possibility is furthered by the legislature's reversal of the former rule of strict construction of local land use laws.[214]

B. Ohio

In Ohio, the issue of state preemption of local land use control of gas drilling was squarely addressed in *Newbury Township Board of Trustees v. Lomak Petroleum, Inc.*[215] Under the authority granted to it to plan and regulate development, the township amended its zoning

212. *Id.* § 8A-3-1(d).

213. *Id.* § 8A-3-2(b).

214. *See id.* § 8-1-7 (instructing courts to review local land use authority fairly broadly). The section declares that the "enumeration of powers and authority granted in this chapter shall not operate to exclude the exercise of other powers and authority fairly incidental thereto or reasonably implied and within the purposes of this chapter . . . [and t]he provisions of this chapter shall be given full effect without regard to the common-law rule of strict construction." *Id.*

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

ordinance to prohibit drilling in all residential areas.[216] In doing so, it relied on a long tradition of local zoning in the state.[217] In 1925, the Ohio Supreme Court upheld the constitutionality of municipal zoning, finding that local zoning helps to maintain the welfare of the community.[218] The power to plan, zone, and regulate land use is vested in the state's General Assembly pursuant to the Ohio Constitution.[219] Through its home-rule provisions and enabling statutes, the Ohio legislature and courts have given significant police power and planning authority to regulate land use to the local legislatures of counties, townships, and municipalities.[220]

The Ohio Oil and Gas Act, chapter 1509, however, expressly prohibits certain local land use restrictions, while allowing localities to adopt zoning restrictions that are designed to protect the public from the health and safety risks of drilling.[221] The *Newbury* court noted that

> the General Assembly had no desire to totally strip local governments . . . of the power to regulate activities within their borders. [Ohio Revised Code] Chapter 1509 attempts to strike a balance between those aspects of oil and gas well exploration and drilling which are reserved for state regulation and those areas which local governments . . . may permissibly regulate.[222]

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216. *Id.* at 306 (holding that a township may prohibit drilling in residential areas for legitimate health and safety concerns).

217. *Id.* (noting that the township zoning resolution in this case did not adopt health and safety standards, which conflicted with state law that prevented prohibition of drilling in appropriate areas, unless for health or safety reasons).

218. Pritz v. Messer, 149 N.E. 30, 35 (Ohio 1925). This case preceded *Village of Euclid v. Ambler Realty Co.*, 272 U.S. 365 (1926), which affirmed the constitutionality of local zoning, and particularly its separation of land uses, drawing on nuisance law as an analogy, and basing its holding in part on protecting public health and safety.

219. Ohio Const. art. II, § 1.

220. *See* Vill. of Hudson v. Albrecht, Inc., 458 N.E.2d 852, 855 (noting "that the right of the individual to use and enjoy his private property is not unbridled but is subject to the legitimate exercise of the local police power"); *see also Euclid*, 272 U.S. 365; Morris v. Roseman, 118 N.E.2d 429, 431 (Ohio Ct. App. 1954) ("The enacting of a zoning ordinance is clearly an exercise of the police power of a municipality in protecting the public morals, safety, health and general welfare of the people.").

221. Ohio Rev. Code Ann. § 1509.39 (West 1996).

222. Newbury Twp. Bd. of Trustees v. Lomak Petroleum, Inc., 583 N.E.2d 302, 304 (Ohio 1992). "[Ohio Revised Code] 1509.39 preempts the power of a township to prohibit oil or gas well drilling in areas which are traditionally appropriate for such activity, unless health and safety

Despite this recognition of local zoning power over fracking, the court in *Newbury* invalidated the total restriction of drilling in all residential districts.[223] It noted that the residential zoning districts in the township included significant amounts of agricultural lands—areas where gas companies traditionally drill.[224] The court also noted that there were no agricultural zoning districts in the township, recognized that a significant amount of land in the residential districts was not developed residentially, and questioned whether the blanket restriction truly was motivated by public health and safety concerns.[225] The effect of banning fracking in residential zones in a town with only three zoning districts—residential, commercial, and industrial—was to confine the practice to a small portion of the community.[226] On the strength of this logic, the court invalidated the restriction.[227]

The court remanded for further consideration of the issue of whether provisions of the local law that prohibited drilling within 300 feet of an inhabited structure protected public health and safety. Objecting to the remand, a concurring justice noted that "the majority imposes an even higher level of scrutiny to determine whether this regulation passes *statutory* muster . . . . [W]e need only determine whether it rationally promotes township health and safety, not whether it is narrowly tailored to address such concerns."[228]

This decision, de facto, prevents Newbury Township from preserving its agricultural lands for future residential use, since homes are not likely to be developed in and around a number of gas drilling facilities. Beyond that, the *Newbury* decision imposes a duty upon local legislatures, in adopting fracking restrictions, to prove that they accomplish public health and safety objectives. This reverses the traditional deferential posture of the courts in reviewing decisions of legislatures, particularly with regard to zoning matters. From its inception, zoning determinations by local legislatures have been subjected to a rational basis test, which this decision reversed.[229]

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standards are being adopted by the township zoning resolution." *Id.* at 306.

223. *Id.* at 306.

224. *Id.* at 305.

225. *Id.*

226. *Id.*

227. *Id.* at 306 ("Because Section 801.0 A of the Newbury Township Zoning Resolution is not an attempt to further health and safety goals, we find that Section 801.0 A conflicts with, and therefore is preempted by, state law.").

228. *Id.* at 309 (Wright, J., concurring in part and dissenting in part).

229. *See* Vill. of Euclid v. Ambler Realty Co., 272 U.S. 365, 395 ("If these reasons, thus summarized, do not demonstrate the wisdom or sound

The practical impact of *Newbury* is that local governments in Ohio must adduce some evidence or argument as to how fracking regulations protect the public health and safety before they adopt them.[230] How, for example, could the township have proved that prohibiting fracking in its extensive residential districts was motivated by such concerns? On the one hand, this may mean that local governments must identify, understand, and rely on the public health and environmental risks that attend fracking and import enough of that science to support their decisions. Alternatively, localities may be able to demonstrate that their antifracking laws are motivated by public health and safety concerns by referring to existing case law in the state and the constitutional and statutory provisions that these cases reference.

Taking this latter approach, could *Newbury* demonstrate that preserving a large part of the township for current agricultural and future residential use protects local health and safety? On point is *Ketchel v. Bainsbridge Township*,[231] in which the Ohio Supreme Court found that a three-acre minimum lot size requirement in a residential zone was a valid requirement in order to protect underground aquifers from being depleted by the demands brought about through subdivision of denser, smaller lots.[232] Such a purpose is clearly tied to protecting local public health and safety. The court ruled that "a local zoning authority may consider the conservation of underground water resources when enacting zoning regulations."[233]

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policy in all respects of those [zoning] restrictions . . . at least, the reasons are sufficiently cogent to preclude us from saying, as it must be said before the ordinance can be declared unconstitutional, that such provisions are clearly arbitrary and unreasonable, having no substantial relation to the public health, safety, morals, or general welfare.").

230. This assertion, if correct, questions the validity of the October 1, 2012, adoption by the City Council of Yellow Springs of a Bill of Rights ordinance banning shale gas drilling and associated activities. Bob Downing, *Ohio's Yellow Springs Adopts Community Bill of Rights*, AKRON BEACON J. ONLINE (Oct. 3, 2012), http://www.ohio.com/blogs/drilling/ohio-utica-shale-1.291290/ohio-s-yellow-springs-adopts-community-bill-of-rights-1.338971. Yellow Springs joins twelve other localities in Pennsylvania and New York in passing similar local legislation. Megan Bachman, *Council Considers Drilling Ordinance—Ban Would Be First in Ohio*, YELLOW SPRINGS NEWS (Aug. 9, 2012), http://ysnews.com/news/2012/08/council-considers-drilling-ordinance%E2%80%94-ban-would-be-first-in-ohio. How can such municipalities support a total ban based on public health and safety concerns? There may be responsible answers to this question, but supporting such ordinances is certainly a heavier lift than supporting, for example, set-back restrictions such as those adopted in *Newbury*.

231. Ketchel v. Bainsbridge Twp., 557 N.E.2d 779 (Ohio 1990).

232. *Id.* at 785.

233. *Id.* at 783.

The connection under Ohio law between protecting the public health, safety, and welfare and preserving natural resources is extraordinarily clear. The Ohio Constitution provides that conservation, preservation, and revitalization are legitimate "public purposes" and vests local governments with the authority to engage in the "conservation and preservation of natural and open areas" and to "control, prevent or minimize, clean up or remediate . . . water contamination or pollution."[234] Among the strategies that municipalities in Ohio can consider in the wake of the *Newbury* decision is to create conservation or environmental zones in lieu of residential holding zones. This is because zoning laws may be enacted for the protection of the environment or conservation of natural resources.[235] This has been held to be a legitimate exercise of the police powers granted to municipalities, counties, and townships to protect the local public health, safety, and welfare.[236] In *Cash v. Cincinnati Board of Zoning Appeals,*[237] the Ohio Court of Appeals found that the purposes of a Cincinnati Environmental Quality-Hillside District advanced the public safety, health, and welfare.[238] In

234. Ohio Const. art. VIII, § 2o (authorizing local government entities to provide for the "conservation and preservation of natural and open areas and farmlands, including by making urban areas more desirable or suitable for development and revitalization; to control, prevent, minimize, clean up, or remediate certain contamination of or pollution from lands in the state and water contamination or pollution."); *see also* Ohio Const. art. II, § 36 ("Laws may be passed to encourage forestry and agriculture . . . and to authorize the acquiring of other lands for that purpose . . . [and] to provide for the conservation of the natural resources of the state, including streams, lakes, submerged and swamp lands and the development and regulation of water power and the formation of drainage and conservation districts; and to provide for the regulation of methods of mining, weighing, measuring and marketing coal, oil, gas and all other minerals."). This constitutional provision gives local governments great leeway in protecting and promoting the conservation of natural resources through the use of land use regulations and devices.

235. *See Ketchel*, 557 N.E.2d at 783 (noting that resources such as groundwater must be conserved and protected).

236. *See* Reed v. Rootstown Twp. Bd. of Zoning Appeals, 458 N.E.2d 840, 842 (Ohio 1984) (holding that the requirements and purposes of a township zoning resolution were "reasonable and legitimate exercise[s] of police power").

237. Cash v. Cincinnati Bd. of Zoning Appeals, 690 N.E.2d 593 (Ohio Ct. App. 1996).

238. *Id.* at 597. The purposes of the Cincinnati Environmental Quality-Hillside District are "to assist the development of land and structures to be compatible with the environment and to protect the quality of the urban environment in those locations where the characteristics of the environment are of significant public value and are vulnerable to

Reed v. Rootstown Twp. Board of Zoning Appeals,[239] the Ohio Supreme Court sustained an application of an Open Space Conservation District, which established a five-acre minimum lot requirement for a swampy area in order to protect the ecological balances and conserve natural resources.[240] The Ohio Supreme Court had held that such conservation districts were a reasonable and legitimate use of police power by the township.[241]

These innovative zoning techniques exhibit the strength of the power delegated to local governments and suggest a path toward demonstrating that public health and safety concerns motivate zoning provisions that limit fracking. Such a strategy is bolstered by the general understanding of local power under Ohio law. The Home Rule Amendment to the Ohio Constitution, for example, states that "[m]unicipalities shall have authority to exercise all powers of local self-government and to adopt and enforce within their limits such local police, sanitary and other similar regulations, as are not in conflict with general laws."[242]

V. Cooperative Governance: State-Local Collaboration

There is tension in the four Marcellus Shale states regarding regulatory control of gas drilling. Debates take on an "either-or" character, with advocates arguing to elbow out the level of government they think least likely to meet their interests.[243] If the New York towns, whose power to ban fracking has been upheld by lower courts, win on appeal, those who oppose fracking will fan the flames of local resistance, encouraging others to follow suit. If they are successful in this, the industry and those who will benefit from its relatively cheap energy will lobby for Act 13–type solutions in the form of new state legislation clearly preempting local regulation.

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damage by development permitted under conventional zoning and building regulations." *Id.* at 595.

239. Reed v. Rootstown Twp. Bd. of Zoning Appeals, 458 N.E.2d 840 (Ohio 1984).

240. *Id.* at 842.

241. *Id.* at 840.

242. Ohio Const. art. XVIII, § 3.

243. This discussion presupposes that the federal government will remain gridlocked legislatively and that Congress will permit only modest interventions by the EPA, beyond those mentioned in Part I. Both state and local governments would benefit from more aggressive federal action, including funding much-needed scientific research regarding the public health and environmental impacts of fracking and fully integrating the gas drilling industry into the coverage of federal clean air and water protections.

Rather than ask which level of government should win the battle for control of gas drilling, it is far preferable to ask how both state and local officials and stakeholders can be involved.[244] As this Article demonstrates, zoning is an important tool in the municipal governance toolkit and should not be sacrificed for the sake of streamlining the gas drilling permitting process. Zoning out fracking, on the other hand, may frustrate important state interests, particularly if it becomes widespread. Gas reserves transcend local boundaries and states have a legitimate interest in promoting an adequate supply of energy sources of their choice. These tensions cannot be resolved in winner-take-all litigation or advocacy in legislative offices and chambers. They require a concerted effort to negotiate a process and create a framework for decision making that provides a role for both local and state agencies and their stakeholders.

The result of such a process might be an agreement by the state to promulgate model zoning ordinances, such as a gas exploration overlay zone,[245] and provide technical assistance to localities in how to adapt such ordinances to their local circumstances. It may be that communities adopt total bans in part because they do not have access to best practices such as these or the understanding of both the law and science necessary to employ them. State agencies that are investing time and money in creating their own regulatory regimes can cost effectively provide such technical assistance to localities as part of a cooperative state-local approach to controlling local impacts and promoting regional and statewide interests.

In New York, the DEC has proposed giving communities with an adopted comprehensive plan component on gas drilling a method of becoming involved in the permitting process.[246] The proposal is to

244. *See* Inst. of Med. of the Nat'l Acads., Environmental Decisions in the Face of Uncertainty 139 (2013) ("Agency decision-making processes that involve stakeholders, including dialogues with stakeholders about uncertainties, can demonstrate intentional transparency and create, maintain, and enhance a relationship of trust between the agency and stakeholders . . . . Early and continuous involvement of stakeholders can also prevent delays that can occur when stakeholders are not engaged in decision making until later in the process, at which time they might take legal actions.") "Stakeholders" is defined in this document to include communities. *Id.* at 139 n.8.

245. *See* Robert H. Frelich & Neil M. Popowitz, *Oil and Gas Fracking: State and Federal Regulation Does Not Preempt Needed Local Government Regulation*, 44 Urb. Law. 533, 556–57 (2012) (discussing the oil and gas element of the Santa Fe County Sustainable Land Development Plan, which "can be used as a local government model for similar planning and regulation in cities and counties where oil and gas drilling and hydrological fracturing permits are requested, in coordination with and supplemental to permits issued under state oil and gas legislation.").

246. Revised Draft SGEIS, *supra* note 3, at 26–27.

require an applicant for a gas drilling permit in a town with a fracking component of its comprehensive plan to negotiate with local officials to conform the drilling to the plan, prior to the DEC's final decision on the permit.[247] But how are localities with limited professional staff going to draft an accurate and reasonable comprehensive plan component on fracking, with its multiple and complex impacts? Such a plan should discuss and assess all environmental and public health risks, as well as the adverse impacts on the particular community's character and environment. State agencies that are charged with regulating the oil and gas industries can be tasked with providing information to localities to help them draft well-informed and appropriate planning documents. This information could also guide communities in identifying measures that can mitigate the adverse impacts of gas drilling.

One model for state-local cooperative governance is New York's law on siting major electric generating facilities, which preempts local control of utility siting but accommodates the local interest in the permitting system it created.[248] This law reauthorized and revised article X of the Public Service Law, establishing an electric generation siting board to review and approve the siting of electric utility generators of twenty-five megawatts or greater.[249] This board is empowered to override local land use laws that it believes are unreasonably burdensome,[250] but it includes two members who are residents of the affected community.[251] Prior to the adoption of this law and following the expiration of a previous version of article X, localities governed this land use and often opposed or significantly delayed the approval of generation plants vitally needed by the state's power grid. In establishing a state-controlled siting system, the legislature largely preempted local control but allowed for the input of the affected locality and local stakeholders.[252] In addition to requiring local residents to sit on the siting board, the revised article X requires applicants to set up a fund that will enable affected local governments, environmental groups, and the community at large to hire experts, lawyers, and other consultants to participate in the process of creating a scope of review for the proposed utility.[253] Applicants are encouraged to enter into agreements with these parties regarding the scope of review and a hearing examiner is appointed to

247. *Id.*

248. N.Y. Pub. Serv. Law §§ 160–173 (McKinney 2011 & Supp. 2013).

249. *Id.* § 162.

250. *Id.* § 168(3)(e).

251. *Id.* § 160(4).

252. *Id.* § 166(j), (k).

253. *Id.* § 163(4)(a).

resolve any disputes that arise over the scoping.[254] While it does not impose a collaborative decision-making process on affected agencies, governments, and private actors, this legislative approach sets the table and provides significant resources so that one can occur.

There are many more such techniques that could be agreed upon if states pursued the intentional policy of including and working with local governments in the regulation of fracking, followed by serious negotiations to create a framework and practices for working together.[255] Such a policy would avoid the uncertainty and vagaries of preemption debates and litigation, respect the critical role of local governments in controlling land uses within their jurisdictions, offer them the technical assistance they need to determine where fracking can occur and how to guard against its adverse impacts, and avoid simplistic solutions such as complete proscriptions that may be inimical to larger state interests.

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254. *Id.* § 163(5).

255. These rather modest suggestions build on a sophisticated strategy referred to as reflexive law regimes. Commentators in the field of reflexive law, which this Article refers to as cooperative government, suggest that positive or formal lawmaking, where higher orders of government create and impose standards on lower-order governments and constituents, is not up to the task of managing highly complex, multifaceted problems such as fracking, with its many local, state, and federal benefits and potential adverse impacts. They offer procedural solutions: reflexive laws that prescribe or suggest decision-making processes that involve government agencies and private sector and civic stakeholders in developing and achieving performance-based solutions. Such laws encourage reciprocal reflection within and among governmental agencies, regulated entities, and involved stakeholders about their performance regarding complex issues like those raised by the challenge of governing fracking. For more on reflexive laws, see generally Tim Iglesias, *Housing Impact Assessments: Opening New Doors for State Housing Regulations While Localism Persists*, 82 Or. L. Rev. 433, 475 n.148 (2003); Sanford E. Gaines, *Reflexive Law as* a *Legal Paradigm for Sustainable Development,* 10 Buff. Envtl. L.J. 1 (2003); Eric W. Orts, *Reflexive Environmental Law,* 89 Nw. U. L. Rev. 1227 (1995); John C. Dernbach, *Navigating the U.S. Transition to Sustainability: Matching National Governance Challenges with Appropriate Legal Tools*, 44 Tulsa L. Rev. 93 (2008); Clayton P. Gillette, *Allocating Government for Disaster Mitigation*, *in* Losing Ground: A Nation on Edge 251 (John R. Nolon & Daniel B. Rodriguez eds., Island Press 2007).

RESOURCES
FOR THE FUTURE

THE STATE of STATE SHALE GAS REGULATION

Executive Summary

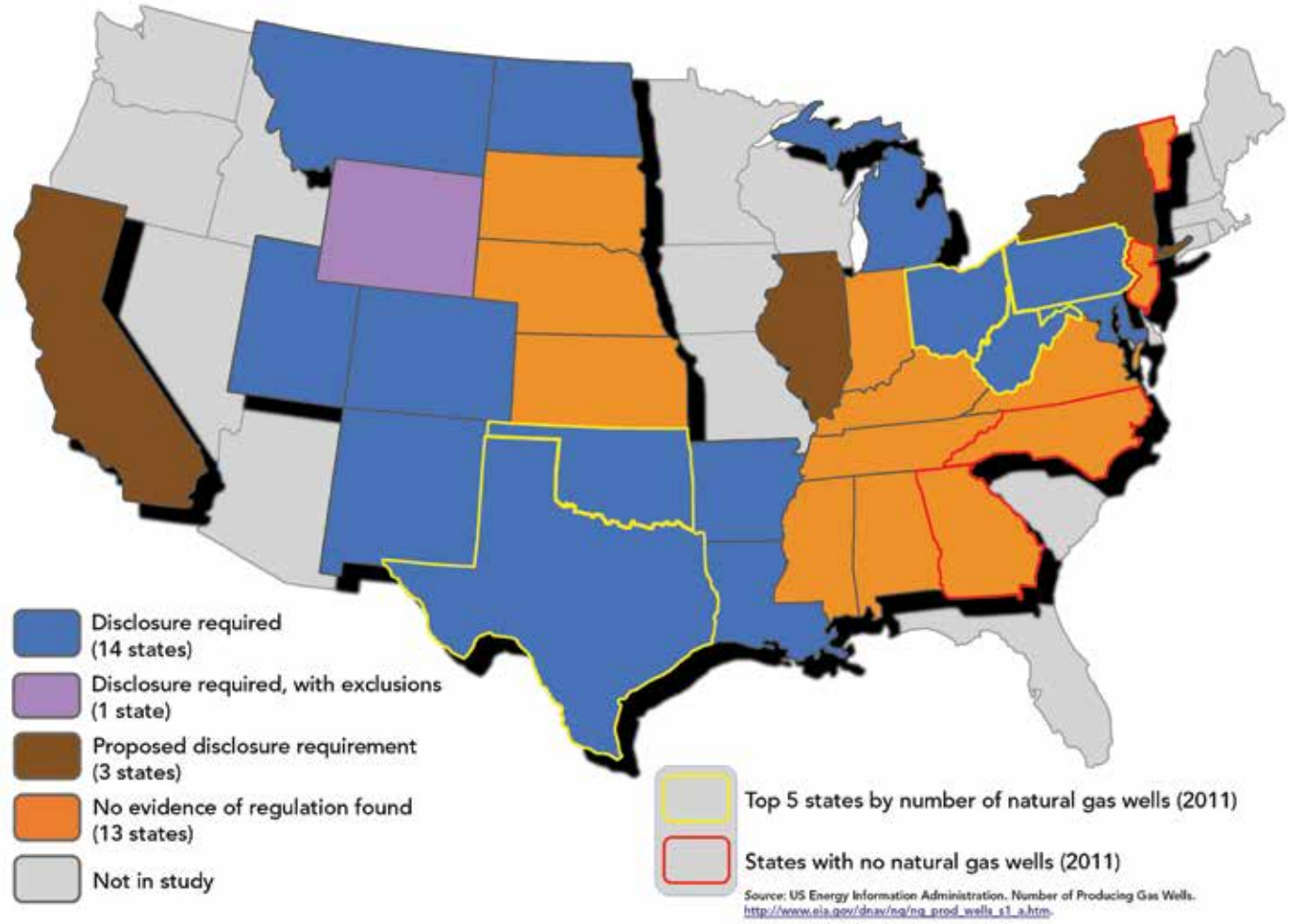
Nathan Richardson, Madeline Gottlieb, Alan Krupnick, and Hannah Wiseman

MAY
2013

ADVANCES in hydraulic fracturing (fracking) and other technologies are driving a boom in natural gas production in the United States, but developing this resource carries risks. Historically, states have been the primary regulators of oil and gas development. As the shale gas boom has taken off, states have updated their regulations, each with varying requirements. This dynamic regulatory environment has been challenging for industry, environmental groups, researchers, the federal government, and other experts to understand.

In a new RFF report, *The State of State Shale Gas Regulation*, we describe, analyze, and compare 25 regulatory elements related to shale gas development across 31 states. Although not a complete review of all state shale gas regulations, it is the most comprehensive to date—systematically identifying the differences and similarities among states for the first time. The report details what type of regulatory tools each state uses, how many regulations a state has relative to other states, and for some regulations, how stringent they are. For the latter two measures, we found a high degree of heterogeneity among states. An overview is given in a series of maps and state-by-state tables (samples are shown in Figures 1 and 2). The complete set of maps and tables is available at www.rff.org/shalemaps.

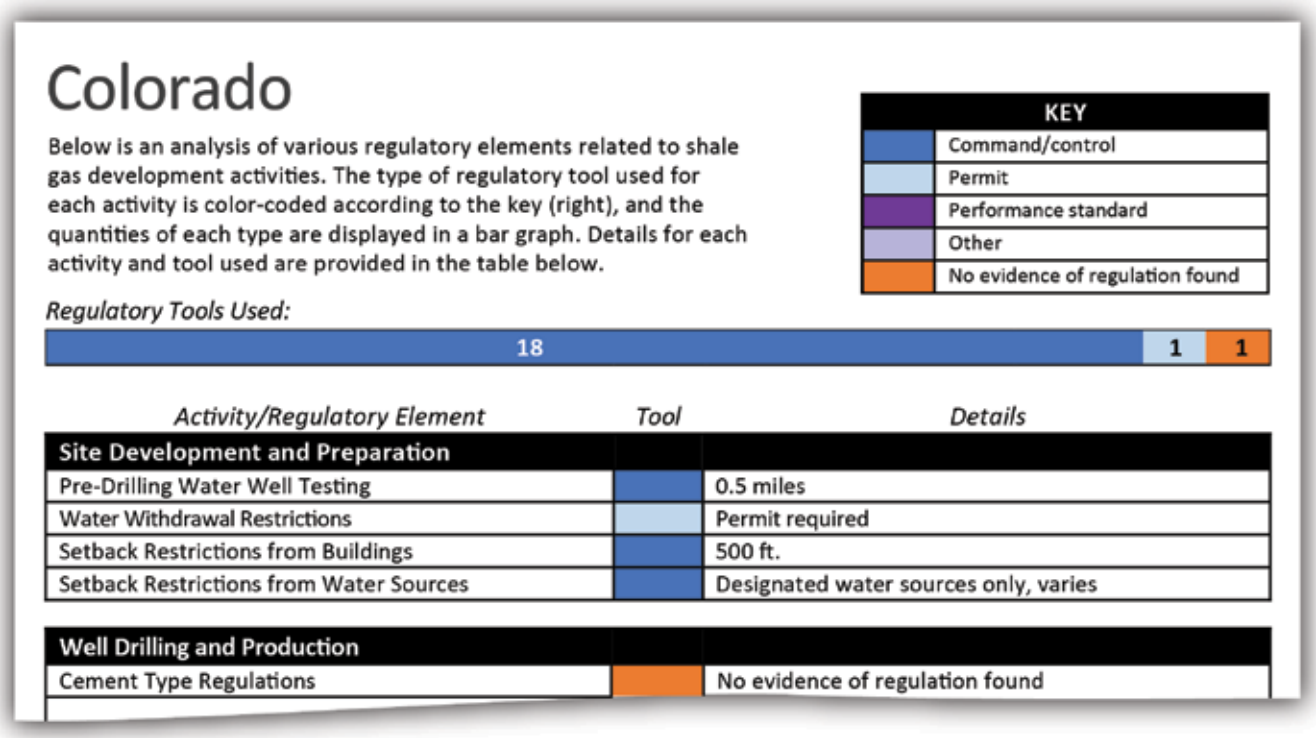
Figure 1. Sample Map: Fracking Fluid Disclosure



The report also highlights a lack of transparency in state shale gas regulations. Though regulations are publicly available, they are often difficult to find and interpret, even for experts. Moreover, states' use of case-by-case permitting makes it challenging for researchers and the public to determine what is regulated and required.

Regulators and stakeholders often ask which states have the "best" regulations and how those regulations can be improved. This report is a first step in helping to answer those questions. However, we only analyzed what some current regulations require, not their costs and benefits or how they are enforced. We also did not rank the overall quality or effectiveness of each state's regulations.

Figure 2. Sample State Table



Colorado

Below is an analysis of various regulatory elements related to shale gas development activities. The type of regulatory tool used for each activity is color-coded according to the key (right), and the quantities of each type are displayed in a bar graph. Details for each activity and tool used are provided in the table below.

KEY	
	Command/control
	Permit
	Performance standard
	Other
	No evidence of regulation found

Regulatory Tools Used:

18 | 1 | 1

Activity/Regulatory Element	*Tool*	*Details*
Site Development and Preparation		
Pre-Drilling Water Well Testing		0.5 miles
Water Withdrawal Restrictions		Permit required
Setback Restrictions from Buildings		500 ft.
Setback Restrictions from Water Sources		Designated water sources only, varies
Well Drilling and Production		
Cement Type Regulations		No evidence of regulation found

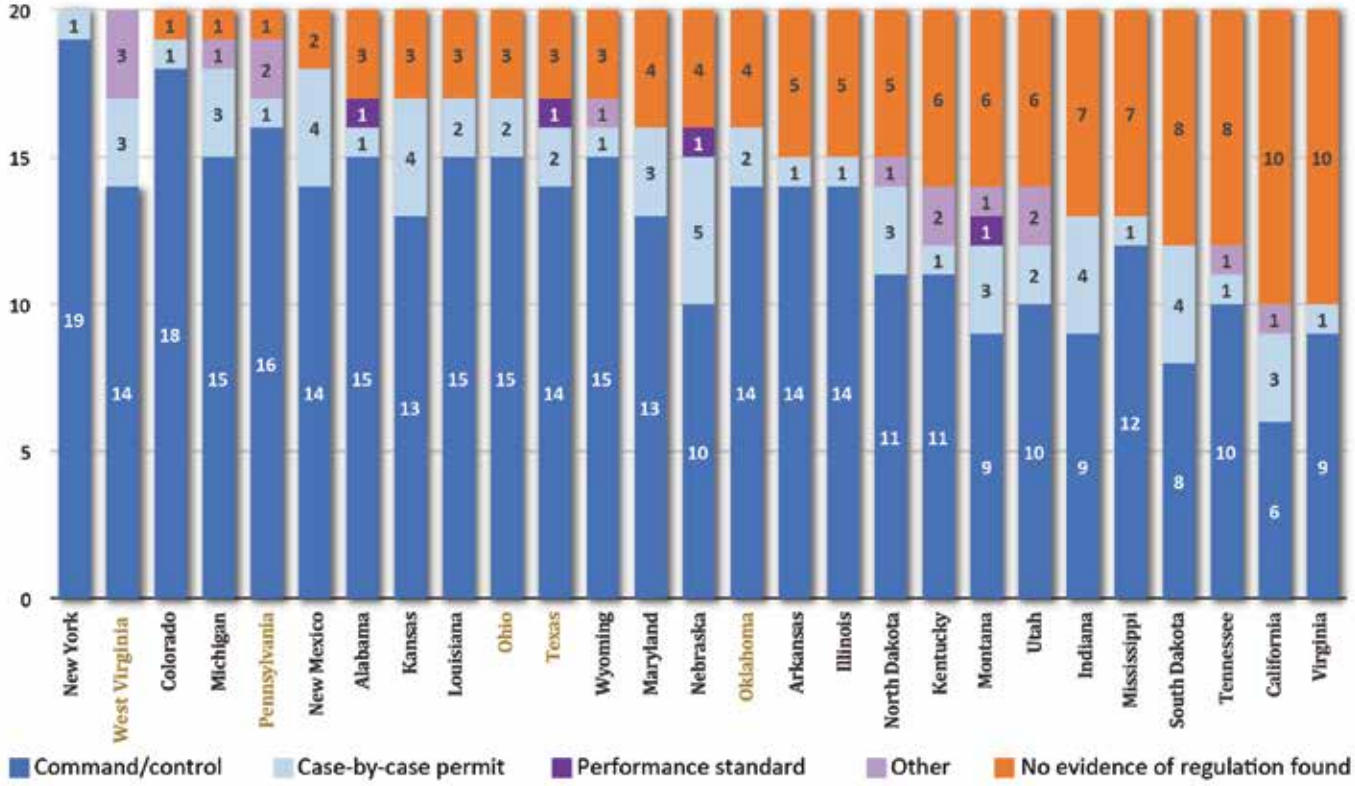
WHAT AND HOW DO STATES REGULATE?

States use a variety of tools to regulate shale gas activity, from command-and-control regulations to more flexible performance standards and case-by-case permitting. For example, a state might require wells to be cased and cemented to a specific depth below the water table (a command-and-control rule), to a level sufficient to protect all "freshwater bearing zones" (a performance standard), or it might require each well's casing and cementing to be reviewed before issuing a permit (case-by-case permitting). Economists generally favor performance standards because, with proper monitoring and enforcement, they give firms the flexibility to meet standards at the lowest cost. Case-by-case permitting is the most flexible approach, but it can be administratively costly and may not be transparent—it is often hard to know what is permitted and what is not.

We statistically tracked 20 of the 25 regulatory elements. The other 5 elements—identified with an asterisk in the table of regulatory elements (see page 6)—cannot be cleanly compared in the report. We found that states regulate anywhere from all 20 elements (West Virginia and, under its proposed regulatory package, New York) to only 10 elements (California and Virginia). The five states with the most gas wells (Texas, Oklahoma, Ohio, Pennsylvania, and West Virginia, shown in yellow in the figures) regulate at least 16 elements, more than the national average of 15.6.

As shown in Figure 3, command-and-control regulation is the most frequent tool used by the states, covering more than 80 percent of the regulatory elements. Case-by-case permitting accounts for 14 percent and performance standards account for about 1 percent of the elements.

Figure 3. Number of Elements Regulated and Tools Used

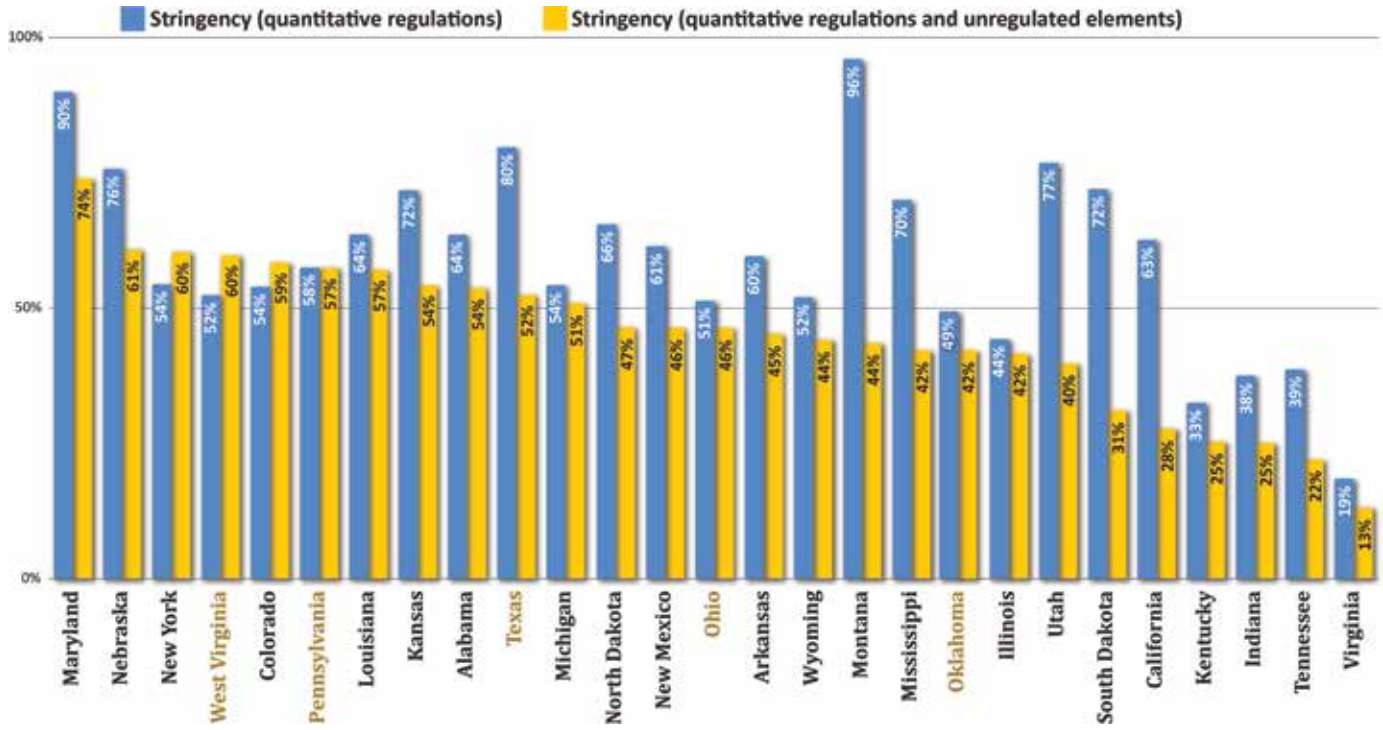


HOW STRINGENTLY DO STATES REGULATE?

For 13 regulatory elements, at least some states use quantitative regulations. For example, setback rules require wells to be sited a certain number of feet from buildings (with greater setback requirements being more stringent). For these regulations, it is possible to compare regulatory stringency across states.

Stringency can be measured in different ways. For example, when only considering the elements each state regulates quantitatively, Montana and Maryland appear to have the most stringent regulations across these elements, and Virginia seems to regulate them the least stringently (Figure 4).

Figure 4. Stringency of State Regulations



However, most states do not regulate all 13 of these quantitative regulatory elements. Montana only regulates 4, for instance. If elements that each state does not regulate (even by permits) are treated as minimally stringent, their average stringency is different. In this adjusted measure of stringency across elements, the average stringency of all states is naturally lower because every state (except New York, under its proposed rules) has at least one unregulated element. Measuring stringency in this way, Maryland appears most stringent (Figure 4).

Differing conditions among states may justify regulating more or less stringently (or indeed, not regulating an element at all). In the report, we explore possible relationships between a variety of state characteristics and the regulatory activity observed.

THE SOURCES OF HETEROGENEITY

The heterogeneity of shale gas regulations is pervasive; it can be seen in what states regulate and how stringently they do so (though states do show a consistent preference for command-and-control regulations). Of course, similar heterogeneity exists in many types of state regulations—from income and sales taxes to speed limits. Regulatory differences may reflect underlying differences of geology, hydrology, demographics, or other factors that affect the local risks of shale gas development—or they could be a result of random variation built up over decades of changing oil and gas regulation, or even political factors.

We analyzed the associations between observed regulatory heterogeneity and more than 50 environmental, demographic, political, and other variables. Relatively few statistically significant associations emerged and, at most, these variables could explain only 35 percent of the observed variation in regulatory activities.

However, our analysis did find several significant associations. For example, states with more gas wells tend to regulate more elements, perhaps reflecting a greater need for regulation where there is a larger industry presence. Also, regulations that protect groundwater (underground aquifers) tend to be more stringent in states where groundwater makes up a greater fraction of overall water consumption.

State regulators can benefit from continued research into the sources of heterogeneity to ensure that they are making decisions that adequately protect the public and the environment.

CONCLUSIONS

Shale gas regulation is complex and dynamic, reflecting the complicated technology, evolving understanding of risks, and rapid pace of development. These factors may contribute to the heterogeneity across states' shale gas regulations detailed in this report.

Heterogeneity alone is not a bad thing, and is not necessarily surprising. But whether it is justified—in an economic and environmental sense—depends on whether it is rooted in underlying differences among states that affect the costs and benefits of policy choices (for example, differences in hydrology, geology, and demographics). That remains unclear—the preliminary analysis in the report cannot, alone, determine whether heterogeneity is justified. But we found only a few relationships between the heterogeneity we observe and what to us seem to be among the most obvious underlying differences that could drive it.

More research is needed, and we look forward to making further contributions. We hope our results will induce those who say the heterogeneity of shale gas rules is justified by relevant underlying factors to better support their position.

More broadly, we hope our analysis will inspire dialogue among states and critical examination of why regulations are what they are today and whether they can be improved—to better protect the public, to reduce compliance costs, to better fit local conditions, to keep pace with technology, and to reflect the best thinking about regulatory design.

REGULATORY ELEMENTS

ANALYZED

We selected and reviewed the following 25 regulatory elements that span the shale gas development process for each of the 31 states with actual or potential shale gas production.

1. General well spacing*
2. Building setback
3. Water setback
4. Pre-drilling water well testing
5. Casing/cementing depth
6. Cement type production
7. Surface casing cement circulation
8. Intermediate casing cement circulation
9. Production casing cement circulation
10. Water withdrawals
11. Fracking fluid disclosure
12. Fluid storage options
13. Freeboard
14. Pit liners
15. Underground injection
16. Fluid disposal options*
17. Wastewater transport tracking
18. Venting
19. Flaring
20. Severance taxes*
21. Well idle time limits
22. Temporary well abandonment
23. Accident reporting
24. Bans and moratoria*
25. Regulatory agencies*

* These elements were not included in the statistical comparison of regulatory elements.

Resources for the Future (RFF) is an independent, nonpartisan organization that conducts economic research and analysis to help leaders make better decisions and craft smarter policies about natural resources and the environment.

This report was developed by RFF's Center for Energy Economics and Policy (CEEP) as part of a larger initiative, Managing the Risks of Shale Gas: Identifying a Pathway toward Responsible Development. Updated findings are published at www.rff.org/shalegasrisks. RFF is pleased to acknowledge the generous support of the Alfred P. Sloan Foundation for this project.

Read the full report at: www.rff.org/shalemaps.

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RESOURCES
FOR THE FUTURE

Controlling the Local Impacts of Hydrofracking Panel
Stephen C. Ross, County Attorney, Santa Fe County
Materials

Santa Fe, NM, Oil & Gas Element *in* County General Plan, found at:

http://www.santafecountynm.gov/userfiles/file/oilandgas/OilGasElement093008.pdf

Santa Fe, NM, Oil & Gas Ordinance, found at:

http://www.santafecountynm.gov/userfiles/SFCOrdinance2008_19.pdf