

REGULATION OF HYDRAULIC FRACTURING

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Abstract: Recent technological advancements in hydraulic fracturing have enabled the oil and gas industry to access shale gas. While it is estimated that shale gas, a clean source of energy, will account for 20% of the total U.S. gas supply by 2020, there have been serious concerns about potential adverse impacts of fracking on the environment and public health. Consequently, a patchwork of regulations has evolved in the United States to cope with the competing concerns of environmentalists and the oil and gas industry. After an overview of the technical aspects of the fracking process and environmental concerns, this article examines the successes and shortcomings of the state-centric regulatory system and the potential application of America's regulatory scheme as a model for entrants into fracking. It reviews federal regulation of fracking and the comprehensive regulatory systems that vary from state-to-state.

Keywords: *Constitutional demarcation of state and municipal competence; environmental protection; federal legislation; fracking; hydraulic fracturing; land use regulation; natural gas; preemption of municipal legislation; regulation*

Hydraulic fracturing has transformed the United States' energy outlook in recent years. President Obama dubbed the United States the "Saudi Arabia of natural gas" because "[w]e've got a lot of it".¹ In fact, the US Department of Energy's (DOE) Energy Information Administration (EIA) estimated that the US has over 2,214 trillion cubic feet (tcf) of recoverable shale gas reserves.² By 2020, the EIA projects that shale gas will comprise over 20 per cent of the total US gas supply.³ Thus, the "fracking" process has been touted in the US as the key to a clean energy

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1 Barack Obama, President of the United States, *President Obama Discusses the Blueprint for American-Made Energy* (White House Press), available at <<http://www.whitehouse.gov/photos-and-video/video/2012/01/26/president-obama-discusses-blueprint-american-made-energy#transcript>> (accessed 18 Jan 2014).

2 Mason Inman, "Estimates Clash for How Much Natural Gas in the United States" (29 Feb 2012) *National Geographic News*, available at <<http://news.nationalgeographic.com/news/energy/2012/03/120301-natural-gas-reserves-united-states/>> (accessed 18 Jan 2014).

3 United States Energy Information Administration, "Annual Energy Outlook 2009 With Projections to 2030" [2009], available at <<http://www.eia.doe.gov/oiaf/archive/aeo09/pdf/0383%282009%29.pdf>> (accessed 18 Jan 2014).

future and to end dependence on foreign oil.⁴ Hydraulic fracturing is a process where fracturing fluids — a combination of sand, water and chemical additives — are pumped into wells under high pressure to generate fractures in underground formations.⁵ Recent technological advancements in hydraulic fracturing have enabled the oil and gas industry to access “shale gas” — natural gas produced from hydrocarbon-rich shale formations.⁶

Despite the many potential benefits of fracking, many have raised concerns about the impact of fracking on underground water resources, public health and other environmental effects in the locale of these shale gas extraction facilities.⁷ The sudden pervasiveness of fracking, in conjunction with communities and environmentalists’ concerns, has raised the issue of who regulates fracking. Because fracking is not regulated under federal law, legal battles ensued between state and local governments over who has the power to regulate fracking. A patchwork of regulations evolved in various states across the nation as legislators and municipalities struggled to cope with the competing concerns of environmentalists and the oil and gas industry.⁸

A cursory investigation into hydraulic fracturing outside the US leads to two conclusions: (1) There is more fracking in the US than in most other countries combined, some of which categorically prohibit it altogether, and

4 US EIA, “Annual Energy Outlook” (n.4), pp.2–3.

5 United States Environmental Protection Agency, “Potential Relationships Between Hydraulic Fracturing and Drinking Water Resources” [2010] 1, available at <[http://yosemite.epa.gov/sab/sabproduct.nsf/02ad90b136fc21ef85256eba00436459/3B745430D624ED3B852576D400514B76/\\$File/Hydraulic+Fract+Scoping+Doc+for+SAB-3-22-10+Final.pdf](http://yosemite.epa.gov/sab/sabproduct.nsf/02ad90b136fc21ef85256eba00436459/3B745430D624ED3B852576D400514B76/$File/Hydraulic+Fract+Scoping+Doc+for+SAB-3-22-10+Final.pdf)> (accessed 18 Jan 2014). See also Beth E Kinne, “The Technology of Oil and Gas Shale Development” in Erica L Powers and Beth E Kinne (eds), *Beyond the Fracking Wars: A Guide for Lawyers, Public Officials, Planners, and Citizens* (American Bar Association, 2013) 3.

6 Jason B Hutt and Salo L Zelemeyer, “The Shale Gale: Storming Towards Energy Independence” in ALL-ABA, *Shale Drilling and Hydraulic Fracturing: A Primer for Non-Specialists* (American Bar Association, 2012) 17.

7 US EPA, “Hydraulic Fracturing and Drinking Water Resources” (n.1), p.1.

8 Rachel Degenhardt, “Hydraulic Fracturing and Groundwater Contamination: Can Disclosure Rules Clarify What’s In Our Groundwater?” (2012) 39 *Ecology Law Currents* 39. See also United States Department of Energy, “Modern Shale Gas Development in the United States: A Primer” [2009] 25–27, available at <http://www.netl.doe.gov/technologies/oil-gas/publications/epereports/shale_gas_primer_2009.pdf> (accessed 18 Jan 2014). See also Daniel Gilbert and Alison Sider, “Ohio Limits Fracking After Series of Quakes” (12 Apr 2014) *The Wall Street Journal* (“The Ohio Department of Natural Resources said Friday it was halting fracking within a 3-mile radius of the epicenter of the quakes in northeastern Ohio, and said firms operating in the Utica Shale — a rock formation holding vast quantities of natural gas — must install seismic monitors if they drill within 3 mile of a known fault.”); Michael K Murphy and Claudia M Barrett, “Pressure Mounts to Disclose Fracking Chemicals” (7 Apr 2014) *The National Law Journal* (discussing the debate over the disclosure of fracking chemical ingredients); Emily Schmall, “Denton Fracking Ban Would Be First in Texas” (8 May 2014) *Huffington Post* (discussing the ban on fracking in Denton, Texas); Dana Feldman, “Beverly Hills Bans Fracking; First City in California To Do So” (7 May 2014) *Reuters* (City leaders in celebrity-filled Beverly Hills voted on Tuesday to ban fracking, becoming the first municipality in California to prohibit the controversial technique for extracting natural gas and oil from underground rock deposits. Environmentalists say chemicals used in the process pollute underground water supplies and cause other damage.).

(2) United States' regulation of fracking is more varied (by state) and generally more comprehensive. What follows is a random sampling of fracking practice and regulation in other, primarily European, countries and China.⁹

That there are considerable shale natural gas reserves in Europe appears to be a given. The International Energy Agency estimates that there is sufficient natural gas locked in shale formations to meet Europe's needs for at least half a century.¹⁰ Given that the European Union (EU) is collectively one of the world's largest importers of natural gas, it would appear logical to assume that Europe as a whole would welcome hydraulic fracturing to capture such a large reserve of natural gas. Not necessarily so. The region's shale gas reserve is largely untapped. The EU is expected to release a unified policy on fracking to manage a multiplicity of sometimes conflicting laws and permitting requirements throughout EU countries.¹¹ Although the EU refused to enact a complete moratorium on fracking, in October 2013, it voted to require energy companies to conduct environmental audits before fracking.¹² With the unified EU policy still in the early stages of development, several EU countries are adopting their own approaches in the interim.¹³

Poland appears to have the largest of such shale gas reserves in western Europe.¹⁴ While there are indications that the Polish government would like to develop its own gas supplies both to decrease use of fossil fuels¹⁵ and to decrease its reliance on natural gas from Russia,¹⁶ exploitation is hampered by legal obstacles such as the generic need for environmental impact assessment together with amendments to current laws directed specifically at hydraulic fracturing.¹⁷ Nevertheless, the trend appears to be toward the regulation of hydraulic fracturing rather than its outright prohibition.¹⁸

9 See for further analysis Benjamin E Griffith, "The International Community's Response to Hydraulic Fracturing and a Case for International Oversight" in Erica L Powers and Beth E Kinne (eds), *Beyond the Fracking Wars: A Guide for Lawyers, Public Officials, Planners, and Citizens* (American Bar Association, 2013) 287–313.

10 *Ibid.*, p.294.

11 Stephen L Kass, "Worldwide: Countries Approach Fracking With Interest and Caution" (6 January 2014) *Mondaq*, available at <<http://www.mondaq.com/unitedstates/x/284506/Climate+Change/Countries+Approach+Fracking+With+Interest+and+Caution>> (accessed 10 Jan 2014).

12 James Kanter, "Europe Votes to Tighten Rules on Drilling Method" (9 October 2013) *The New York Times*, available at <http://www.nytimes.com/2013/10/10/business/energy-environment/european-lawmakers-tighten-rules-on-fracking.html?_r=0> (accessed 10 Jan 2014).

13 Kass (n.11).

14 "Energy in Poland: Fracking Heaven" (23 June 2011) *The Economist*, available at <<http://www.economist.com/node/18867861>> (accessed 10 Jan 2014).

15 *Ibid.*

16 "Poland to Get Gas from 'Fracking' in Europe" *RT* (29 August 2013), available at <<http://rt.com/business/poland-shale-gas-fracking-europe-154/>> (accessed 10 Jan 2014).

17 Poland's eagerness to frack triggered opposition at the recent Warsaw conference on climate change where opponents argued that fracking actually increases GHG emissions. Kass (n.11) (citation omitted).

18 Griffith (n.9), p.296.