ENERGY MANAGEMENT BRIEF:

Is It Time for Federal Regulation of Shale Gas Production?

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The production of natural gas from formerly inaccessible shale formations using hydraulic fracturing (also known as "fracking") has transformed America's energy options. Only a few years ago, American policymakers foresaw a future increasingly dependent upon natural gas imports; they now foresee a domestically-produced supply sufficient to serve the country's needs for as much as 100 years. Historically, natural gas prices have been volatile (and frequently high), but now forecasters predict relatively low prices into the foreseeable future. Low natural gas prices could stimulate the replacement of dirtier fossil fuels (coal and oil) with cleaner natural gas (in electricity generation and transportation, respectively), hastening the long-held dream of the industry's proponents that natural gas serve as a bridge fuel to a renewable energy future.

For a variety of reasons outlined in a previous post, shale gas production is controversial. Its rapid growth has been driven in large part by production techniques (horizontal drilling and fracking) that are now in use on a much wider scale than ever before. Their use produces negative externalities -- pollution and other unpleasant byproducts borne mostly by the community in which shale gas production occurs. Hydraulic fracturing changes the character of the area in which it occurs, bringing truck traffic, seismic testing, and other industrial uses to formerly quiet rural or suburban neighborhoods. It uses enormous quantities of water, and produces wastewater (that must be disposed of) and fugitive emissions of methane, a potent greenhouse gas. For these reasons and others, fracking has generated intense opposition in some parts of the United States and around the world.

State and federal regulators have scrambled to adapt to the boom in natural gas production, and the controversy it has spawned. That scramble has produced a significant amount of regulatory change in states containing shale gas deposits (called "shale plays" in the industry vernacular). Some states (like New York) have reacted cautiously, banning some shale gas production pending further study of its risks. Others (like Texas) have opened their shale plays to development under existing state regulatory regimes, adjusting those regimes to address new or newly-recognized risks. That process of state regulatory adjustment continues, but it has not quieted opponents of shale gas production. At the national level, the

Environmental Protection Agency ("EPA") is engaged in a multiyear study of the industry, one that may yield additional federal regulation.

All of which suggests a question. Should the federal government regulate shale gas production using hydraulic fracturing? Should Congress pass comprehensive federal licensing rules and/or standards governing the industry? Should the EPA use existing regulatory authority to impose further restrictions on fracking or to fill gaps in the network of state regulatory regimes? Or is the regulation of this industry better left to the states, whose varied regulatory approaches to date represent a series of experiments from which all can learn? In an article coming later this year, I argue that, for now, we ought to let this process of state-level regulatory adjustment continue, and that comprehensive federal regulation is not necessary.

This question mixes policy preferences and principles of federalism. While it is clear that the federal government has the *power* to regulate hydraulic fracturing under the Constitution's Commerce Clause (because of the industry's substantial effects on interstate commerce), that acknowledgment does not answer the question of where regulatory authority *ought* to lie. We could answer that question in either of two ways. One option is to decide what the best policy response is, and regulate at the level of government that is best suited to achieve that policy goal. That approach, however, puts the cart before the horse. There is still a lot we don't know about the impacts of shale gas production. Cornell University, the National Academy of Sciences, Penn State University, and our own University of Texas are just a few of the many research institutions studying the effects of hydraulic fracturing on the environment. We are learning more about this process, and as we learn, different states are approaching the task of regulating these risks differently. Therefore, it makes sense to take a different approach to this problem, one that is policy-neutral and starts with the question of who (which level of government) is best suited to make regulatory judgments about shale gas production.

Law and economics scholars commonly favor regulation at the level of government that is simultaneously (i) closest to the problem and (ii) subsumes all or most of the costs and benefits of the activity to be regulated. Stated differently, we justify federal (as opposed to state or local) regulation only under certain conditions, three of which may be relevant to the regulation of shale gas production. First, federal regulation may be necessary to address spillover effects that cross state boundaries. The Clean Air Act, for example, addressed a problem, air pollution, that did not respect state or local government boundaries. Second, federal regulation is sometimes necessary even when the effects of the regulated activity are primarily local, if economic forces tend to lead states to under-regulate environmental risks. This is the so-called "race to the bottom" argument for federal regulation, which is based on the idea that states are locked in competition with other states for jobs and investment, and so compete with one another by lowering their regulatory standards to suboptimal levels. Finally, we sometimes regulate at the federal level when Congress articulates an important national interest in promoting and regulating the development of the resource in question. National

laws governing the licensing of nuclear power plants are example of this kind of regulation; such laws were enacted to promote and regulate the development of an industry of strategic importance to the country.[1]

We can use one or more of these rationales to explain every existing national law regulating energy facilities, from coal-fired power plants to hydroelectric facilities to liquefied natural gas terminals. If we apply these rationales to the production of shale gas using hydraulic fracturing, none seems to justify a new federal regulatory regime addressing the risks of hydraulic fracturing. First, most of the impacts of fracking do not cross state boundaries. Problems of groundwater contamination, wastewater disposal, impacts to local character, and seismic impacts are essentially local in nature. Indeed, this may be one reason why we have traditionally left the regulation of onshore natural gas production to the states. To the extent that hydraulic fracturing produces spillover impacts that cross state lines (as with fugitive methane emissions or wastewater disposal to interstate waters) there already exist federal regulatory regimes to address those impacts (the Clean Air Act and Clean Water Act, respectively). Indeed, just this week the EPA finalized new rules under the Clean Air Act to minimize fugitive emissions from natural gas production.

Nor does the "race to the bottom" rationale apply here. Normally, federal regulation is required to avoid a race to the bottom where multiple states are competing for a limited supply of capital investment, as when a a manufacturer pits states against one another to compete for the jobs associated with the new factory. By contrast, there is ample capital available to develop shale gas wherever it is found. Indeed, shale gas production is booming wherever it is permitted, and the glut has driven price of natural gas to historic lows. Nor do states or local governments appear to be competing for this capital. Many local communities (as well as the state of New York and the nation of France) have banned certain kinds of shale gas production within their borders. They can do so secure in the knowledge that if they change their minds, they will not have forgone the option to develop their shale gas resources because of limited capital.

Finally, shale gas development doesn't seem to implicate the kinds of national interests that have motivated federal licensing regimes for other energy facilities. The national hydroelectric licensing regime, for example, was part of a New Deal package of legislation designed to promote economic development during the depression. Likewise, Congress created the nuclear power licensing regime after World War II to manage the development of this strategically important new resource. Shale gas production, by contrast, does not seem to implicate any national interest of similar magnitude. One might argue that the government has a national interest in promoting natural gas production so as to enhance the nation's energy

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[1] A fourth rationale, the efficiency argument for uniform manufacturing standards (as with, say, automobile emissions), seems less applicable here.

independence, or for environmental reasons (because it burns cleaner than coal or oil). However, shale gas production seems to be proceeding apace on its own in the absence of any federal regulatory regime.

In sum, for these reasons and others, there is no need for a new comprehensive federal regulatory regime addressing the risks of shale gas production. We may continue to see the EPA propose changes to its Clean Air Act and Clean Water Act regulations to address specific pollution issues associated with hydraulic fracturing. Meanwhile, we can expect that most of the regulatory developments governing this industry will continue to be at the state and local level. States are paying close attention to the risks of fracking, and the different regulatory responses we have seen to date in different jurisdictions may also reflect the different ways people balance the risks and benefits of this particular form of energy production. It is perhaps not surprising that Texans might strike this balance differently from New Yorkers. Better, then, not to force a uniform answer to this question on a diverse populace.

Professor Spence's research and teaching focuses on business-government relations and regulations, particularly energy and environmental regulation. He received his Ph.D. in political science from Duke University, and his J.D. from the University of North Carolina.