

**The Politics of “Fracking”:
Regulating Natural Gas Drilling Practices in Colorado and Texas**

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Abstract

This paper focuses on the politics of regulating natural gas fracking operations in Colorado and Texas. Between state differences in the economic importance of natural gas production, political traditions, environmental impacts of drilling activities, and local governmental responses to risk reduction, and entrepreneurial activities are discussed in relation to policymaking initiatives. In the concluding section, I suggest that Colorado’s regulatory approach offers a greater degree of environmental protection than Texas. Key reforms adopted in 2007-8 can be largely attributed to electoral victories that ensured unified party control over state government and the determined efforts of the pro-environmental governor to make changes in both the regulatory commission and in the substance of natural gas drilling policies.

Introduction

This paper focuses on the politics of regulating unconventional sources of natural gas at the state level.¹ I analyze state policy responses to the industry practice commonly referred to as “fracking,” a drilling technology that uses a mix of water and chemicals to dislodge natural gas from deep shale or coalbed methane deposits. Some state officials and environmental groups are increasingly worried about potential risks related to public health and water quality stemming from the migration of chemicals to nearby aquifers as well as the sizeable amount of water required to utilize this technology. Industry officials are resisting efforts by regulators to disclose the main ingredients within this chemical stew arguing that such information warrants protection as trade secrets. They also contend that related regulatory policies are unnecessary since the technology is both effective and safe. Trade association officials frequently note that fracking has been used for a long time in several states without adverse health or environmental consequences.

While most – if not all – shale gas states have encouraged energy companies to explore for and develop in-state gas resources, a number of state officials have taken additional steps public policy-wise to ensure that fracking operations do not produce adverse ecological and health-related impacts. My goal in this paper is to offer a very preliminary assessment of why selected state policymakers choose to adopt policies (including regulations) that offer a greater degree of environmental protection. What factors increase the likelihood that a state will either retain more pro-development status quo policies or impose some regulatory restrictions on how drilling activities are carried out? I will attempt to answer this question by examining the politics of fracking in two states – Colorado and Texas.

Research Expectations

There is a paucity of literature on state energy policy in general and hardly any when the topic of natural gas is searched. For much of the twentieth century, energy producers were primarily interested in oil production, often flaring natural gas at the wellhead since the fuels were often discovered in the same deposits. When the value of natural gas as a stand-alone energy source became apparent, state policymakers responded with new conservation requirements that made it illegal to flare or otherwise “waste” gas extracted from subterranean sources. Older texts from political scientists David Davis (1993) and Walter Rosenbaum (1987) refer to the political importance of oil and gas producers within “energy patch” states like Texas or Oklahoma and suggest that their influence was derived not only from meeting the energy needs of within-state residents but from providing a rather sizeable economic boost to their state’s gross domestic product (GDP) as well.

An important consequence of increasingly prosperous oil and gas ventures was the development of powerful state level sub-governments consisting of trade associations and industry officials (including pipeline companies as well as firms involved in exploration or production activities), state legislators, and regulatory agencies that frequently placed more emphasis on the promotional side of the energy business than on safety or environmental issues (Eisner, Worsham, and Ringquist, 2006). Oil and gas companies were able to forge close working relationships with state regulators who shared the belief that building and maintaining a strong economic base offered multiple benefits for the state. Hayes (2001) argues that industries that hold a privileged position within a state along with ample financial resources and a reputation for expertise are often able to effectively veto policy proposals that threaten their interests. Under these circumstances, it is very difficult to for groups or individuals seeking policy change to overcome the politics of the status quo. Indicators that offer a means of evaluating the importance of maintaining programs in their current form include the percent contribution to the state’s GDP and the annual amount of natural gas production.

However, not all states currently reaping (or thinking about reaping) the financial benefits of the “shale gale” have been historically aligned with or dominated by oil and gas companies. Tolerance for change varies across the states. Some state policymakers have displayed greater sensitivity to environmental policy concerns and constituencies and have developed greater institutional capabilities to manage policy problems (Rabe and Mundo, 2007). Consequently, they will incur less political risk from proposing policy or regulatory alterations that limit fracking operations. In addition to considering differences in a state’s political climate or culture, the public policy literature reveals a number of factors or circumstances that can be strategically used to disrupt existing policy arrangements in an effort to promote desired changes.

Three variables are drawn from Kingdon’s (1995) seminal work on agenda building and from Steelman’s (2010) recent book on the implementation of policy innovations. One of the most enduring and predictable sources of new policy enactment occurs because of electoral outcomes resulting in legislative or executive turnover, especially when elections produce unified partisan control over state government. In some cases, efforts to alter the status quo will be led by a policy entrepreneur who may be a just-elected governor or legislator demonstrating a willingness to deploy his or her resources to shape policy decisions (Corwin, 2002; Teske, 2004). Similarly, the analysis and manipulation of public problems can also prove useful to advocates of policy change. Attention can then be directed toward a particularly troublesome trend that needs to be reversed or to focusing events that heighten public awareness and concern about a policy

issue (Birkland, 1997). A fourth indicator considered here is the presence or absence of policy initiatives enacted by municipal officials (Ground Water Protection Council and ALL Consulting, 2009). This represents an additional, albeit limited, form of additional institutional capacity that serves to either reinforce state regulatory policies or, in some cases, to fill a policy vacuum aimed at providing an extra measure of environmental protection for local residents in the absence of stronger state regulatory policies (Reeder, 2010).

Given the built in political and economic advantages that large companies typically enjoy in state politics (Rabe and Mundo, 2007), it is plausible to expect little or no movement in the direction of additional regulatory restrictions imposed upon natural gas companies engaged in fracking operations within states classified as energy dominant. If changes do occur, they are more likely to take the form of what Cobb and Ross (1997) term “symbolic placating strategies” or minor inexpensive changes designed to appease status quo challengers. Industry flexibility in an otherwise energy dominant state may also be constrained by local government ordinances, actions that are sometimes beyond the control of state authorities. In states that are more economically and politically diversified, I expect to find that regulatory policy changes may reflect a shift in governing coalitions, actions taken by a well positioned policy entrepreneur, or policymaker reaction to a well publicized but tragic focusing event. The probability of change is obviously greater if more than one of these conditions takes place.

Policy Context

Hydraulic fracturing (or fracking) has provided a major technological boost to industry efforts to obtain greater amounts of natural gas from unconventional (harder to reach) sources. According to Peter Saundry (2009), it involves “the high-pressure underground injection of large amounts of water and other fluids (including chemicals) into gas bearing rock to form fractures that are propped open with sand. Once the formation is fractured, the natural gas can flow to the well where it is pumped out of the ground.” While earlier forms of fracking by U.S. energy companies such as Halliburton date back to the late 1940s, the recent upsurge in its use was prompted by the discovery of large new reserves of coal or shale bound gas throughout the U.S. and by technological improvements such as combining fracking with horizontal drilling techniques adopted from deepwater oil and gas wells operating in the Gulf of Mexico (American Petroleum Institute, 2010; U.S. Energy Information Administration, 2011).

The continuing use of fracking technologies bodes well for U.S. energy policy goals such as energy independence from imported oil and gas. A study by IHS Cambridge Energy Research Associates (2010) indicated that shale gas released from unconventional sources amounted to 1% of gas supplies in 2000; however, this figure had increased to 20% by 2010 and is expected to reach 50% by the year 2035. Overall, natural gas now represents roughly a quarter of total energy consumption in the U.S., a percentage that is likely to increase in view of the problems associated with the development and use of other fuel sources such as coal (Brown and Krupnick, 2010). Moreover, the vast majority of gas supplies (87%) are extracted from U.S. lands and waters; hence, the likelihood of supply interruptions is exceedingly small (U.S. Energy Information Administration, 2011). Analysts suggest that known reserves within existing shale plays will provide heat and electricity for American consumers for at least another hundred years (Ground Water Protection Council and ALL Consulting, 2009). The importance of the latter point is increasingly driven home by the increasing turmoil in and destabilization of oil exporting countries in the middle east that adds reliability concerns to meeting import demand and by

continuing political opposition within the U.S. to the development of oil and gas resources in ecologically sensitive areas such as the Arctic National Wildlife Refuge in Alaska (Layzer, 2006).

Beyond energy security concerns, there are economic and political arguments advanced to support the accelerated development of shale gas resources. As the U.S. gradually recovers from the most devastating economic recession in memory, the upsurge in natural gas production offers a rare piece of good news in terms of job creation. A study by IHS Global Insight (2009) estimated that approximately 2.8 million jobs could be attributed to the natural gas industry in 2008, including more than 600,000 jobs that were “directly involved in exploring, producing, transporting, and delivering natural gas to consumers or in providing critical supplies or onsite services to the natural gas industry.” For others, an acceleration of natural gas production offers the least costly (from an environmental perspective) fuel among current scalable energy options toward a post-carbon future. It burns more cleanly than coal and emits fewer pollutants (Ground Water Protection Council and ALL Consulting, 2009). Moreover, any discernable political momentum that may have led to greater economic and political investments in other energy sources such as nuclear power has slowed thanks to the recent natural and political tsunamis associated with the disintegration of nuclear fuel reactors in Japan.

Critics point to a number of potentially harmful environmental and public health consequences from the continuing use of hydraulic fracturing to extract gas from underground shale formations. One key concern is the possible contamination of groundwater supplies. While identifying the chemical ingredients used in fracking with any degree of precision is difficult to impossible because of the reluctance of company officials to disclose trade secrets, some preliminary studies have revealed the use of toxic fracking fluids such as diesel and benzene. And in some cases the failure to adequately seal pipes within a wellbore has led to a build-up of pressure that results in the release of gas and these drilling fluids into the natural environment (Lustgarten, 2009a). In one case that was subsequently publicized in a pair of documentariesⁱⁱ, U.S. EPA officials in Denver investigated citizen complaints from a community in Fremont County, Wyoming and concluded that a quarter of the water wells located near a fracking operation were contaminated.

A related concern is how to manage “produced waters” that surface following fracking operations. These waters have absorbed not only fracking fluids such as biocides (used to minimize corrosion of pipes from bacteria) but substantial quantities of naturally occurring salts as well. Companies can deal with wastewater by re-injecting it into the ground, through treatment and release or by recycling fluids for subsequent fracks (Kerr, 2010). A recent article about wastewater fracking jobs in Pennsylvania suggested that potentially unsafe concentrations of radioactive contaminants had been detected in produced waters but not reported. According to Urbina (2011), the effluent was then transported by company officials to municipal treatment plants that were not equipped to handle it and was subsequently discharged into rivers not far from water intake plants that supply drinking water to nearby cities.

Policymakers are also paying attention to the amount of water withdrawn from underground aquifers. Each frack job also requires large quantities of water, an amount that ranges from two to four million gallons (cited in Pless, 2010). While companies are strongly encouraged to cut water use by recycling fluids whenever possible, the amounts needed to stimulate the release of natural gas from rock formations in water scarce states like Wyoming or Colorado is a matter of concern to state and local officials worried about balancing energy-related demands with those related to municipal consumption and irrigated agriculture. The location of drilling

operations also matters. Groundwater is also more likely to represent a major source of drinking water in more sparsely populated rural areas than in cities. A study of water use in the Barnett Shale play in Texas indicated that fracking operations consumed less water from groundwater than surface sources; however, largely rural Cooke County depends on subsurface withdrawals for 85% of its water supply (Texas Railroad Commission, 2011).

Finally, there are other environmental impacts affecting land use, noise, and air quality. The tranquility of everyday life can be adversely affected by gas-related exploration activities that can include continuous noise and traffic from trucks hauling sand, chemicals, or wastewater through communities. Companies utilize large seismic trucks called “thumpers” that are deployed to hit (or thump) the ground with considerable force to aid in the identification of subterranean formations with commercially viable gas reserves (Wiseman, 2009). The activities associated with preparing sites for drilling operations are also associated with another unwanted byproduct – air pollution. One of the most productive gas fields in the U.S. located near Pinedale, Wyoming, has not only yielded considerable economic wealth to the area but amounts of ozone pollution that in March, 2011, were measured at 124 parts per billion; i.e., two thirds higher than EPA’s maximum daily limit and higher than the worst day reported by Los Angeles in all of 2010 (Associated Press, 2011). In addition, a recent study indicated that increasing amounts of methane (a greenhouse gas) have been released into the atmosphere because of leaks from shale gas wells and from loose pipe fittings attached to gas pipelines (Zeller, 2011).

State Regulation of Unconventional Natural Gas

Despite the potentially important health and environmental impacts associated with hydraulic fracturing and horizontal drilling technologies, policy control remains largely with the states. Lobbyists representing the Interstate Oil and Gas Compact Commission, an organization that has drafted policies for oil and gas producing states since the 1930s, contend that few documented cases of groundwater contamination can be directly attributed to fracking operations over the past fifty years. An additional point emphasized by industry supporters is that an EPA study was conducted in 2004 that found no evidence of adverse environmental impacts from industry use of these practices (Ground Water Protection Council, 2009). Consequently, the argument went, there was little need for federal oversight from the Environmental Protection Agency (EPA) or from the U.S. Interior Department (for federal lands and offshore operations) to correct a nonexistent problem.

In addition, politically influential trade groups like the American Petroleum Institute (API) and the Independent Petroleum Association of America (IPAA) have fiercely opposed efforts from environmental groups and a handful of Congressional allies to require the federal regulation of fracking. In 2005, the pro-gas coalition succeeded in attaining an important policy goal when Congress was persuaded to exempt hydraulic fracturing drilling practices from regulatory coverage under the Safe Drinking Water Act. Earlier political initiatives from the 1980s had already resulted in the enactment of policies allowing companies to avoid compliance with other environmental policies associated with oil and gas drilling actions. This included important disclosure programs such as the “right to know” reporting requirements associated with the 1986 Superfund law and the cradle to grave regulatory processes mandated by the Resource Conservation and Recovery Act, a hazardous waste program (Ground Water Protection Council, 2009).

So what does this mean for state-level initiatives dealing with fracking policies? The Ground Water Protection Council (2009) finds twenty seven states that have deep shale or coalbed methane gas deposits and enough gas producing activities to warrant some form of oversight policy. Whether they have the political will to do so appears to vary considerably.ⁱⁱⁱ The following sections cover policymaking activities in two states – Colorado and Texas. Both are major gas producing states but there are major differences between the two in terms of population size, region, political culture and orientation toward environmental policy concerns.

Texas

Texas is far and away the leading natural gas production state in the U.S., accounting for over six trillion cubic feet (tcf) in 2009, or 30% of the nation's output (U.S. Energy Information Administration, 2010). It has been a major producer state for oil (and eventually natural gas) since the beginning of the twentieth century. There are several major gas fields – or plays – in the state including two of the largest, the Barnett Shale play located in and around Fort Worth and the Haynesville play found in the eastern edge of Texas and in western Louisiana (Pless, 2010). A third field, the Eagle Ford, is expected to become another significant source of gas production and may eventually become a source of political controversy since (like the Barnett Play) it is located near a major urban area – San Antonio. Much of the recent upsurge in drilling activity since 2005 is directly attributable to the expanded use of hydraulic fracturing technology (Galbraith, 2011). State data indicate that businesses connected to the oil and gas industry employ over 200,000 people and contribute over \$200 billion (or 20%) to the economy of Texas (Texas PetroFacts 2011).

The economic impact of the energy industry coupled with the continuing political clout it wields in state government justifies classifying Texas as an energy dominant state (Wiseman, 2009). A conservative and largely Republican state legislature acting in sync with the past two governors (also Republican), Rick Perry and George W. Bush, have been particularly strong supporters of the energy industry. No fracking-related policy proposals have surfaced within the past few legislative sessions in Austin. Natural gas exploration and production activities have been placed under the jurisdiction of Texas Railroad Commission (TRRC), a bureaucracy that has exhibited more of a promotional emphasis in its dealings with oil and gas companies than concern for safety and environmental issues (Rahm, 2011). The TRRC is responsible for virtually all activities associated with natural gas exploration and production except for the regulation of air quality impacts. The latter task is under the jurisdiction of the Texas Commission on Environmental Quality.

The approach taken by the TRRC in overseeing natural gas fracking operations exemplifies this emphasis (see Table 1). The basic assumption imbedded in oil and gas laws is that any impacts arising from fracking technologies can be adequately handled through the traditional regulatory framework for oil and gas drilling activities; i.e., there is no explicit section that addresses fracking, per se. Companies are still responsible for obtaining a permit to drill or to deepen a well, complying with casing, cementing and completion requirements, and utilizing approved methods of waste disposal for fracking fluids (Kurth, et al, 2010). No additional requirements such as disclosing chemicals used in fracking operations, environmental assessment of proposed frack jobs, or consideration of wildlife-related impacts. TRRC officials insist that fracking operations are safe, adding the caveat that no documented evidence exists of

groundwater contamination in the sixty year history of frack jobs within Texas (cited in Smith, 2010).

This is not to say that fracking operations are without critics. People residing in the fourteen county area above the Barnett Shale play in and around Fort Worth hold contrary views. The convergence of technology, the discovery of significant shale gas reserves, and rapidly increasing prices for oil and gas led to the development of the Barnett field in 2001. According to Ward (2011), “the number of new producing wells jumped to 8,036 between 2006 and 2009... and the [current] number of wells in the area is 13,785.” He argues that the sheer number of wells affects environmental quality in terms of increased risk for spills, gas leaks and declining levels of air quality. These concerns have since been validated by a number of drilling operator mistakes resulting in negative environmental impacts.

One indicator of increased risk is the number of well blowouts (explosions) that occur because of carelessness at the well completion stage coupled with regulatory inaction. Between 1997 and 2006, fourteen blowouts occurred at wells located in Wise County while an additional four were reported in Denton County (Nguyen, 2010). Reports of contaminated water wells in Fort Worth in close proximity to fracking operations were investigated and found to be without merit by TRRC officials. However, inspectors from the regional office of EPA came to a different conclusion; i.e., their tests indicated that water samples contained contaminants that could be traced to nearby drilling operators. The TRCC findings were subsequently overruled (Rahm, 2011). And increases in air pollution can be traced to an array of drilling activities such as exhaust from internal combustion compressor engines, gas leaks from loose pipe fittings, and vapors escaping from oil tanks. Nguyen (2010) reveals that 50 of the 300 air samples tested from company operations in North Texas by state regulators exceeded clean air health standards established by the Texas Commission on Environmental Quality. Incredibly, this research also indicates that the amount of pollution generated by natural gas companies in Fort Worth now equals the amount emitted from motor vehicles (Nguyen, 2011).

While the surge in natural gas production has produced a corresponding increase in economic prosperity within metro Fort Worth, it has come at the cost of rising public concern about public health and environmental quality (Theodori, 2009) as well as the view that state officials have been insensitive to the policy preferences of local residents. Can city officials take action? A critical distinction in Texas (and elsewhere) is whether municipalities operate under “general law” or “home rule.” Urban areas like Dallas or Fort Worth are typically granted home rule status which allows local officials greater discretion to operate independently of state government, including the enactment of policies that restrict some oil and gas drilling activities, while smaller municipalities working under the constraints of a general law have less leeway to regulate industry decisions (Maxwell, 2009).

Demands for regulatory action from citizens in communities like Flower Mound and Fort Worth have adopted new policies that have withstood legal challenges from affected gas companies. Local authorities in Fort Worth enacted health and safety ordinances such as well setback requirements from residential areas, streets, churches, and schools, daytime and nighttime noise limits, the use of directional lighting, and restrictions on road construction in certain areas (Ground Water Protection Council and ALL Consulting, 2009). Other restrictions on drilling operations have been accepted in a less adversarial fashion. Sometimes agreements have been negotiated between gas companies and smaller municipalities or neighborhood associations. On occasion, industry officials may try to avoid potentially troublesome land use conflicts altogether through greater use of horizontal drilling.

In short, gas companies operating in Texas enjoy considerable latitude in their pursuit of drilling opportunities with relatively few state-level restrictions but must occasionally make accommodations with city officials when the gas fields are located within local boundaries. The political climate in Austin is quite supportive of oil and gas industry preferences, the state relies heavily on the severance tax on energy resources as a major source of funding for schools and other public programs, and the Texas Railroad Commission has not made any regulatory adjustments to accommodate environmental or health risks associated with fracking operations. Thus, status quo politics provides an apt description of natural gas policymaking in the Lone Star state.

Colorado

Energy companies in Colorado also rely on fracking to gain access to unconventional natural gas reserves that are typically imbedded within coalbed seams rather than shale. Nevertheless, the production figures over the past five years have been impressive. In 2009, the state ranked sixth in natural gas production with approximately 1.4 tcf of natural gas withdrawn (U.S. Energy Information Administration, 2010). Like Texas, Colorado has numerous wells distributed widely throughout the state. Considerable drilling activity takes place in two western counties, Rio Blanco and LaPlata, although a sizeable number of smaller wells are located in Weld County in northeastern Colorado (Colorado Oil & Gas Commission, 2011). According to HIS Global Insights (2009), the natural gas industry employs over 137,000 people in Colorado directly or indirectly accounting for approximately 6% of the state's workforce. In production counties with a sizeable percentage of federal land, the importance of revenues contributed in the form of property and/or severance taxes are striking. Bryner (2003) noted that coalbed methane (CBM) related industries contributed 43% of property tax revenue flowing into LaPlata county coffers in the early 2000s.

Colorado has historically been a pro-business state in terms of facilitating industry access to the development of natural resources, including natural gas. To accomplish this goal, three agencies share at least some responsibilities for overseeing oil and gas production activities. The Department of Public Health and Environmental Quality is in charge of implementing Safe Drink Water Act regulations and issues permits for the discharge of wastes into surface waters or groundwater. Departmental officials are also responsible for regulating air quality at drilling sites. If fracking operations require the diversion of groundwater, approval must be received from the State Engineer's Office. However, the primary policy actor in the regulation of natural gas drilling activities is the Colorado Oil & Gas Commission (COGC). Commissioners authorize most decisions affecting drilling operations.

COGC represents the agency part of an energy policy subgovernment that has historically maintained close ties to oil and gas company officials as well as members of the state house and senate natural resources committees. This has led to important policy decisions that have clearly produced economic benefits for energy producers. One example is a law originally enacted in the 1950s that allows energy companies to deduct up to 87.5% of severance tax obligations to the State of Colorado from any property tax assessments levied by the county where drilling occurs (Hubbard, 2007). The net effect of this statute is that the companies and the counties receive the gold while the state receives the shaft. In most years the state receives severance tax revenue from only five of the thirty counties with gas producing wells. Another policy that originated within COGC resulted in a gradual but very lucrative series of decisions allowing companies to

substantially increase the density of CBM wells over time – from one well per 640 acres in the 1960s to one per 40 acres in some areas (cited in Duffy, 2008).

The political importance of the natural gas industries in Colorado is evident. However, the state is more politically diversified than Texas and is less economically dependent upon oil and gas than Texas; hence, it cannot be categorized as “energy dominant.” In terms of general political orientations, state political leaders over the past twenty years have typically ranged from conservative to moderate with Democrats faring particularly well in capturing the governor’s office while Republicans have enjoyed greater success in terms of controlling the General Assembly (the state legislature). A second difference is the size and importance of the environmental policy constituency in Colorado as a partial counterweight to the political clout exercised by extractive industry groups. Third, there are a larger number of within-industry conflicts in Colorado that have not only diffused the opposition (from the perspective of environmental groups) but have offered opportunities for forming some rather unusual political alliances that can be readily observed in land use policy conflicts involving energy companies and other user groups (often ranchers).

At a micro level, natural gas policy conflicts in Colorado and elsewhere have centered upon “split estate” issues. In Colorado and Texas property ownership is split between those who hold title to and often live on the surface of a land parcel and those who own mineral rights (including natural gas) located below the surface. Conflicts emerge when parties with mineral rights seek access to these resources through drilling pads, road construction, removal of obstructions or similar actions that may result in significant impacts to the surface area as well as the economic and emotional well being of the owners. Onsite frac jobs may also create surface owner fears related to the possible contamination of water wells and to possible family exposure to chemicals released in the air or water. Gas companies that have purchased mineral rights in Colorado (or Texas) are legally entitled to reasonable access to these resources (which would not be worth much without such guarantees). Companies can avoid some problems by contacting surface owners in advance to work out an agreement regarding conditions of access as well as financial compensation for the loss of property or the opportunity costs of deferred economic activities incurred by surface owners. The surface owner is clearly at a disadvantage here and the only form of relief that the state can commonly offer is a requirement that the developer post a bond sufficient to cover property damages (Bryner, 2003).

Politically this has placed gas company officials on a collision course with many rural landowners in Colorado, particularly across the western slope. Many controversies pitting the interests of industry officials against ranchers, retirees, recreational businesses like hunting guides or wilderness outfitters have erupted with spillover impacts on policy contests and the development of policy proposals aimed at leveling the legal playing field between mineral and surface property owners. Environmentalists who were increasingly wary about the environmental impacts associated with fracking often sided with surface owners like ranchers who previously viewed each other with a healthy dose of skepticism or, in some cases, outright hostility. Other unusual allies of convenience for environmental opponents of fracking included some county commissioners concerned about water quality or retiree complaints and hunting organizations worried about the adverse impacts of large scale drilling operations on habitat requirements for wildlife (Duffy, 2008).

The emergence of land use and property rights controversies over fracking became increasingly visible because of media reports of water contamination in Garfield County and in northeastern Colorado near fracking operations. Gas industry officials contend that the

relationship between drilling activities and declining water quality is coincidental at best since fracs occur well below aquifers or water wells and the likelihood of frack fluids or brine migrating long distances to sources of drinking water is practically nil – a view shared by COGC officials. However, a three year study of over 700 methane samples from 292 locations that was conducted for Garfield County concluded that gas drilling adversely affected water quality in dozens of water wells (cited in Lustgarten, 2009b).

At approximately the same time, the political winds began to shift statewide in favor of the Democrats. After gaining control of the General Assembly in 2004, they succeeded in electing Bill Ritter as governor in 2006 while adding to their margins of partisan advantage in both chambers. The main policy platform for the incoming governor was pushing for a new energy economy that focused on increasing utility usage of renewable energy resources through a strengthened statewide renewable portfolio standard and building upon the state's natural capacity for the construction and use of wind and solar facilities. However, an ancillary campaign focus for Ritter was aimed at making existing energy sources like natural gas more sensitive to environmental policy concerns.

Key policies containing a new pro-environmental focus soon followed. Democratic control of state government led to the enactment of two important laws in 2007. The first produced an organizational shakeup of COGC. The roster of commissioners was expanded from seven to nine and membership requirements were altered to diversify an organization previously dominated by individuals with an industry background. Under the new law, appointees were to include individuals with expertise in wildlife, soil conservation, and agriculture to complement members with an oil and gas background. In addition, the Directors of the Departments of Natural Resources and the Public Health and Environmental Protection were designated as *ex officio* members.

A second law, titled the *Colorado Wildlife Stewardship Act*, called for natural gas drilling activities to administer oil and gas operations in a manner that is compatible with wildlife conservation goals, a requirement to be met through consultation with the state's wildlife division. This was followed by a contentious two year period of rulemaking aimed at translating broad policy objectives into more specific operational guidelines for COGC staffers, culminating in the passage of a new law in 2009 that codified the new regulations. One of the new rules called for gas companies to reveal the chemicals used in the fracking process; however, access was restricted to public health professionals with a "need to know" in response to a leak or spill (Rahm, 2011).

A glance at Table 1 reveals the key differences between Colorado and Texas after the flurry of policymaking actions from 2007 through 2009. The states are alike in terms of the basic features of regulating oil and gas drilling operations. Beyond that, Colorado policymakers have imposed additional environmental requirements on natural gas companies. In part, this reaffirms the point that energy companies do not wield the level of influence in Colorado that companies have come to expect in Texas. Another factor that carries more weight in Colorado is the strength of non-energy constituencies such as environmentalists, hunters, ranchers, and wealthy retirees in sparsely populated western counties. But the Colorado case also demonstrates the importance of a majority party leaders who are sufficiently opportunistic to take advantage of unified partisan control when it occurs to enact high priority policies. One final point is that local governments in both states have successfully adopted ordinances restricting unwanted drilling practices. But in Texas, the additional policymaking venue may be more important since it

provides a kind of regulatory backstop for residents in more populous urban areas to compensate for the more minimalist approach implemented by the TRRC.

Conclusions

Colorado and Texas represent polar opposites along a state hydraulic fracturing policy continuum that ranges from minimal adjustments to the regulatory status quo for exploration and production activities to the inclusion of a kind of precautionary principal that adds an extra measure of environmental protection against the unintended byproducts of new technologies. The contrast is instructive in the sense that both are big time producer states. However, differences in policy direction can be attributed to a variety of factors, including the relative economic dependency on natural gas production, the degree of party competition or control, the existence (or not) of a significant environmental constituency, the benefits of entrepreneurial leadership, and the addition or subtraction of agency governing capacity. An analysis of how these factors played out in explaining the differing policy outcomes in Colorado and Texas can only be regarded as suggestive given the relative newness of fracking policies on state legislative or regulatory agendas and the lack of data that would allow a more rigorous test of the expectations put forward. Not surprisingly, the main influences that stand out in the Colorado policy shifts are the combined effects of the Democrats gaining political control over both the governor's office and the general assembly in 2006 along with Governor Bill Ritter's staunch efforts to change the political culture of the COGC through a combination of organizational modifications in commissioner membership requirements and the addition of new regulatory requirements for the protection of groundwater and wildlife.

On the other hand, it seems plausible to expect an expansion of state policymaking efforts in the near future for several reasons. First, the magnitude of major new shale plays such as the Marcellus field in Pennsylvania (and several other states) and the Eagle Ford field in South Texas are extraordinarily attractive to state officials seeking new, well paying jobs in a time of fiscal austerity. Second, natural gas looks like a much more attractive source of energy in the wake of declining federal support for climate change policies and renewable energy standards coupled with growing skepticism about the risk and expense of constructing and licensing nuclear power plants. Third, the very real prospect of expanded federal policymaking responsibilities to be shouldered by the EPA and perhaps the Interior Department in response to EPA's study of hydraulic fracturing (expected in 2012) offers an incentive for heretofore inactive shale states to weigh in with programs that best reflect in-state policy priorities. Fourth, growing media attention to the environmental and health risks posed by fracking operations increase the likelihood that environmentalists will call for stronger state-level disclosure policies for fracking fluids. And some of the major natural gas policy players like Halliburton and Chesapeake Energy will join hands with the Interstate Oil and Gas Compact Commission to voluntarily disclose some chemicals in an effort to ward off prospects for an increase in federal regulatory involvement in fracking programs.

Table 1
State Regulation of Hydraulic Fracturing

| Regulatory Requirements* | Colorado | Texas |
|--|-----------------|--------------|
| General oil and gas permitting | | |
| - application to drill | Y | Y |
| - applications to deepen, reenter, or plug wells | Y | Y |
| - permit to dispose of drilling wastes | Y | Y |
| Prenotification for land owners prior to drilling | Y | N |
| Environmental review of proposed fracking operation | Y | N |
| Disclosure of chemicals utilized in fracking operations | Y | N |
| Limit impact of fracking on wildlife and biodiversity | Y | N |

*Sources: Ground Water Protection Council and ALL Consulting. 2009. *Modern Shale Gas Development in the United States: A Primer*. Prepared for the U.S. Department of Energy, Office of Fossil Energy, and the National Energy Technology Laboratory. DOE Award No. DE-FG26-04NT15455 (April).

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End Notes

ⁱ Unconventional but technically recoverable sources of natural gas include gas obtained from tight sands, coalbed seams, and shale through fracking operations. It is estimated that 60% of all remaining onshore gas resources in the U.S. are of the unconventional type.

ⁱⁱ *Gasland*, written and directed by Josh Fox, and a segment on fracking reported within *Dan Rather Reports*. Both were released in 2009.

iii I initially intended to gather data on the fracking-related policymaking activities from the shale gas states that would allow for some comparative state policy analyses. However, my efforts to retrieve information about state policy proposals dealing with natural gas or hydraulic fracturing since 2008 from the National Conference of State Legislatures' energy tracking database revealed little in the form of legislative activity until 2010 with a handful of bills and even fewer enacted laws. There has been a slight increase in the number of states offering legislative proposals in the 2011 session. Not surprisingly, most are in the "still pending" phase.