

**CHEVRON FAILS TO TRANSPARENTLY DISCLOSE RISKS ASSOCIATED WITH HYDRAULIC FRACTURING OPERATIONS TO INVESTORS**

Hydraulic fracturing operations have been linked to significant environmental impacts that not only could have financial implications for the company but are also leading to increased community opposition and regulatory scrutiny which could have business implications. Currently Chevron is not providing investors the necessary information to determine if it is successfully managing the associated risks. This memo identifies the general risks the entire natural gas production sector faces, while also elaborating the risks specific to Chevron.

***Shareholders are being asked to vote FOR a report on the short-term and long-term risks to Chevron’s operations, finances and gas exploration associated with community concerns, known regulatory impacts, moratoriums, and public opposition to hydraulic fracturing and related natural gas development.***

**Rationale for a Yes vote:**

1. Hydraulic fracturing results in significant environmental and social impacts, which are contributing to increased community opposition.
2. Chevron’s shareholders face significant financial risks due to tightening state and federal regulations including bans and moratoria.
3. Expectations around disclosure are shifting rapidly and companies and regulators are responding.
4. Chevron does not provide investors with sufficient information to determine of the company is mitigating the risks associated with fracturing operations.

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## BACKGROUND ON HYDRAULIC FRACTURING

Natural gas production from shale formations in the United States has grown dramatically since the early 2000s, amidst expanding controversy over the horizontal drilling and hydraulic fracturing used to access the gas. The supplies of newly accessible gas are an energy “game changer”, and companies are now assessing shales on nearly every continent.

Many governments and communities around the world are looking to learn from the U.S. experience before deciding whether and how to permit exploitation of their shale resources. In the U.S. there have been incidents of poorly constructed wells, equipment failures, degraded local and regional air quality, water contamination, private lawsuits, strained community relations, and related government enforcement actions. Moratoria or bans have been enacted in New York State, the Delaware River basin, and by local governments in several U.S. states. Outside the U.S., France and Bulgaria have banned fracturing and the Province of Quebec, Canada and South Africa, among other jurisdictions, have enacted moratoria.

Bans and moratoria are denials of companies’ social license to operate—denials of public consent—arising from concerns about environmental and social risks. Bans and moratoria impose a wide range of costs on companies, ranging from the costs of delays to complete loss of access to valuable resources where sunk costs must be written off.

Companies must be publicly transparent about managing their environmental footprint and social impacts, and engage with key community stakeholders to earn and maintain their social license to operate. Transparency requires full disclosure of steps being taken to minimize risks, acknowledgement of challenges and failures, and clearly defined steps to continually improve operations.

Investors in particular require specific, detailed information about how companies manage natural gas operations’ risks and rewards. It is necessary for shareholders to have assurance that company managers are reducing business risks by addressing operational hazards and are capturing the genuine, measurable business rewards flowing from environmental management practices that have the potential to lower costs, increase profits and enhance community acceptance. Investors require relevant, reliable, and comparable information about companies’ natural gas operations to make investment judgments based on a robust assessment of companies’ environmental, social, and governance policies, practices and performance.

## BACKGROUND ON INVESTOR CAMPAIGN

The hydraulic fracturing issue has unfolded rapidly on the national scene and investors were at the forefront raising this issue just as the debate was heating up across the country. Investors make decisions based on assessments of risks and rewards. Data on hard financial indicators are relatively easy to gather, but data on companies’ processes for managing environmental and social risks pose a greater challenge. To better address investor concerns, it is necessary for companies to provide investors with assurance that all along the corporate chain of command, managers are reducing business risks by addressing operational hazards and are capturing the genuine, measurable business rewards flowing from environmental management practices that have the potential to lower costs, increase profits, and enhance community acceptance. Investors require relevant, reliable, and comparable information about companies’ operations to make investment judgments based on a robust assessment of companies’ environmental, social, and governance policies, practices, and performance.

Investors initially engaged companies in the 2009-2010 proxy season, flagging many issues that are becoming increasingly common—more prevalent enforcement actions and fines, increased litigation, and the loss of social license to operate in certain communities. Moreover, votes at the companies' 2010 shareholder meetings were remarkably strong, indicating that a significant portion of each company's shareholders recognized these risks are real and required increased disclosure and accountability. On average, the proposals received approximately 30 percent of the vote, with the highest vote being at Williams Companies, where 42 percent of the shares voted either for or against supported the proposal. This is one of the highest votes on record for a first year environmental proposal. It took years for other issues such as global warming to record similarly high votes and investors contend this demonstrates just how important this issue is to the companies and their shareholders. In 2011, support for these proposal increased to an average vote of 40%, with the highest at Energen where the proposal received 49.5 percent of the vote, sending a very clear message to the company and the entire sector that increased disclosure is necessary.

This season investors have been tracking the growing number of reported adverse health and environmental episodes, and negative community social impacts, which have contributed to a growing number of bans and moratoria that can limit operations and pose direct business risks. In the 2012 proxy season, 10 proposals were filed but only three (Chevron, ExxonMobil and Ultra Petroleum) are going to a vote. All of the companies that will see a resolution on their ballot have faced one in the past. Shareholders first filed a similar proposal at Chevron last proxy season after the company acquired Atlas Energy, which brought with it significant holdings in the controversial Marcellus Shale. Last year, over 40 percent of the shares voted supported the proposal. This is a remarkable amount of support for a first year proposal at any company but it is particularly notable at an oil major. Proponents contend it is time the company responds to investor concerns and increases disclosure in key areas of investor concern.

#### CHEVRON RELIES HEAVILY ON HYDRAULIC FRACTURING TO PRODUCE NATURAL GAS

According to the *Wall Street Journal*, Chevron has been playing "catch-up"<sup>i</sup> in recent years as it has attempted to expand its presence in major US shale gas plays. But the company provides very limited information on the locations of its operations, making it very difficult for investors to assess the business risk it faces as a result of growing community opposition contributing to bans and moratoria. Currently, it holds over 700,000 acres in the Marcellus Shale along with 600,000 acres in the Utica Shale.<sup>ii</sup> The company provides a map of its operations in a presentation to analysts, but it is very difficult to determine whether the company is operating in some of the most controversial parts of the Marcellus region.

But from the information disclosed, it is clear that the Marcellus is a major strategic focus. According to the *Wall Street Journal*, the company plans to double its drilling in the Marcellus from 100 wells to 200 in "the near future".<sup>iii</sup> Its 2011 10-K says it drilled 61 wells in the Marcellus in 2011 so, clearly, the company is planning a significant increase in its operations in the region.<sup>iv</sup>

Given the high level of public opposition In the Marcellus, investors believe it is particularly important for the company to improve its reporting. As stated prior, there is growing community opposition, increasing regulations and a proliferation of bans and moratoria in the Marcellus Shale, but given the company's existing level of disclosure, it is impossible for investors to determine how the company's operations are being impacted.

Beyond the US, the company has significant investments in Poland, Romania and Bulgaria, which all pose notable challenges, particularly in Bulgaria which has banned hydraulic fracturing and Romania where there have been significant public protests against shale gas exploration.<sup>v</sup>

Given its presence in some of the most controversial shale gas plays, investors contend it is particularly important for the company to increase its disclosure around how growing community concern, increased regulations and

drilling moratoria are impacting the company's operations. But currently, the company provides very little information on its website and 10-K and many sector peers provide much more disclosure in both.

## 1. HYDRAULIC FRACTURING OPERATIONS RESULT IN SIGNIFICANT ENVIRONMENTAL AND SOCIAL IMPACTS, WHICH ARE CONTRIBUTING TO INCREASED COMMUNITY OPPOSITION

Hydraulic fracturing operations use millions of gallons of water and thousands of gallons of chemicals, and generate substantial amounts of waste water and polluting air emissions. They can also be socially disruptive—damaging roads, creating long traffic jams in rural communities, driving up local rental costs and, in some locations, increasing crime rates. Such operations have also been linked to air and water pollution episodes and human health and livestock damage. In the face of these environmental and social impacts, community opposition is growing and in some cases, resulting in restrictions and moratoria limiting business opportunities. The environmental and social risks include the following:

### ENFORCEMENT ACTIONS

Companies are increasingly facing enforcement actions and fines associated with the environmental impact of their operations. These violations contribute to community wariness of fracturing operations. Pennsylvania is one of the few states having a searchable database of drilling operation violations and enforcement actions. A new report, "Risky Business: An Analysis of Marcellus Shale Gas Drilling Violations in Pennsylvania 2008-2011," sums up the situation in the Commonwealth as follows:

"Using records obtained by the Pennsylvania Department of Environmental Protection (PADEP), the PennEnvironment Research and Policy Center identified a total of **3,355 violations of environmental laws** by 64 different Marcellus Shale gas drilling companies between January 1, 2008 and December 31, 2011. Of these violations, the PennEnvironment Research and Policy Center identified **2,392 violations that likely posed a direct threat to our environment and were not reporting or paperwork violations.**

Moreover, the PennEnvironment Research and Policy Center believes these numbers offer a conservative view of environmental violations taking place across the Commonwealth by Marcellus Gas drilling companies. These data only include violations discovered by PADEP's enforcement staff. Yet based upon the number of wells drilled and limited PADEP enforcement staff, further violations that have gone undetected are likely."<sup>vi</sup>

According to PADEP information, Chevron Appalachia has 52 active wells in the region and has been fined \$6,000 for 5 violations and Atlas Resources has 215 wells and received \$334,800 in fines for 25 violations (some of which may have occurred before Chevron's acquisition of the company.)<sup>vii</sup> Recently, the company has been in the news after a leaking pipe released "as much as 80 barrels, or 4,000 gallons, of condensate – also known as 'wet gas' – leaked from the pipe between Nov. 8, when the well fracking began and its discovery 42 days later" according to company estimates reported in the media.<sup>viii</sup>

Investors believe that companies should directly report on all violations, as Talisman Energy currently does, as a means of acknowledging and responding to public concerns. More importantly, since most states do not disclose such information, investors are largely left in the dark about companies' overall of compliance and associated risk management practices making direct company disclosure a necessity.

Furthermore, tracking violations more closely can help companies manage and reduce problems. According to media reports, when Chief Oil & Gas found itself at the top of a list of the most fines in Pennsylvania, that served as a wake-up call for the company. "When Chief Oil & Gas landed near the top of several lists – including the most fines of any Marcellus Shale drilling company in Pennsylvania – its leadership asked for a meeting with the head of the Department of Environmental Protection. Chief's operations leadership flew up from Dallas because 'they

were not pleased,' recalled then-DEP Secretary John Hanger recently of that meeting last summer. 'They told me they were taking steps to improve their environmental performance, improving their control of water, improving their command and control on site.'"<sup>x</sup> Investors believe the above demonstrates that while it is valuable for states to make this kind of information available, it also clearly shows that companies should be tracking and disclosing this information directly because it can help bring about operational improvements.

Specific notable enforcement actions or fines include the following:

- In May 2011, the Pennsylvania Department of Environmental Protection (DEP) levied a record-breaking \$1.1 million dollar fine on Chesapeake Energy for violations related to its fracturing operations.<sup>x</sup>
- In June 2010, a blowout at an EOG well reportedly spewed gas and wastewater for 16 hours and was described by the Pennsylvania DEP as an event that posed "a serious threat to life and property."<sup>xi</sup> In response, the company was forced to shut down its operations in Pennsylvania for 40 days and pay \$353,400 in fines.<sup>xii</sup>
- In August 2010, the Pennsylvania DEP fined Atlas Resources over \$97,000 "for allowing used hydraulic fracturing fluids to overflow a wastewater pit and contaminate a high-quality watershed."<sup>xiii</sup>
- According to media reports, Range Resources faced enforcement actions twice in 2009 for spills of hydraulic fracturing fluids. In October 2009, the Company faced a \$23,500 fine after it spilled close to 5000 gallons of water including fracturing fluids into a protected watershed that was a rich fish habitat. In another case, Range spilled more than 10,000 gallons of wastewater and as a result, there was a substantial fish kill and significant clean-up was required.<sup>xiv</sup>
- Cabot Oil & Gas Corporation has experienced significant problems with its natural gas wells and hydraulic fracturing operations. In September 2009, Pennsylvania ordered Cabot Oil & Gas to shut down all hydraulic fracturing operations in Susquehanna County.<sup>xv</sup>
  - In April 2010, in an effort to protect the residents of Dimock Township affected by gas migration from company wells, Pennsylvania ordered Cabot Oil & Gas to pay a \$240,000 fine, install water treatment systems in 14 homes where drinking water was contaminated and barred the company from drilling any new wells in the township for a year.<sup>xvi</sup>
  - In December 2010, Cabot Oil & Gas agreed in a settlement with Pennsylvania DEP to pay \$4.1 million to residents in Dimock Pennsylvania alleging that the company contaminated their water supply, and to reimburse the state \$500,000 for investigative expenses.<sup>xvii</sup> The company still faces private lawsuits related to contaminated wells in the town.

The proponents contend that the above examples demonstrate that problems associated with hydraulic fracturing operations have resulted in significant enforcement actions and fines which impact the company directly but also pose reputational risks, particularly in the communities surrounding the incidents. As a result, investors believe more disclosure is necessary.

## WATER-RELATED IMPACTS

### QUANTITY OF WATER USED

Millions of gallons of water are used through the course of a fracturing operation. This is becoming increasingly controversial especially in drought prone areas such as the Barnett Shale in Texas. The CEO of a driller active in the region said, "The rumblings have definitely started in the last six months. It used to be, 'Are you going to contaminate my water;' now the concern is, 'You're going to use up all my water.'"<sup>xviii</sup> According to media reports, in August 2011, Grand Prairie, Texas became the first municipality to ban the use of city water for fracking.<sup>xix</sup> Chesapeake Energy was served with a permit violation when the company trucked in water from another site to frack a well in Grand Prairie.<sup>xx</sup>

This illustrates that companies face not only financial risks in the form of restrictions (and fines if such restrictions are not met or circumvented,) but also increased tension with communities from competition over water use have the potential to threaten a company's social license to operate.

#### LITIGATION RISKS FROM ALLEGED WATER CONTAMINATION

Lawsuits alleging impacts to groundwater sources are moving forward in numerous communities.

- According to analysis done by Sedgwick LLP in September 2011, over three dozen fracking-related lawsuits had been filed, ten of which were class action suits.<sup>XXI</sup>
- In December 2010, two lawsuits were filed in federal court alleging that Chesapeake Energy and Encana Oil & Gas operations contaminated property owners' water wells.<sup>XXII</sup>
- In September 2010, 13 families in Pennsylvania sued Southwestern Energy alleging that their drinking water was contaminated by the company's drilling operations.<sup>XXIII</sup>
- In Colorado several years ago, EnCana reached a reportedly multi-million dollar settlement with a private landowner and was fined \$266,000 by regulators for release of gas production waste and failure to protect water bearing formations.<sup>XXIV</sup>

Such lawsuits consume company resources and also strain community relations. As a result, investors believe increased transparency in this area is necessary.

#### IMPACTS OF CHEMICAL ADDITIVES

Hydraulic fracturing fluids include numerous hazardous chemicals. The industry generally argues that chemical additives make up only .5 percent of fracturing fluid. While the statement may be literally accurate, is also misleading and underplays the associated risks because it fails to convey the enormous volumes of liquid used to fracture wells. If a fracturing operation uses 3 million gallons—and some use much more—to fracture one well one time, that .5 percent means that the companies are using 15,000 gallons of chemicals.

The vast quantities of chemicals also pose substantial business risks as the companies are responsible for securing them throughout the entire supply chain. These chemicals must be trucked to drill sites, stored on site, pumped into the ground, and disposed of properly. Disposal usually requires them to be piped or trucked away. Companies face significant financial risks, including the potential for enforcement actions or even litigation, if problems occur at any point in this process.

These toxic fluids have the potential to contaminate groundwater and the surrounding environment. According to independent tests done in Colorado in 2008, **at least 65 chemicals used by natural gas companies were defined as hazardous** under the major federal statutes designed to protect against toxic contamination. **If these chemicals were released from an industrial facility, reporting to the Environmental Protection Agency (EPA) would be required, and specific clean-up protocols prescribed.**<sup>XXV</sup> Given this, there is growing community unease with the presence of such significant quantities of toxic chemicals used in the fracturing process.

#### AIR IMPACTS:

Much of the controversy over fracturing has focused on water contamination and chemicals, but as the number of natural gas wells has increased over the past decade, the contribution of natural gas extraction to declining regional air quality has created concern for residents in various states.

- A recent report from the Colorado School of Public Health documented that air emissions near fracking sites could pose health risks to individuals living in the surrounding communities. According to the lead author of the report, "Our data shows that it is important to include air pollution in the national dialogue on natural gas development that has focused largely on water exposures to hydraulic fracturing."<sup>XXVI</sup>
- In Utah's sparsely-populated Uintah Basin, "ozone levels spiked above federal limits 26 times...in the first three months of 2011...and have even exceeded those of famously smoggy Los Angeles."<sup>XXVII</sup>
- In Colorado, air emissions from oil and gas operations were found to be contributing as much as 97% of

the smog-forming compounds from stationary sources in some Colorado counties.<sup>xxviii</sup>

- In addition to smog-forming pollutants, natural gas extraction emits other air contaminants that can affect human health, such as benzene and other volatile organic compounds. In April 2011, the Earthworks Oil and Gas Accountability Project, an NGO, released a report entitled *Flowback – How the Texas Natural Gas Boom Affects Health and Safety*.<sup>xxix</sup> The report includes a study on air pollutants and health issues in a Texas town called Dish. Residents of Dish live near natural gas facilities (wells, compressors, pipelines) located in the Barnett Shale. In 2009, air sampling revealed hazardous pollution – including benzene and related compounds – in the town at levels exceeding state safety guidelines. Further testing found many of these same contaminants in residents’ blood. Wilma Subra, a chemist on the board of the organization Earthworks, said, “What is most revealing is that the community is reporting health symptoms that overlap significantly with the known health effects of chemicals already detected.”<sup>xxx</sup> While companies contend this research was flawed, these kinds of reports contribute to increased unease from surrounding communities.
- In July 2011, Global Community Monitor, an NGO, released a report *Gassed – Citizen investigation of toxic air pollution from natural gas development*. The report found that in Northwest New Mexico, the switch from drilling for oil to drilling for natural gas has brought more severe and more frequent odor incidents causing health effects in communities. Residents commonly report headaches, nausea, dizziness, and nose, eye and throat irritation during odor events.<sup>xxxi</sup>

Given these air impacts, some communities are growing increasingly concerned about allowing this industrial activity into their backyards.

## SOCIAL IMPACTS

Across the country, there is growing concern that along with the environmental impacts of hydraulic fracturing operations, the process brings significant impacts on communities as well. In August 2011, the US Department of Energy Shale Gas Advisory Panel released a report where it found that two of four “major areas of concern” pertain to communities: “community disruption during shale gas production” and “cumulative adverse impacts that intensive shale production can have on communities and ecosystems.”<sup>xxxii</sup> In January 2012, a group of doctors called for a moratorium on drilling in populated areas until the health impacts of such operations were better understood.<sup>xxxiii</sup>

Studies in Pennsylvania, Wyoming and Colorado, show significant impacts from the sudden influx of outside workers related to fracking’s boom – bust economy. These include increases in traffic accidents, crime, drug use, sexually transmitted diseases, uninsured injured workers, a higher burden on local police and health services, inflation, and less available housing. These quality of life issues further divide communities.

Specific impacts include the following:

### INCREASED CRIME

According to media reports, “county and local governments have to cope with the cost of dealing with more people, more social service referrals and more crime—the latter due to the presence of hundreds of young, unattached men with money to burn. Police calls for service in Bradford County[PA], which has more Marcellus wells than any other in the state, are up 25 percent this year, the Associated Press reported.”<sup>xxxiv</sup>

According to another article:

- “In Pennsylvania’s Bradford County, DUI arrests by state troopers are on track to rise 40 percent this year after climbing 60 percent last year...the number of sentences handed out for criminal offenses was up 35 percent in 2010...Sheriff Clinton Walters said his officers are handling about a 25 percent increase from last year in everything from warrants for people who fail to appear in court to protection-from-abuse orders. This flood of arrests is such that his office’s van is no longer big enough to transport all the inmates at once from jail to court...”<sup>xxxv</sup>

- “In Sweetwater County, Wyo., where natural gas exploration boomed about a decade ago, the population increased from 37,600 in 2000 to 43,800 in 2010, and arrests for drunkenness, drugs and DUI more than doubled from 603 in 2000 to a peak of 1,535 in 2008, according to state figures.”<sup>xxxvi</sup>

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#### SKYROCKETING RENTS

- Tioga County, Pennsylvania, is smack in the middle of the drilling boom. The influx of gas-industry workers has resulted in skyrocketing rents which is increasing instances of homelessness. Dana Augustine, a waitress at a local café, was concerned because “she’d gotten the word that her land lord will be doubling the rent sometime soon and her mother already had to move when her lease expired and the rent rose from \$675 to \$1,700.”<sup>xxxvii</sup> In light of such significant increases in rent, it is not surprising that there has been a significant uptick in homelessness in the region. According to the vice president of a local shelter program who doubles as the county’s part-time housing specialist, she has seen a dramatic increase in the number of families affected. “She’s seen 134 families in her office this year, up from 17 percent in 2008. She estimates 75 percent of Tioga residents with nowhere to live were displaced by gas workers.”<sup>xxxviii</sup>

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#### INCREASED TRUCK TRAFFIC

One media report sums up the new situation in many communities as follows: “It’s possible to travel through gas country without seeing many wells, which often are set back in fields and woods. It is not possible, however, to travel any distance at all without encountering the tankers, dump trucks and pickups that make the natural gas industry go. Used to haul in water, supplies and workers and haul our drilling wastes, the trucks are a constant reminder of new prosperity and a constant annoyance to locals. Work goes on around the clock, year-round.”<sup>xxxix</sup>

In many cases, these negative local impacts are straining community resources and generating opposition to fracturing operations which have the potential to impact business operations. According to an MSCI report, “the expansion of oil and gas activities into areas previously untouched by the industry will continue to face fierce opposition from the community, unless companies adequately manage environmental impacts and community health concerns through communication and adoption of best environmental practices.”<sup>xl</sup> In this climate, companies face a threat to their social license to operate as communities increase opposition to, or ban outright, fracturing operations.

## 2. CHEVRON SHAREHOLDERS FACE SIGNIFICANT FINANCIAL RISKS DUE TO TIGHTENING REGULATIONS INCLUDING BANS AND MORATORIA.

As the use of hydraulic fracturing skyrockets, communities, regulators and investors are growing increasingly concerned about the environmental impacts of this process.

Hydraulic fracturing is particularly controversial in New York State. In November 2011, public hearings were held by the New York Department of Environmental Conservation (DEC) to gather public input on its Environmental Impact Statement for high-volume hydraulic fracturing of the Marcellus Shale. The meetings drew 6,000 attendees and standing room only crowds both upstate and downstate.<sup>xli</sup>

As concern about the potential impacts of fracturing operations has grown, we have seen a significant increase in the number of communities which have banned hydraulic fracturing within their borders.

#### STATE AND LOCAL ACTIONS

There has been vigorous action by state governments and at the local level to restrict and in some cases ban fracking operations from certain communities. For example,



- **New York:** New York State is revising its guidelines related to hydraulic fracturing and vocal and politically well connected support for increased protections has emerged. New York City’s drinking watershed lies under a portion of the Marcellus shale. Currently, the state is under a defacto moratoria while regulations are finalized.
  - Updated draft regulations were issued in September 2011 and the public comment period closed in January 2012, after an “unprecedented turnout” at hearings; final rules are expected soon.<sup>XLII</sup> While regulations are winding through the state process, more than 70 cities, towns and counties in New York have enacted various rules and restrictions, and in some cases bans.<sup>XLIII</sup>
  - In February 2012, the New York State Supreme Court affirmed that two local governments had the authority to prohibit natural gas drilling within their borders.<sup>XLIV</sup>
- **Maryland:** In June 2011, the state announced it would conduct a comprehensive study on the implications of natural gas drilling. Permits will not be approved before the completion of the study in 2014.
- **Pennsylvania:** Between March 2010 and September 2011 over 100 municipalities in the state, including Pittsburgh, enacted ordinances to restrict or limit hydraulic fracturing operations.<sup>XLV</sup>
- **New Jersey:** The state has a one-year ban on drilling, though this action is largely ceremonial since there are not significant quantities of gas in the New Jersey, though it is a voting member of the Delaware River Basin Commission discussed below.<sup>XLVI</sup>
- **Texas:**
  - Flower Mound, TX
    - In this city, citizen pressure resulted in a 6-month moratorium (effective in June 2010) on pipelines and centralized waste facilities, and a 90-day ban on drilling permits and gas production. The Council created a committee to advise Flower Mound on how gas drilling should be regulated.<sup>XLVII</sup> In September 2010, the council extended the moratoriums for another 45 days to allow the town's Oil and Gas Advisory Board time to complete a review of oil and gas ordinances.<sup>XLVIII</sup> The moratoriums were extended again until July 2011, when a new ordinance took effect. The new oil and gas rules required 1,500-foot setbacks from residences, monitoring requirements such as water well testing, pre- and post-drilling soil sampling, air quality monitoring, the establishment of noise limits, and numerous other stipulations to reduce the impact on Flower Mound residents during gas drilling, hydraulic fracturing and production.<sup>XLIX</sup>
  - Southlake, TX
    - The city of Southlake adopted a 180-day moratorium on new gas drilling permits. In June 2011 the council extended the moratorium for another 120 days. The oil and gas ordinance that was created during the moratorium period requires a 1000-foot setback from habitable structures and from the property line of schools and hospitals, prohibits earthen drilling pits, requires low toxicity drilling fluids, bans fracturing fluid waste ponds within city limits, bans drilling in environmentally sensitive areas,<sup>L</sup> and the ordinance was later amended to prohibit hydraulic fracturing during the summer months.<sup>LI</sup> Southlake’s restrictions on fracking operations, according to media reports, have had a significant impact on companies operating in the region.

The Food and Water Watch website provides a list of 150 local or state actions (resolutions or ordinances to ban or impose moratoriums) that have been passed with respect to drilling and hydraulic fracturing. These actions have taken place in 13 states.<sup>LII</sup> The following chart shows all of these moratoriums as well as some that are not on the Food and Water Watch site (these additional ones are directly footnoted below).

***Moratoriums passed in the U.S.***

State	Communities			Boroughs/	Other

				Township/Counties	
<b>California</b>	•Berkeley				
<b>Colorado</b>	•Colorado Springs	•Commerce City <sup>LIII</sup> •Longmont		•Boulder County •El Paso County <sup>LIV</sup>	
<b>Maryland</b>	•Mountain Lake Park				
<b>Michigan</b>	•Detroit •Ferndale			•Wayne County	
<b>New Jersey</b>	•Bethlehem •Byram •Clinton •Closter •Highland Park •Holland •New Brunswick	•Readington •Red Bank •Secaucus •Stillwater •Trenton		•Clinton Township •Delaware Township •Franklin Township •Princeton Township •Princeton Borough	•State-wide moratorium on fracking activity in the state. <sup>LV</sup> •Musconetcong River Management Council
<b>New York</b>	•Albany •Alfred •Andes •Auburn •Augusta •Barrington •Benton •Binghamton •Buffalo •Brighton •Camillus •Canadaigua •Cherry Valley •Cochecton •Cooperstown •Cortlandville •Conesus •Danby •Dewitt •Dryden •Elbridge •Fabius •Freeville	•Geneva •Gorham •Highland •Ithaca Town •Ithaca City •Jerusalem •Kirkland •Lebanon •Livonia •Lumberland •Marshall •Marcellus •Middlefield •Middlesex •Milford Town •Milo Town •Naples Village •New Hartford •New Lisbon •New York City •Niles •Oneota •Onondaga Town	•Otsego Town •Otisco •Paris •Rensselaerville •Rome •Saugerties •Sharon •Skaneateles •South Brisol •Spafford •Springfields •Syracuse •Torrey •Tully •Tusten •Utica •Ulysses •Virgil •Vernon •Wales Town •Westmoreland •West •Bloomfield •Whitesboro	•Cayuga County •Cortland County •Onondaga County •Ontario County •Putnam County •Rockland County •Sullivan County •Tompkins County •Ulster County •Westchester County •Yates County	•Canandaigua Lake Watershed Association •New York State
<b>N. Carolina</b>	•Creedmoor				

<b>Ohio</b>	<ul style="list-style-type: none"> <li>•Amesville</li> <li>•Athens</li> <li>•Burton</li> <li>•Canal Fulton</li> <li>•Canton</li> </ul>	<ul style="list-style-type: none"> <li>•Columbiana</li> <li>•Garrettsville</li> <li>•Girard</li> <li>•Hartville</li> </ul>	<ul style="list-style-type: none"> <li>•Munroe Falls</li> <li>•North Canton</li> <li>•Yellow Springs</li> <li>•Youngstown</li> </ul>	<ul style="list-style-type: none"> <li>•Hinckley Township</li> <li>•Medina Township</li> <li>•Plain Township</li> </ul>	
<b>Pennsylvania</b>	<ul style="list-style-type: none"> <li>•Baldwin</li> <li>•Easton</li> <li>•Forest Hills</li> <li>•Harveys Lake</li> <li>•Murrysville</li> </ul>	<ul style="list-style-type: none"> <li>•New Hope</li> <li>•Philadelphia</li> <li>•Phoenixville</li> <li>•Pittsburgh</li> </ul>	<ul style="list-style-type: none"> <li>•South Fayette (ban)<sup>LVI</sup></li> <li>•W. Homestead</li> <li>•Wilksburg</li> </ul>	<ul style="list-style-type: none"> <li>•Media Borough</li> <li>•State College Borough</li> </ul>	<ul style="list-style-type: none"> <li>•Buckingham Township Civic Association</li> </ul>
<b>Texas</b>	<ul style="list-style-type: none"> <li>•Bartonville</li> <li>•Dallas<sup>LVII</sup></li> </ul>	<ul style="list-style-type: none"> <li>•Denton<sup>LVIII</sup></li> <li>•Flower Mound</li> </ul>	<ul style="list-style-type: none"> <li>•Grand Prairie<sup>LIX</sup></li> <li>•South Lake<sup>LX</sup></li> </ul>		
<b>West Virginia</b>	<ul style="list-style-type: none"> <li>•Lewisburg</li> <li>•Morgantown (overturned)</li> </ul>	Wellsburg (repealed)			<ul style="list-style-type: none"> <li>•Pocahontas County Free Libraries</li> </ul>
<b>Wyoming</b>					<ul style="list-style-type: none"> <li>•Bridger-Teton National Forest</li> </ul>
<b>Virginia</b>	<ul style="list-style-type: none"> <li>•Staunton</li> </ul>			<ul style="list-style-type: none"> <li>•Shenandoah County</li> </ul>	

#### REGIONAL ACTION—THE DELEWARE RIVER BASIN COMMISSION

The Delaware River Basin Commission—a hybrid state/federal regulatory agency that includes the U.S. Army Corps of Engineers and the governors of New York, Pennsylvania, Delaware and New Jersey — imposed a moratorium on drilling in the Marcellus Shale while it revises its regulations limiting development in Pennsylvania. The commission was expected to come to a decision before the end of 2011 but that decision has been delayed and as of the time of this memo, there was no updated timeline for finalization.

#### INTERNATIONAL ACTION:

Chevron, which in addition to its holdings in the Marcellus and Utica Shales has notable holdings in Poland, Bulgaria and Romania, is particularly affected by growing public opposition and bans and moratoria in Europe.

- **CANADA:** In March 2011, the Province of Quebec instituted a de facto ban on hydraulic fracturing pending review by a committee appointed by the Province’s Environmental Minister to determine if shale gas could be extracted in the region without impacting the environment. In April 2012, the committee recommended that the minister should not allow hydraulic fracturing even for research purposes.<sup>LXI</sup>
- **FRANCE:** In response to the potential environmental damage the process poses, the country has a nationwide ban in place. In October, President Sarkozy stated that “Development of hydrocarbon resources underground is strategic for our country but not at any price. This won’t be done until it has been shown that technologies used for development respect the environment...”<sup>LXII</sup>
- **BULGARIA:** In January 2012, Bulgaria banned hydraulic fracturing and suspended Chevron’s license to explore for shale gas in the country.<sup>LXIII</sup>
- **ROMANIA:** In Mach 2012, the Romanian government granted Chevron three licenses to explore and develop shale gas in the country. Since that time thousands of people have mobilized in opposition and according to media reports, one municipality “has started a campaign to collect signatures to support a legislative initiative to ban extraction of the unconventional gas.”<sup>LXIV</sup>

- **SOUTH AFRICA:** The Government has stopped licensing fracking permits in the Karoo region while it reviews the potential impacts on the issue.<sup>LXV</sup>
- **IRELAND:** In January 2012, the Clare County Council became the first local authority to ban fracking in the country.<sup>LXVI</sup>

#### IMPACT OF BANS AND MORATORIA:

**Bans and moratoria clearly have implications on business prospects but, given current levels of disclosure, it is impossible for investors to evaluate such risks.**

- According to media sources, both ExxonMobil and Chesapeake Energy were financially affected by the restrictions in Southlake TX.
  - In May 2011 the *Dallas Morning News* reported that “The anti-drilling movement is beginning to have an effect on the natural gas industry, which has had to slow down and even cancel some projects. XTO Energy, owned by Exxon Mobil Corp., halted plans to drill in Southlake, and after paying millions of dollars to lease city land, now must wait for Dallas to rewrite drilling ordinances.”<sup>LXVII</sup>
  - After the ordinance passed, Chesapeake reportedly sent out a letter to leaseholders stating the following: “The City of Southlake recently approved a new municipal ordinance regulating natural gas operation within the city limits. As a direct result of that ordinance, Chesapeake will not be seeking any permit approvals and will allow the last of our nearly 1,400 leases in Southlake to expire.”<sup>LXVIII</sup> Clearly, this move has had a significant impact on Chesapeake’s operations.
- Royal Dutch Shell has estimated 40% of its New York acreage could be off-limits because of potential state rules.<sup>LXIX</sup>
- In late October 2009, in the face of the massive public controversy about its plans to engage in drilling and hydraulic fracturing near the New York City watershed, Chesapeake Energy, reportedly the only company to hold leases within that watershed, announced it would “voluntarily” refrain from drilling within the boundary.<sup>LXX</sup>
- Companies in New York State are exercising the “right” of force majeure, or “an unforeseen event that hinders the terms of the contract” to extend leases.<sup>LXXI</sup> This is not a popular move and companies are facing two class action lawsuits in federal court representing 300 landowners.<sup>LXXII</sup>
- Determining the impact of the DRBC defacto moratorium has been very difficult. According to media reports, two companies operating in the region affected by the moratorium had “put their lease contracts on hold, citing a ‘force majeure’ clause that allows such suspensions because of regulation outside the ‘normal and ordinary course of business.’”<sup>LXXIII</sup> According to other media reports the companies had invested more than \$100 million into the leases before putting them on hold.<sup>LXXIV</sup>
  - In response to the commission’s draft regulations, Chris Tucker, a spokesperson for Energy In Depth, a pro-drilling association said, “Unfortunately, while a lot of the words in here sound good, a lot of the numbers sounds like a swift kick to the stomach. I’ve never seen bonding and fee requirements this high. They very well might prove prohibitive.”<sup>LXXV</sup>

**Given the extensive number of bans and moratoria, it is clear that company operations are being affected but at the current level of disclosure, it is impossible for investors to evaluate how significant the impacts may be.**

### 3. EXPECTATIONS AROUND DISCLOSURE ARE SHIFTING AND REGULATORS AND COMPANIES ARE RESPONDING.

#### STATE-LEVEL CALLS FOR INCREASED DISCLOSURE

**A central concern for communities across the country is a desire to have a better understanding of the chemicals used in the wells, which in some cases, are constructed literally in peoples’ backyards.**

Though there are variations among the states as to whether the disclosure of chemicals is partial or complete, and there are variations in the forms the disclosures take, the following states have recently updated their regulations to improve transparency.

- Arkansas
- Colorado
- Montana
- Pennsylvania
- Texas
- Wyoming

This momentum at the state level clearly indicates that expectations around disclosure are expanding and increasing. We believe companies should respond to and stay on the cutting edge of this trend in order to maintain their social license to operate.

#### FEDERAL EFFORTS TO INCREASE DISCLOSURE

- **FRAC Act:** In June 2009, the Fracturing Responsibility and Awareness of Chemicals Act—or FRAC Act—was introduced in Congress to reinstate the EPA’s authority to regulate hydraulic fracturing under the Safe Drinking Water Act.<sup>LXXVI</sup> In March 2011, it was reintroduced in the House and Senate. Although it is not expected to move in the current congress, companies should acknowledge the potential for its future enactment.
- **Congressional Committee Review:** In February and May 2010 the U.S House Subcommittee on Energy and the Environment sent letters to a 14 companies involved in hydraulic fracturing asking for increased disclosure on the chemicals used in the fracturing process and their potential impacts on human health or the environment. In July 2010, the committee sent letters to ten oil and gas producers to obtain additional information. According to the committee, “[t]his investigation will help us better understand the potential risks this technology poses to drinking water supplies and the environment, and whether Congress needs to act to minimize those risks.”<sup>LXXVII</sup>
- **Department of the Interior requirements:** In February 2012 the Department of the Interior announced draft rules that would require natural gas companies to disclose the chemicals used in all fracturing operations on public lands. According to media reports the rules would require companies to disclose the “complete chemical makeup of all materials used.”<sup>LXXVIII</sup> According to the Secretary of the Interior, “those rules are common sense and if we do not move forward with that kind of program from the Department of the Interior, my own view is that the failure of disclosure and failure of giving the American people confidence that hydraulic fracturing will in fact work will end up being the Achilles heel of the energy promise of America.”<sup>LXXIX</sup>
- **Environmental Protection Agency:** Currently, the EPA is taking a close look at fracturing and plans draft rules requiring increased disclosure of the chemicals used in the process. In 2009, Congress requested that the EPA carry out a study on the “relationship between hydraulic fracturing and drinking water” and the Agency’s Science Advisory Board encouraged the use of a “life cycle approach.” In late 2011 the EPA announced its final research plan and confirmed that the initial research results and study findings will be released to the public in 2012 and the final report will be available in 2014.<sup>LXXX</sup> At the same time, in response to a petition filed by Earthjustice, the agency will use its authority under the Toxic Substances Control Act to require companies to provide increased disclosure on the chemicals used in the fracturing process.<sup>LXXXI</sup>

Given the myriad of state and federal agencies and regulators considering increased regulation of aspects of fracturing operations, investors contend companies must be preparing for this reality.

#### 4. CHEVRON DISCLOSURE IS INSUFFICIENT TO MITIGATE THE ASSOCIATED RISKS AND PROVIDE INVESTORS WITH SUFFICIENT INFORMATION.

The proponents contend that the company has failed to meaningfully respond in any of the key areas addressed in the proposal. The below chart demonstrates the company’s failure to respond to the “resolved clause” of the proposal.

<b>Analysis of Chevron’s Existing Reporting Against the Guidelines of the Proposal</b>		
<b>Topic Requested in Proposal</b>	<b>Chevron Reporting</b>	<b>Chevron Omissions</b>
Risk from any substantial community opposition or concerns		For its U.S. assets, Chevron does not describe which operations are affected by community opposition, nor the long or short-term effects of that opposition, for instance whether assets may be idled or other costs imposed on the company.
Government enforcement actions including allegations of violations	No reporting	Some violations have been disclosed in PA media and by the state’s DEP but violations in other states are unknown.
Total aggregate government fines on an annual basis	No reporting	No aggregate disclosure of penalties.
Facility shutdown orders, license suspensions or moratoriums on licensing, exploration or operations	In its 10-K the company does acknowledge that its permits in Bulgaria were revoked after the country banned hydraulic fracturing.	Proponents are pleased to see the company reporting in this area but request more information on the financial impacts of this action.
Communities where opposition is anticipated	None identified	No reporting on this topic.
Financial or operational risks to particular operations, facilities and plans from proposed federal or state laws or regulations, including moratoriums	In its 10-K the company does acknowledge that its permits in Bulgaria were revoked after the country banned hydraulic fracturing.	Investors are pleased to see a reference to the Bulgaria action in the 10-K but the company fails to disclose the financial impacts of this action, therefore it is impossible for investors to determine the impact.
Any limitations from regional water supply or waste disposal issues on operations or expansion	Company does have a position statement on water and discloses that in its Marcellus operations, it is “ <i>working to</i> capture and reuse 100 percent of produced water and fracturing fluids.” (emphasis added)	This vague and general disclosure does not provide investors with sufficient information. For example, it is unclear whether the company has achieved this goal. Furthermore, the company is silent on how it disposes of its

	waste water.
<b>SUMMARY: The Company fails to satisfy the majority of information requests included in the proposal.</b>	

**Company Opposition Statement:**

In its opposition statement, Chevron claims its existing policies and disclosures make the request of this proposal duplicative. Clearly, the above chart indicates that the company’s disclosure fails to satisfy the request of the proposal and, therefore, such disclosure does not overlap with the company’s existing reporting.

The company states that it understand that communities are concerned about natural gas development and argues that its existing risk management system, commitment to stakeholder engagement and strong public disclosure are sufficient. In its opposition statement the company states it has an Operational Excellence Management System in place that “maintains rigorous assessments, audits and reviews to identify and reduce health, environment and safety risks.” In addition, the company also touts its Environmental, Social and Health Impact Assessment process which is used to avoid, minimize and mitigated potential impacts. We are pleased that the company employs such systems but in order for investors to determine if the company is adequately managing the associated risks, more disclosure on how they are applied to concern around fracturing operations is necessary.

For example, Chevron fails to discuss systematically how it engages communities on hydraulic fracturing, including both nuisance impacts and social impacts nor does it disclose how it tracks community concerns or report such concerns and their resolution upwards through senior corporate management to Boards of Directors. The company does not discuss systems it has in place for assuring contractor compliance with operational requirements. Investors do recognize that the company does have some good systems in place and we believe that increased reporting on management of the environmental risks from natural gas operations in shales can be nested within larger disclosure initiatives to avoid unnecessary duplication of data development efforts and to place information within context. Nevertheless natural gas operations in shales deserve discrete reporting because of their ever-increasing public profile, something Chevron does not currently do.

The company states its “shale operations are focused on protecting groundwater, managing water use, preserving air quality, improving access to information, and ensuring emergency preparedness” while also gives a brief overview of some of the information included in this section. While the company does provide some reporting on its efforts to address operational and environmental risks, it does not provide the level of granularity necessary for investors. Furthermore its disclosure is quite limited, and far less comprehensive to that of other sector peers that provide much more comprehensive information. For a more detailed discussion of the best practice already employed by sector peers to minimize environmental and social impacts, please refer to [Extracting the Facts: An Investor Guide to Disclosing the Risks From Hydraulic Fracturing Operations](#).

The company touts its participation in FracFocus, which is a step in the right direction but has some serious limitations. While FracFocus represents a move forward in transparency, its disclosures are primarily based on Material Safety Data Sheets (MSDS), which have been widely criticized as insufficient disclosure vehicles for fracturing chemicals. MSDS reports are principally designed to provide information on occupational hazards rather than environmental hazards, and as a result they only disclose chemicals that are labeled as hazardous by OSHA and do not require the disclosure of information that companies deem to be confidential business information. Furthermore, the database itself has limited functionality and is difficult to manipulate. For example, it is possible to retrieve information on the chemicals used at one particular well, but it is impossible to determine how much of any chemical the company is using in a specific region to assess cumulative risks, or determine if the company is reducing its toxic chemical use across its operations.

The company highlights its participation in industry groups and constructively engages regulators. The company states that it contributed work to the Department of Energy’s (DOE) Advisory Board. The proponents encourage the company to heed the warning of the DOE’s Shale Gas Production Subcommittee, which found that “if action is

not taken to reduce the environmental impact accompanying the very considerable expansion of shale gas production expected across the country...there is a real risk of serious environmental consequences causing a loss of public confidence that could delay or stop this activity.”<sup>LXXXII</sup> Furthermore, we encourage the company to participate in industry efforts to define best practice and also to take advantage of existing resources such as “Extracting the Facts” referenced above.

Finally, the company claims that it provides information on its efforts to mitigate regulatory, legal, reputational and financial risks in a variety of sources, including its 10-K. In recent years we have seen many sector peers provide much more thorough information about the risks associated with fracturing operations and the steps the companies are taking to mitigate those risks. Some companies are providing very detailed information about the specific, regulatory and operational risks they face, but Chevron’s disclosure in its 10-K is limited. Currently, its only mention of hydraulic fracturing is in reference to the previously mentioned ban on such operations in Bulgaria. While investors are very please that the company provides disclosure on the impact of this ban, more information on the risks associated with fracturing operations is necessary.

## CONCLUSION

The use of hydraulic fracturing in natural gas drilling has become highly controversial. Proponents are concerned about regulatory, legal, reputational and financial risks associated with the environmental, health, and social impacts of fracturing operations. Concern about water sources, toxic chemicals and wastewater has led to new regulations in several states and proposed federal legislation. Explosions, contamination incidents, and millions of dollars in fines demonstrate that things can and do go wrong. Negative local impacts are straining community resources and generating opposition to fracturing operations. In this climate, companies risk increased regulatory and legal risks along with a significant increase in the proliferation of restrictions, bans and moratoria in strategically important areas. As a result, investors need more information to determine how companies are managing the community impacts along with the impact such opposition has had on their operations now and into the future. In the absence of meaningful disclosure, investors have no way of fully assessing the risks and rewards from investing in various companies in the energy sector, and are concerned about unpleasant shocks to shareholder value. Currently Chevron fails to provide sufficient disclosure in this area. As a result, we encourage shareholders to vote in support of this proposal calling on the company to disclose risks to the company’s operations, finances and gas exploration associated with community concerns, known regulatory impacts, moratoriums, and public opposition to hydraulic fracturing and related natural gas development.

<sup>I</sup> Isabel Ordonez, “Chevron Plays Catch-Up in Shale Gas,” *The Wall Street Journal*, March 11, 2012.

<sup>II</sup> “Chevron Corporation’s 2012 Security Analyst Meeting,” March 13, 2012, available at: <http://investor.chevron.com/phoenix.zhtml?c=130102&p=irol-EventDetails&EventId=4134339>.

<sup>III</sup> Isabel Ordonez, “Chevron Plays Catch-Up in Shale Gas,” *The Wall Street Journal*, March 11, 2012.

<sup>IV</sup> “Chevron 10-K For the Filing Period 12/31/2011” Filed on February 23, 2012, available at: <http://investor.chevron.com/phoenix.zhtml?c=130102&p=irol-sec&secCat01.1 rs=11&secCat01.1 rc=10>.

<sup>V</sup> Elizabeth Konstantinova and Joe Carroll, “Bulgaria Bans Gas Fracking, Thwarting Chevron Drilling Plan”, *Bloomberg Business Week*, January 19, 2012, available at: <http://www.businessweek.com/news/2012-01-19/bulgaria-bans-gas-fracking-thwarting-chevron-drilling-plan.html>; Andra Timu, “Romanians Protest Against Shale-Gas Exploration, Mediafax Says,” *Bloomberg Business Week*, March 23, 2012.

<sup>VI</sup> Erika Staaf, “Risky Business: An Analysis of Marcellus Shale Gas Drilling Violations in Pennsylvania 2008-2011,” PennEnvironment Research & Policy Center, February 2012, available at: [http://pennenvironmentcenter.org/reports/pac/risky-business-analysis-marcellus-shale-gas-drilling-violations-pennsylvania-2008-2011? utma=1.1997849493.1333033028.1333033028.1333033028.1& utmb=1.4.10.1333033028& utmc=1& utmx=-& utmz=1.1333033028.1.1.utmcsr=google|utmccn=\(organic\)|utmcmd=organic|utmctr=\(not%20provided\)& utmv=-& utmk=172448675](http://pennenvironmentcenter.org/reports/pac/risky-business-analysis-marcellus-shale-gas-drilling-violations-pennsylvania-2008-2011? utma=1.1997849493.1333033028.1333033028.1333033028.1& utmb=1.4.10.1333033028& utmc=1& utmx=-& utmz=1.1333033028.1.1.utmcsr=google|utmccn=(organic)|utmcmd=organic|utmctr=(not%20provided)& utmv=-& utmk=172448675) (emphasis in the original.)



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- <sup>vii</sup> Chevron Appalachia, available at: <http://stateimpact.npr.org/pennsylvania/drilling/operators/chevron-appalachia-llc/>; Atlas Resources, available at: <http://stateimpact.npr.org/pennsylvania/drilling/operators/atlas-resources-llc/>.
- <sup>viii</sup> Don Hopey, "Chevron Assessing Damage of Washington Co. Well Leak," *The Post-Gazette.com*, February 28, 2012.
- <sup>ix</sup> Sean D. Hamill, "What Fines Reveal About Drilling In State," *The Post-Gazette.com*, April 17, 2011.
- <sup>x</sup> Pennsylvania Department of Environmental Protection media release, "DEP Fines Chesapeake Energy More than \$1 Million," May 17, 2011, available at: <http://www.portal.state.pa.us/portal/server.pt/community/newsroom/14287?id=17405&typeid=1>
- <sup>xi</sup> Pennsylvania Department of Environmental Protection media release, "DEP Orders EOG Resources to Halt All Natural Gas Drilling Activities in PA," June 7, 2010.
- <sup>xii</sup> Commonwealth of Pennsylvania, Department of Environmental Protection media release, "Independent Report Faults Clearfield County Gas Well Operators for June 3 Blowout DEP Outlines Proper Procedures for All Marcellus Drilling Firms," July 13, 2010.
- <sup>xiii</sup> Pennsylvania Department of Environmental Protection Southwest Regional Office media release, "PA DEP Fines Atlas Resources For Drilling Wastewater Spill in Washington County," August 17, 2010.
- <sup>xiv</sup> Sabrina Shankman, "Pennsylvania's Gas Wells Booming-But so Are Spills," *ProPublica*, January 27, 2010, available at: <http://www.propublica.org/feature/pas-gas-wells-booming-but-so-are-spills-127>.
- <sup>xv</sup> Commonwealth of Pennsylvania, Department of Environmental Protection media release, "DEP Orders Cabot Oil and Gas to Cease all Well Fracking in Susquehanna County," September 25, 2009.
- <sup>xvi</sup> Commonwealth of Pennsylvania, Department of Environmental Protection media release, "DEP Takes Aggressive Action Against Cabot Oil & Gas Corp to Enforce Environmental Laws Protect Public in Susquehanna County," April 15, 2010.
- <sup>xvii</sup> Tracie Mauriello, "Driller Settles with Pa. over contaminated water wells," *The Post-Gazette.com*, December 16, 2010, available at: <http://www.post-gazette.com/pg/10350/1111252-100.stm>
- <sup>xviii</sup> Mike Lee, "Parched Texans Impose Water-Use Limits for Fracking Gas Wells," *Business Week*, October 6, 2011, available at: <http://www.businessweek.com/news/2011-10-06/parched-texans-impose-water-use-limits-for-fracking-gas-wells.html>.
- <sup>xix</sup> Mike Lee, "Parched Texans Impose Water-Use Limits for Fracking Gas Wells," *Business Week*, October 6, 2011, available at: <http://www.businessweek.com/news/2011-10-06/parched-texans-impose-water-use-limits-for-fracking-gas-wells.html>.
- <sup>xx</sup> Mike Lee, "Parched Texans Impose Water-Use Limits for Fracking Gas Wells," *Business Week*, October 6, 2011, available at: <http://www.businessweek.com/news/2011-10-06/parched-texans-impose-water-use-limits-for-fracking-gas-wells.html>.
- <sup>xxi</sup> Earl Hagstrom, "Hydraulic Fracturing Litigation is on the Rise," Sedgwick. LLP, September 2011.
- <sup>xxii</sup> Jack Z. Smith, "Two Lawsuits Contend Groundwater in Barnett Shale Contaminated by Drilling," *Star-Telegram.com*, December 15, 2010.
- <sup>xxiii</sup> Jim Efstathiou Jr., "Pennsylvania Families Sue Southwestern Energy on Shale Drilling," *Bloomberg*, September 15, 2010.
- <sup>xxiv</sup> <http://www.propublica.org/feature/buried-secrets-is-natural-gas-drilling-endangering-us-water-supplies-1113>
- <sup>xxv</sup> Dusty Horwitt, Senior Analyst, Environmental Working Group and Theo Colborn, President, The Endocrine Disruption Exchange, letter to David Patterson, Governor of New York and Michael Bloomberg, Mayor of New York City, August 11, 2008, available at: <http://www.awwa.org/files/Publications/WaterWeek/1219434939844.pdf>.
- <sup>xxvi</sup> "Study Shows Air Emissions Near Fracking Sites May Pose Health Risk," Press release, the University of Colorado, Denver, March 19, 2012.
- <sup>xxvii</sup> C. Carswell, "EPA aims to clean up polluted air in Western gas fields," *High Country News*, September 5, 2011 available at: <http://www.hcn.org/issues/43.15/epa-aims-to-clean-up-polluted-air-in-western-gas-fields>.
- <sup>xxviii</sup> Earthworks website, "Colorado Air Pollution from Oil and Gas," available at: [http://www.earthworksaction.org/issues/detail/colorado\\_air\\_pollution\\_from\\_oil\\_and\\_gas](http://www.earthworksaction.org/issues/detail/colorado_air_pollution_from_oil_and_gas).
- <sup>xxix</sup> Earthworks. Flowback – How the Texas Natural Gas Boom Affects Health and Safety, available at: [http://www.earthworksaction.org/library/detail/natural\\_gas\\_flowback](http://www.earthworksaction.org/library/detail/natural_gas_flowback).
- <sup>xxx</sup> Earthworks Press Release, "Groups, Town of DISH urge Texas regulators to act immediately on behalf of impacted citizens," December 16, 2009, available at: [http://www.earthworksaction.org/media/detail/community\\_health\\_survey\\_shows\\_shale\\_gas\\_threatens\\_human\\_health](http://www.earthworksaction.org/media/detail/community_health_survey_shows_shale_gas_threatens_human_health).
- <sup>xxxi</sup> Global Community Monitor, "Gassed– Citizen investigation of toxic air pollution from natural gas development," July 2011, available at: <http://www.gcmmonitor.org/article.php?id=1339>.
- <sup>xxxii</sup> The SEAB Shale Gas Production Subcommittee Ninety-Day Report, August 11, 2011, available at: <http://www.shalegas.energy.gov/resources/index.html>
- <sup>xxxiii</sup> Alex Wayne, "Fracking Moratorium Urged as Doctors Call for Health Study," *Business Week*, January 18, 2012, available at: <http://www.businessweek.com/news/2012-01-18/fracking-moratorium-urged-as-doctors-call-for-health-study.html>
- <sup>xxxiv</sup> Steve Orr, "Fracking: Bane or Boon? A Look Into Industry's presence in Pa.," *The Democrat and Chronicle.com*, December 18, 2011.
- <sup>xxxv</sup> "Drilling Boom Brings Surge in Crime to Small Towns," *The Associated Press*, October 26, 2011.

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<sup>xxxvi</sup> "Drilling Boom Brings Surge in Crime to Small Towns," *The Associated Press*, October 26, 2011.

<sup>xxxvii</sup> Steve Orr, "Fracking: Bane or Boon? A Look Into Industry's presence in Pa.," *The Democrat and Chronicle.com*, December 18, 2011.

<sup>xxxviii</sup> Steve Orr, "Fracking: Bane or Boon? A Look Into Industry's presence in Pa.," *The Democrat and Chronicle.com*, December 18, 2011.

<sup>xxxix</sup> Steve Orr, "Fracking: Bane or Boon? A Look Into Industry's presence in Pa.," *The Democrat and Chronicle.com*, December 18, 2011.

<sup>xl</sup> Dana Sasarean, Sameul Block and Linda-Elling Lee, "Shale Gas and Hydraulic Fracturing in the US: Opportunity or Underestimated Risk?" MSCI Industry in Focus, Unconventional Oil & Gas, October 2011.

<sup>xli</sup> New York State Department of Environmental Conservation Press Release, "Unprecedented Turnout at DEC Hearings on High-Volume Hydraulic Fracturing," December 1, 2012, available at: <http://www.dec.ny.gov/press/78799.html>.

<sup>xlii</sup> New York State Department of Environmental Conservation Press Release, "Unprecedented Turnout at DEC Hearings on High-Volume Hydraulic Fracturing," December 1, 2011, available at: <http://www.dec.ny.gov/press/78799.html>.

<sup>xliii</sup> Sabrina Tavernise, "As Gas Drilling Spreads, Towns Stand Ground Over Control," *The New York Times*, December 14, 2011, available at: <http://www.nytimes.com/2011/12/15/us/towns-fighting-to-stand-ground-against-gas-drillers.html?pagewanted=all>.

<sup>xliv</sup> Dan Wiessner, "New York Rulings Could Embolden Towns to Ban Fracking," *Thompson Reuters News & Insight*, February 28, 2012.

<sup>xlv</sup> Kris Maher, "New Challenges to Gas Drilling," *The Wall Street Journal*, September 12, 2011, available at: <http://online.wsj.com/article/SB10001424053111903648204576552861902466194.html>.

<sup>xlvi</sup> "New Jersey Fracking Ban: Gov. Chris Christie's 1- year recommendation accepted by lawmakers," *The Associated Press*, January 10, 2012.

<sup>xlvii</sup> S. Kofler, "Flower Mound passes gas drilling moratorium," *KERA News*, June 8, 2010, available at: <http://keranews.org/post/flower-mound-passes-gas-drilling-moratorium>.

<sup>xlviii</sup> W. Hundley, "Flower Mound extends moratorium on permits for natural gas drilling," *Dallas Morning News*, September 9, 2010, available at: <http://www.dallasnews.com/news/community-news/flower-mound/headlines/20100908-Flower-Mound-extends-moratorium-on-permits-8006.ece>.

<sup>xlix</sup> "Flower Mound adopts new gas well and pipelines ordinances," *Cross Timbers Gazette*, July 18, 2011, available at: <http://www.crosstimbersgazette.com/local-news/1714-flower-mound-adopts-new-gas-well-and-pipeline-ordinances.html>.

<sup>l</sup> Article IV, Chapter 9.5 of the Southlake City Code. Gas & Oil Well Drilling and Production. Available at: [http://www.cityofsouthlake.com/SiteContent/70/documents/Departments/PlanningDevServices/Gas/Codified\\_880A.pdf](http://www.cityofsouthlake.com/SiteContent/70/documents/Departments/PlanningDevServices/Gas/Codified_880A.pdf).

<sup>li</sup> Ordinance 880-B. An Ordinance of the City of Southlake Texas Amending Ordinance 880-A. Gas & Oil Well Drilling and Production of Chapter 95 Article IV of the Southlake City Code. Sec 95243. Operations and equipment practices and standards.

<sup>lii</sup> D. Stanley, "Commerce City continues drilling moratorium," *ABC 7News*, Jan. 24, 2012, available at: <http://www.thedenverchannel.com/news/30285558/detail.html>.

<sup>liii</sup> D. Stanley, "Commerce City continues drilling moratorium," *ABC 7News*, Jan. 24, 2012, available at: <http://www.thedenverchannel.com/news/30285558/detail.html>.

<sup>liv</sup> "Modified the moratorium to enable the [development services] department to take applications for temporary exploration activities . . .still not accepting applications for production." Oct. 27, 2011. "El Paso County partially lifts drilling moratorium," *Colorado Energy News*. <http://coloradoenergynews.com/2011/10/el-paso-county-partially-lifts-drilling-moratorium/>

<sup>lv</sup> Jon Hurdle, "Governor Christie puts a one year moratorium on fracking in NJ." *Business Insider*. August 30, 2011, available at: <http://www.businessinsider.com/bans-on-natural-gas-fracking-spread-2011-8>.

<sup>lvi</sup> Bans natural gas drilling in residential and conservation areas, including neighborhoods, farms and public parks. Iglar, Andrea, "Marcellus Shale drilling banned in some areas of South Fayette," *Pittsburgh Post-Gazette*, Nov. 18, 2010, available at: <http://www.post-gazette.com/pg/10322/1104009-57.stm>.

<sup>lvii</sup> S. Gwynne, E. Souder, and G. Jacobson, "In midst of gas boom anti-drilling movement gains ground," *Dallas Morning News*, May 15, 2011, available at: <http://www.dallasnews.com/business/energy/20110515-in-midst-of-gas-boom-anti-drilling-movement-gains-ground.ece>.

<sup>lviii</sup> L. Brown, "Drilling permit moratorium passes," *Denton Record-Chronicle*, February 8, 2012, available at: [http://www.dentonrc.com/sharedcontent/dws/drc/localnews/stories/DRC\\_Moratorium\\_0208.455ccee53.html](http://www.dentonrc.com/sharedcontent/dws/drc/localnews/stories/DRC_Moratorium_0208.455ccee53.html).

<sup>lix</sup> M. Norris, "Grand Prairie City Council approves 180-day moratorium on gas-drilling permits," *Dallas Morning News*, November 18, 2010, <http://www.dallasnews.com/news/community-news/grand-prairie/headlines/20101118-grand-prairie-city-council-approves-180-day-moratorium-on-gas-drilling-permits.ece>.

<sup>lx</sup> N. Sakelaris, "Southlake extends gas drilling moratorium," *Star-Telegram*, June 22, 2011, available at: <http://www.star-telegram.com/2011/06/21/3169997/southlake-extends-gas-drilling.html>.

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- <sup>LXI</sup> Rebecca Penty, "Quebec Bans Any Fracking Pending Studies," *The Calgary Herald*, April 4, 2012.
- <sup>LXII</sup> Tara Patel, "France Keeps Fracking Ban to Protect Environment, Sarkozy Says," *Bloomberg Business Week*, October 4, 2011.
- <sup>LXIII</sup> Elizabeth Konstantinova and Joe Carroll, "Bulgaria Bans Gas Fracking, Thwarting Chevron Drilling Plan", *Business Week*, January 19, 2012, available at: <http://www.businessweek.com/news/2012-01-19/bulgaria-bans-gas-fracking-thwarting-chevron-drilling-plan.html>.
- <sup>LXIV</sup> "Chevron Receives Romanian Approval for Shale Gas License," *Natural Gas Europe*, March 29, 2012.
- <sup>LXV</sup> Victoria Eastwood, "Concern Over 'Insanity' of Shell South Africa Fracking Plans," *CNN.com*, March, 23, 2012.
- <sup>LXVI</sup> Gordon Deegan, "Councillors (sic) Back Fracking Ban," *The Irish Times*, January 10, 2012.
- <sup>LXVII</sup> S.C Gwynne, E. Souder and G. Jacobson, "In midst of gas boom anti-drilling movement gains ground," *Dallas Morning News*, May 15, 2011, available at: <http://www.dallasnews.com/business/energy/20110515-in-midst-of-gas-boom-anti-drilling-movement-gains-ground.ece> (emphasis added).
- <sup>LXVIII</sup> Brantley Hargrove, "Fear and Fracking in Southlake," *The Dallas Observer*, November 24, 2011.
- <sup>LXIX</sup> Edward McAllister, "Insight: N.Y. Gas Drillers' Victory Soured by Tough New Rules," *Reuters.com*, October 21, 2011, available at: <http://www.reuters.com/article/2011/10/21/us-newyork-shale-idUSTRE79K4YT20111021>.
- <sup>LXX</sup> Jad Mouawad and Clifford Krauss, "Gas Company Won't Drill in New York Watershed," *The New York Times*, October 27, 2009.
- <sup>LXXI</sup> Steve Reilly, "Twp New Suits Challenge Gas Drillers' Claims to Tier Land," May 3, 2011, *pressconnects.com*.
- <sup>LXXII</sup> Steve Reilly, "Twp New Suits Challenge Gas Drillers' Claims to Tier Land," May 3, 2011, *pressconnects.com*.
- <sup>LXXIII</sup> Mike Soraghan, "Obscure Regulator Hits Brakes on Northeast Shale Drilling Rush," *Greenwire* reported in *The New York Times*, September 13, 2010.
- <sup>LXXIV</sup> Andrew Maykuth, "Marcellus Shale Dispute Bubbling Up in Northeast Pennsylvania," *The Philadelphia Inquirer*, July 4, 2010.
- <sup>LXXV</sup> Mike Soraghan, "Northeast Regulator Eases Proposed Natural Gas Drilling Curbs," *The New York Times*, December 9, 2010.
- <sup>LXXVI</sup> Senator Robert Casey, Jr, "Statement for the Record, Introduction of the Fracturing Responsibility and Awareness of Chemicals (FRAC) Act," June 9, 2009, available at: <http://casey.senate.gov/newsroom/press/release/?id=3D78271C-E412-4B63-95B8-419E75CE2BB6>.
- <sup>LXXVII</sup> Committee on Energy and the Environment, "[Energy & Commerce Committee Investigates Potential Impacts of Hydraulic Fracturing](#)," February 18, 2010, updated July 19, 2010, accessed: September 23, 2010.
- <sup>LXXVIII</sup> Lucia Graves, "Federal Fracking Regulations In Draft Report Would Require Disclosure of Chemicals," *The Huffington Post*, February 6, 2012.
- <sup>LXXIX</sup> "Salazar Hints at Fracking Disclosure," *United Press International*, February 15, 2012, available at: [http://www.upi.com/Business\\_News/Energy-Resources/2012/02/15/Salazar-hints-at-fracking-disclosure/UPI-96491329309020/](http://www.upi.com/Business_News/Energy-Resources/2012/02/15/Salazar-hints-at-fracking-disclosure/UPI-96491329309020/).
- <sup>LXXX</sup> "EPA Announces Final Study Plan to Assess Hydraulic Fracturing/Congressionally Directed Study will Evaluate Potential Impacts on Drinking Water," <http://yosemite.epa.gov/opa/admpress.nsf/6427a6b7538955c585257359003f0230/197771b608adfdbb8525793d005379c9!OpenDocument>.
- <sup>LXXXI</sup> Ben Geman, "EPA Moves to Require 'Fracking' Chemicals Information Disclosure," *The Hill*, November 23, 2011, available at: <http://thehill.com/blogs/e2-wire/e2-wire/195393-epa-moves-to-require-fracking-chemical-info-disclosure>.
- <sup>LXXXII</sup> "Shale Gas Production Subcommittee Second Ninety Day Report," [http://www.shalegas.energy.gov/resources/111811\\_final\\_report.pdf](http://www.shalegas.energy.gov/resources/111811_final_report.pdf).