

Hydraulic Fracturing – Quantitative Reporting Exxon Mobil Annual Meeting: May 29, 2013, Dallas, TX

Resolution

This Proposal asks “the Board of Directors to report to shareholders, via quantitative data, the result of company policies, procedures and practices above and beyond regulatory requirements, to minimize the adverse environmental and community impacts from the company’s shale energy operations.”

Rationale for a Yes Vote

Horizontal drilling and hydraulic fracturing operations have been linked to significant environmental and social impacts. These impacts, which result in increased community opposition and regulatory scrutiny, could have significant financial implications for the company. The Proposal reflects rising public expectations for *quantifiable* disclosure from companies undertaking hydraulic fracturing activities. Transparency requires full disclosure of steps being taken to minimize risks, acknowledgement of challenges and failures, and clearly defined steps to continually improve operations. As public expectations for company disclosure and transparency rise, investment value may be undermined by company environmental policies and practices that lag public and regulatory expectations. In order to measure the effectiveness of expressed company policies and practices intended to mitigate environmental and community impacts, investors need rigorous, detailed reporting on key indicators. Currently, Exxon is not providing the data necessary for investors to verify whether the company’s policies and practices effectively manage these impacts and risks.

1. Horizontal drilling and hydraulic fracturing operations result in significant environmental and social impacts, which increase financial risks to shareholders.
2. Public expectations are on the rise for better company disclosure and environmental protection measures. Proponents are concerned that the company’s investment value may be undermined if the Company fails to respond effectively.
3. Exxon does not provide investors with sufficient information to determine if the company is mitigating the risks associated with fracturing operations.

Filers

Lead filers of this proposal are As You Sow (on behalf of the Park Foundation) and New York City Pensions Fund. Co-Filers include: Benedictine Sisters of Boerne, Texas, Benedictine Sisters of Mount St. Scholastica, Walden Asset Management, First Affirmative, Sisters of St Francis, Philadelphia, Unitarian Universalists Service Committee, Zevin Asset Management.

This memo, which was prepared in part by IEHN and Green Century, will detail why a vote for this proposal is important. It identifies the risks facing the natural gas production sector as a whole, identifies risks specific to Exxon, and describes the rising public and regulatory expectations for better disclosure by companies.

This is not a solicitation to vote your proxy. Please DO NOT send us your proxy card; As You Sow is not able to vote your proxies, nor does this communication contemplate such an event. We urge shareholders to vote for Item number 10 following the instruction provided on the management’s proxy mailing.

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BACKGROUND ON GROWING CONCERNS REGARDING HYDRAULIC FRACTURING OPERATIONS

As natural gas production has expanded in the United States, controversies associated with the hydraulic fracturing process have grown. In the rush to drill for natural gas, 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. As a result of the many impacts communities have experienced, the industry has faced public backlash including costly bans and moratoria.

Companies that fail to transparently mitigate the significant environmental and community impacts of their operations face significant business risks including enforcement actions and loss of their social license to operate. The banning of hydraulic fracturing operations was recently upheld by an appellate court which ruled that New York municipalities can use local zoning laws to ban the practice of hydraulic fracturing for natural gas.ⁱ In the face of these issues, investors have become more concerned about how companies are managing and disclosing issues regarding their hydraulic fracturing operations, and especially, how these environmental and social risks may affect financial performance.

Rising Expectations for Quantitative Disclosure

Prominent regulatory bodies are echoing investor calls for increased transparency and disclosure of company policies and progress toward achieving best practices. The International Energy Agency, the Department of the Interior, and 18 states are pressing for increased disclosure requirements regarding hydraulic fracturing operations. In particular, and as noted in proponents’ resolution, the Department of Energy secretary’s shale advisory panel recommended in 2011 that companies “adopt a more visible commitment to using quantitative measures as a means of achieving best practice and demonstrating to the public that there is continuous improvement in reducing the environmental impact of shale gas production.”ⁱⁱⁱ (emphasis in original)

Investor Campaign

This is the fourth year investors with concerns regarding the impacts of hydraulic fracturing operations have engaged companies. Proposals have consistently received remarkably high votes. In the 2010 proxy season, votes at six companies where resolutions went to a vote ranged from 21% to 42%, averaging 30%.

ANALYSIS OF EXXON’S CURRENT REPORTING AGAINST THE GUIDELINES OF THE PROPOSAL

Company Practices

In comparison with its peers, Exxon provides very little data on its website and 10-K on key environmental and social indicators of its hydraulic fracturing operations.

<i>Topic Requested in Proposal</i>	<i>Exxon Omissions</i>
Percentage of wells using green completions	Exxon provides no quantitative information on green completions.
Total amount of air emissions reduced annually on a categorical and regional/site basis	Exxon provides no information on air emissions from hydraulic fracturing operations, or on a categorical or site basis. As explained below, the company-wide information provided by Exxon does not suffice.
Percentage of drilling residuals managed in closed-loop systems	Exxon reports only that closed-loop systems are used in the Marcellus region, providing no data concerning use in other regions.
Numbers and types of community complaints and portion resolved	Exxon provides no information on numbers and categories of community complaints or resolution of complaints.
Quantities of water used and sources for shale energy ops by region; percentage of recycled water used in each regional operation	Exxon provides no data on quantity of water used by source for hydraulic fracturing operations and no data on percentage of recycled water used in each regional operation.
Goals and systems to reduce potentially harmful chemicals in fracturing fluids	Exxon provides in information on goals for reducing, or systems it may have in place to reduce, potentially harmful chemicals in fracturing fluids.
Enforcement statistics; including numbers of violations notices or administrative actions alleging violations with potential harm to health or environment; and aggregate value of all penalties	Exxon does not provide enforcement statistics or information on notices of violations, administrative actions, or aggregate values of all penalties beyond the large violations required to be reported pursuant to SEC requirements.

In its Opposition statement, Exxon argues that its 2010 and 2011 Corporate Citizenship Reports (CCRs) “discuss issues surrounding natural gas production and include metrics that reflect the materiality of our operational footprint.” (Opposition statement, Exxon Proxy Memo, p. 1). While Exxon does discuss, in general and non-quantitative terms, certain broad issues concerning hydraulic fracturing operations, the metrics it provides apply to its *entire operations*. These metrics do not meet the requirements of the Proposal because company-wide metrics not only provide no quantifiable information as to what is occurring at Exxon’s hydraulic fracturing operations, but these company-wide statistics could easily mislead investors and community members into believing that, for instance, air quality improvements are being made, when in fact such improvements are occurring at other company operations such as refineries or offshore drilling wells. Company-wide metrics, which reflect Exxon’s operations around the world, provide no useable information for shareholders and community members as to what is happening at Exxon’s natural-gas hydraulic fracturing and drilling operations.

Exxon’s other arguments against this proposal are:

- (1) That it provides information about fracture fluid chemical additives and water use at each well. Proponents do not disagree that, for each well listed in Frac Focus, information is provided as to non-confidential chemical additives and amounts of water used. While useful, this information is insufficient to address the broader request of the Proposal.
- (2) That “the Appalachian Shale Responsible Practice Group [of which Exxon is a member]...include a section on measurements and metrics that are being followed.” While the Appalachian Shale Principles do have a short section on measurements and metrics, Exxon is not reporting pursuant to that section *as to its horizontal drilling and hydraulic fracturing shale gas operations* as requested in the Proposal.
- (3) That its “aboutnaturalgas.com website also presents information on unconventional gas development and the manner in which the associated risks are managed.” Again, while general information is presented in “aboutnaturalgas.com,” these pages do not provide any of the quantifiable information requested in the Proposal. Similarly, the blog “Perspectives” touches on a wide range of issues and does not provide the quantifiable information requested in the Proposal.
- (4) That “it is committed to operating in an environmentally responsible manner.” Essentially, this argument asks shareholders, community members, and policy makers to simply trust Exxon. Communities and policy makers are no longer willing to simply trust companies, which creates risks for companies’ social license to operate, especially when companies are unwilling or unable to provide specific data regarding the impact of their hydraulic fracturing and drilling operations. Given the continuing vocal concerns being raised by communities and policy makers about hydraulic fracturing operations, including the potential for bans and moratoria, companies must begin providing *quantifiable* information about their progress in adopting and implementing practices to minimize adverse environmental and community impacts from their horizontal drilling and hydraulic fracturing operations.

HYDRAULIC FRACTURING OPERATIONS RESULT IN SIGNIFICANT ENVIRONMENTAL AND SOCIAL IMPACTS

Hydraulic fracturing operations use millions of gallons of water and thousands of gallons of chemicals, generating wastewater and polluting air emissions. The sudden expansion of industrial activity in an area can also be socially disruptive -- often damaging roads, creating traffic jams, increasing rentsⁱⁱⁱ, and increasing rates of crime^{iv}. These impacts can lead to strained community relations and have financial

implications for companies when not appropriately addressed. Investors need specific, detailed assurances that companies are transparently and proactively managing the impacts of their operations.

A. WATER-RELATED IMPACTS

Much of the controversy surrounding hydraulic fracturing has centered on water usage and wastewater management. The high volumes of water and chemicals used during the extraction process have prompted concerns about potential water contamination and shortages, and have increased tension with communities from competition over finite water resources. These concerns have prompted calls for increased chemical disclosure, restrictions on companies' access to water, and in some cases even bans and moratoria on the entire hydraulic fracturing process.

The high volumes of water used during hydraulic fracturing also pose substantial operational, and thus business, risks to companies. As an example, in June 2012, the Susquehanna River Basin Commission suspended 37 water withdrawals to protect stream flow levels.^v This was the second summer in succession during which SRBC imposed such restrictions on energy companies.

B. DISPOSAL CONCERNS

As public concern over the chemical content and water contamination risks of hydraulic fracturing fluid increases, companies are finding it increasingly difficult and expensive to ensure safe disposal of fracking fluids:

- After the Pennsylvania Department of Environmental Protection set stricter standards on wastewater treatment plants, companies operating in the Marcellus Shale were forced to send nearly 14.8 million gallons of wastewater to Ohio for deepwater injection in the last 6 months of 2010.^{vi}
- Youngstown, Ohio reported a series of earthquakes in the past year, which may be linked to the underground injection of the wastewater used in the hydraulic fracturing process.^{vii}
- In November 2012, more than 60% of voters in Mansfield, Ohio voted in favor of an "environmental bill of rights" to ban wastewater injection wells on grounds that the operations would threaten community rights to clean air and water.^{viii}

It is crucial that our company have policies and practices in place to mitigate its impact on finite water resources and be responsive to concerns about water competition and shortages.

C. AIR IMPACTS

The contribution of natural gas extraction to declining regional air quality has prompted health concerns among local residents, increasing the likelihood of tightened oversight and regulation of the industry. Emissions from hydraulic fracturing operations have been linked to increased ozone and methane levels, further tarnishing natural gas's reputation as the more 'climate-friendly' alternative.

- August 2012 interim findings of the *Uinta Basin Winter Ozone Study* reported that "observed levels of ambient VOC species were highest in gas-production areas."^{ix}
- In 2011, Ultra Petroleum, along with Shell, and QEP Resources paid a total of \$13 million to mitigate high ozone levels in Wyoming, while EnCana committed to contributing an additional \$36 million.^x
- A March 2012 study from the Colorado School of Public Health found that "people living within a half-mile of oil- and gas-well hydraulic fracturing operations were exposed to air pollutants five times above a federal hazard standard"^{xi}. The lead author of the report concluded that, "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."^{xii}

- Ongoing debate surrounding the greenhouse gas impact of natural gas due to methane leakage continues to cast doubt on natural gas as the obvious 'cleaner' alternative to traditional fossil fuels (Wigley, 2011^{xiii}; Pétron et al., 2012^{xiv}, Scottish Widows Investment Partnership, 2012^{xv}).

These studies publicly linking hydraulic fracturing to declining air quality threaten to further tarnish the industry's environmental profile. *Proponents believe that the company would benefit from beyond-compliance measures to transparently reduce its air emissions across the life cycle of its shale gas operations.*

D. COMMUNITY IMPACTS

The resolution specifically asks for "numbers of community complaints or grievances and portion open or closed" in order to assess how effective these initiatives are in engaging with and addressing the communities' concerns. The company fails to provide any such detail.

Exxon hasn't responded to one of the real issues facing communities especially in Pennsylvania since hydraulic fracturing is also a human rights issue. The Pennsylvania Constitution speaks to all the rights of its citizens, particularly "clean air, pure water, and the preservation of the natural, scenic, historic and esthetic values of the environment." (Art.1, Section 27)

The influx of industrial activity associated with hydraulic fracturing operations exposes host communities to increased health risks, crime, noise and light pollution, truck traffic, and skyrocketing rents. A significant body of literature points to negative impacts on the surrounding community:^{xvi}

- Sublette County, WI, a rural gas boomtown, displays a significant correlation between population growth associated with energy development, and crime rate between 1995-2004. The population increased by 21%, while the crime rate, measured by the number of arrests in the county, rose by 270%.^{xvii}
- A 2012 report from Cornell University suggested that exposure to shale gas operations likely contributed to increased illness, death and reproductive issues in farm animals.^{xviii}
- The National Institute for Occupational Safety and Health (NIOSH) issued a hazard alert in 2012 for workers exposed to dust from the sand used during hydraulic fracturing, warning that the silica in the dust may cause lung diseases such as silicosis, lung cancer, and tuberculosis.^{xix}
- A 2012 study from the Colorado School of Public Health reports that "air pollution caused by hydraulic fracturing or fracking may contribute to acute and chronic health problems for those living near natural gas drilling sites".^{xx}
- 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."^{xxi}

Companies that fail to comprehensively address and mitigate the impacts of their hydraulic fracturing operations on the surrounding community risk losing their social license to operate. *Proponents believe that companies need to have clear systems in place for engaging the community, and tracking and resolving complaints.*

PUBLIC EXPECTATIONS ARE GROWING REGARDING COMPANY DISCLOSURE AND ENVIRONMENTAL PROTECTION MEASURES.

A central concern for communities across the country is a desire to have a better understanding of the practices taking place, sometimes literally, in their back yards. As community wariness of and opposition to hydraulic fracturing operations increases, there is growing recognition that companies must be publicly transparent about managing their environmental footprint and social impacts, and engage with key stakeholders to earn and maintain their social license to operate.

The following illustrate the calls for increased disclosure:

- In November 2011, the Department of Energy Secretary's shale gas advisory panel recommended that companies "adopt a more visible commitment to using quantitative measures as a means of achieving best practice and demonstrating to the public that there is continuous improvement in reducing the environmental impact of shale gas production".^{xxii}
- The International Energy Agency (IEA), in its 2012 report, "Golden Rules for a Golden Age of Gas" addressed the need of the energy industry to maintain or earn its social license to operate, stating that "full transparency, measuring and monitoring of environmental impacts and engagement with local communities are critical to addressing public concerns."^{xxiii} IEA continued, "Operators need to explain openly and honestly their production practices, the environmental, safety, and health risks and how they are addressed."^{xxiv}
- Because existing company disclosure is insufficient, the Investor Environmental Health Network and the Interfaith Center on Corporate Responsibility published "Extracting the Facts: An Investor Guide to Disclosing Risks from Hydraulic Fracturing Operations" in December 2011.^{xxv} These guidelines, now supported by investors on three continents managing assets more than \$1.3 trillion, have also earned support from both companies—Apache, Southwestern, Talisman, BG Group—and environmental organizations—Environmental Defense Fund and the Natural Resources Defense Council.
- Several energy companies have recognized the growing demands for disclosure and have released explicit sets of principles and practices for shale gas operations on which they plan to report. These include Shell's "Onshore Tight/Shale Oil & Gas Operating Principles"^{xxvi}, Talisman's "Shale Operating Principles", and BG Group's "Public Position on Unconventional Gas".^{xxvii} Talisman has stated "we will measure our progress by setting quantitative performance metrics"^{xxviii}, and they plan to audit their operations and report publicly on their progress.

As public expectations for company disclosure and transparency rise, investment value may be undermined by company environmental policies and practices that lag public and regulatory expectations. Transparency requires full disclosure of steps being taken to minimize risks, acknowledgement of challenges and failures, and clearly defined steps to continually improve operations.

In the absence of meaningful disclosure, investors and the public cannot differentiate companies' management of hydraulic fracturing risks.

A. REGULATORY CALLS FOR INCREASED DISCLOSURE AND TIGHTENING OF REGULATIONS GOVERNING OPERATIONS

As public awareness and concern over the impacts of hydraulic fracturing operations grow, so do calls for increased regulation and oversight. A May 2012 Bloomberg poll reported that the majority of the U.S. public

favors greater regulation of hydraulic fracturing operations, with three times as many Americans in support of increased regulation than less.^{xxxix} Regulators are responding: This year alone, 24 states have considered at least 127 bills dealing specifically with hydraulic fracturing, at least seven states have enacted regulatory laws, and rulemaking is still underway in several other states according to the National Conference of State Legislatures.^{xxx}

- South Dakota^{xxxi}, Alaska, Texas, and Colorado are among the latest states to propose rules increasing requirements for company disclosure of chemical use in hydraulic fracturing fluids.
- Securities and Exchange Commission (SEC): The Security and Exchange Commission has been seeking “detailed information about oil and gas companies’ hydraulic fracturing operations, including environmental impacts” and is “looking for...whether companies are disclosing risks associated with the practice.”^{xxxii}
- Environmental Protection Agency (EPA): In November 2011, the EPA partially accepted a petition from over 100 environmental groups calling for the agency to use its authority under the Toxic Substances Control Act (TSCA) to require disclosure of chemicals used during hydraulic fracturing.
- Bureau of Land Management (BLM): The BLM is developing proposed rules to address well integrity, waste water management and disclosure of chemicals used in hydraulic fracturing operations on public and Indian lands. These rules are due to be published in spring 2013.

Companies that wait for regulations to force their hand, rather than acting proactively, may find it more difficult to keep pace with regulation, potentially leading to enforcement penalties and a negative public profile. Shareholder value may be detrimentally affected.

B. FINANCIAL IMPACTS OF BANS AND MORATORIA

Companies failing to address the environmental and social impacts of their operations have faced community backlash, including bans or moratoria on their operations, as communities seek added protection. This loss of companies’ ‘social license to operate’ poses a significant financial risk to companies resulting from costly delays, enforcement fines, and litigation.

For example:

- Norse Energy Corporation USA filed for Chapter 11 bankruptcy in December 2012 as a result of the 4 year moratorium in New York State, which idled seven of the company’s wells in the area.^{xxxiii}
- Talisman Energy booked an impairment charge of \$109 million on its assets in Quebec in 2012 because of Quebec’s continued moratorium on hydraulic fracturing.^{xxxiv}
- Royal Dutch Shell has estimated 40% of its New York acreage could be off-limits because of potential state rules.^{xxxv}
- France and Bulgaria have enacted national bans on hydraulic fracturing. Exxon’s license to explore for shale gas in Bulgaria was subsequently suspended.

CONCLUSION

We are concerned that Exxon currently fails to provide the transparent, widespread, and detailed reporting necessary for shareholders and the public to assess Exxon’s progress towards achieving best practices. As highlighted in proponents’ resolution, the Department of Energy panel has urged companies to “adopt a more visible commitment to using quantitative measures as a means of achieving best practice and demonstrating to the public that there is continuous improvement in reducing the environmental impact of shale gas production.” (emphasis in original)^{xxxvi} We encourage shareholders to vote in support of this proposal calling on the company to provide quantitative reporting on the results of its procedures and

practices, in order to measure the company's effectiveness in minimizing the adverse environmental and community impacts of its hydraulic fracturing operations.

Respectfully yours,



Danielle Fugere

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ⁱ George M. Walsh, "Appeals Court Upholds Local Fracking Bans in NY" *Associated Press*, May 2, 2013, <http://abcnews.go.com/US/wireStory/appeals-court-upholds-local-fracking-bans-ny-19094214>.

ⁱⁱ U.S. Department of Energy Secretary of Energy Advisory Board, "Shale Gas Production Subcommittee Second Ninety Day Report," November 18, 2011, page 9, http://www.shalegas.energy.gov/resources/111811_final_report.pdf.

ⁱⁱⁱ James Loewenstein, "Skyrocketing Rent in Bradford County: Influx of Gas Workers Creating Shortage of Affordable Housing," *The Daily Review*, January 22, 2010, <http://thedailyreview.com/news/skyrocketing-rent-in-bradford-county-influx-of-gas-workers-creating-shortage-of-affordable-housing-1.563248>.

^{iv} Joel Berger and Jon Beckmann, "Sexual Predators, Energy Development, and Conservation in Greater Yellowstone," *Journal of Conservation Biology*, 24, no. 3 (June 2010):301-306, <http://onlinelibrary.wiley.com/doi/10.1111/j.1523-1739.2010.01449.x/abstract>.

^v Susquehanna River Basin Commission, "37 Water Withdrawals for Natural Gas Drilling and Other Uses Suspended to Protect Streams," press release, June 28, 2012, <http://www.srbc.net/newsroom/NewsRelease.aspx?NewsReleaseID=89>.

^{vi} Timothy Puko, "Pennsylvania Fracking Water Being Disposed in Ohio," *Pittsburg Tribune – Review*, July 5, 2011, http://triblive.com/x/pittsburghtrib/s_745228.html#axzz2JZv4yBh0.

^{vii} Kim Marineau, "Ohio Quakes Probably Triggered by Disposal Well, Say Seismologists," *State of the Planet*, January 6, 2012, <http://blogs.ei.columbia.edu/2012/01/06/seismologists-link-ohio-earthquakes-to-waste-disposal-wells/>.

^{viii} Ellen Gillmer, "Ohio City Votes to Block Wastewater Injection Wells," *EnergyWire*, November 8, 2012, <http://www.midwestenergynews.com/2012/11/08/ohio-city-votes-to-block-wastewater-injection-wells/>.

^{ix} "2012 Utah Basin Winter Ozone & Air Quality Study: Summary of interim findings, ongoing analyses, and additional recommended research," August 7, 2012, <http://www.deq.utah.gov/locations/uintahbasin/docs/2012/Aug/UBOSWinter2012InterimFindingsMitigation%20.PDF>.

^x Dustin Bleizeffer, "Despite Ozone Spikes, More Drilling Proposed in Wyoming Community," *WyoFile*, May 17, 2011, <http://www.stanford.edu/group/ruralwest/cgi-bin/drupal/content/despite-ozone-spikes-more-drilling-proposed-wyoming-community>.

^{xi} Mark Jaffe, "CU Denver Study Links Fracking to Higher Concentration of Air Pollutants," *The Denver Post*, March 20, 2012, http://www.denverpost.com/breakingnews/ci_20210720/cu-denver-study-links-fracking-higher-concentration-air.



- ^{xii} University of Colorado Denver, “Study Shows Air Emissions Near Fracking Sites May Pose Health Risk,” press release, March 19, 2012, <http://www.ucdenver.edu/about/newsroom/newsreleases/Pages/health-impacts-of-fracking-emissions.aspx>.
- ^{xiii} Tom Wigley, “Coal to Gas: The Influence of Methane Leakage,” *Springer Science+Business Media* Vol. 108, no. 3 (August 2011): 601-608, <http://www.usclimatenetwork.org/resource-database/report-coal-to-gas-the-influence-of-methane-leakage>.
- ^{xiv} J. Tollefson, “Air Sampling Reveals High Emissions from Gas Field,” *Nature* 482, no. 7384 (February 2012):139-140 <http://www.ncbi.nlm.nih.gov/pubmed/22318579>.
- ^{xv} Scottish Widows Investment Partnership, “Shale Gas: The Fugitive Methane Problem,” May 23, 2012, <http://www.swip.com/documents/sustainability-research-note-may-2012/>.
- ^{xvi} Grassroots Environmental Education, “Summary Report: Human Health Risks and Exposure Pathways of Proposed Horizontal Hydrofracking in New York State,” (Presented in a meeting with officials from the New York State Department of Environmental Conservation and the New York State Department of Health in Albany, New York on October 9, 2012), <http://chej.org/wp-content/uploads/Summary-Report-Hydrofracking-In-New-York-State.pdf>.
- ^{xvii} Emma Garrison et al., “Frack Attack: How Hydraulic Fracturing for Natural Gas Threatens Human Health,” (Presented at Proceedings of the National Conference on Undergraduate Research at Ithaca College, New York, March 31-April 2, 2011), <http://urpasheville.org/proceedings/ncur2011/papers/NP52000.pdf>.
- ^{xviii} Krishna Ramanujan, “Study Suggests Hydrofracking is Killing Farm Animals, Pets,” *Cornell Chronicle*, March 7, 2012, <http://www.news.cornell.edu/stories/2012/03/reproductive-problems-death-animals-exposed-fracking>.
- ^{xix} U.S. Department of Labor Occupational Health and Safety Administration, “Hazard Alert: Worker Exposure to Silica During Hydraulic Fracturing,” http://www.osha.gov/dts/hazardalerts/hydraulic_frac_hazard_alert.html.
- ^{xx} University of Colorado Denver, “Study Shows Air Emissions Near Fracking Sites May Pose Health Risk,” press release, March 19, 2012, <http://www.ucdenver.edu/about/newsroom/newsreleases/Pages/health-impacts-of-fracking-emissions.aspx>.
- ^{xxi} Dana Sasarean, Sameul Block and Linda-Elling Lee, “Shale Gas and Hydraulic Fracturing in the US: Opportunity or Underestimated Risk?” *MSCI ESG Research*, October 2011, http://www.msci.com/resources/pdfs/Unconventional%20Oil%20%20Gas_Article_October%202011.pdf.
- ^{xxii} U.S. Department of Energy Secretary of Energy Advisory Board, “Shale Gas Production Subcommittee Second Ninety Day Report,” November 18, 2011, page 9, http://www.shalegas.energy.gov/resources/111811_final_report.pdf.
- ^{xxiii} International Energy Agency, “Golden Rules for A Golden Age of Gas: World Energy Outlook Special Report on Unconventional Gas,” 2012, 9, http://www.worldenergyoutlook.org/media/weowebiste/2012/goldenrules/WEO2012_GoldenRulesReport.pdf.
- ^{xxiv} International Energy Agency, “Golden Rules for A Golden Age of Gas: World Energy Outlook Special Report on Unconventional Gas,” 2012, 43, http://www.worldenergyoutlook.org/media/weowebiste/2012/goldenrules/WEO2012_GoldenRulesReport.pdf.
- ^{xxv} Interfaith Center on Corporate Responsibility and Investor Environmental Health Network, “Extracting the Facts: An Investor Guide to Disclosing Risks from Hydraulic Fracturing Operations,” December, 2011, <http://www.iehn.org/documents/frackguidance.pdf>.
- ^{xxvi} “Shell Onshore Tight Sand/Shale Oil & Gas Operating Principles.” http://www.shell.us/home/content/usa/aboutshell/shell_businesses/onshore/principles/.
- ^{xxvii} “Unconventional Gas Resources: Our Eight Principles” BG Group website, accessed April 29, 2013, http://www.bg-group.com/OurBusiness/OurBusiness/Pages/UnconventionalGasResources_position.aspx.
- ^{xxviii} “Shale Gas Operating Principles,” Talisman Energy website, accessed May 6, 2013, <http://www.talisman-energy.com/operations/the-americas/shale-operating-principles.html>.



^{xxix} Jim Efstathiou, "Tighter Fracking Regulations Favored by 65% of U.S. in Poll," *Bloomberg*, March 14, 2012, <http://www.bloomberg.com/news/2012-03-15/tighter-fracking-regulations-favored-by-65-of-u-s-in-poll.html>.

^{xxx} Jim Malewitz, "States Scramble to Regulate Fracking," *Stateline*, May 9, 2012, <http://www.pewstates.org/projects/stateline/headlines/states-scramble-to-regulate-fracking-85899385716>.

^{xxxii} Dante Taomassoni, "South Dakota Considering New Oil and Gas Regulations; Increased State Oversight Likely," *Association of Corporate Counsel*, January 2, 2013, <http://www.lexology.com/library/detail.aspx?g=1a7ef156-4311-41f7-a3aa-ed15e6db007>.

^{xxxiii} Deborah Soloman, "SEC Bears Down on Fracking," *Wall Street Journal*, August 25, 2011, <http://online.wsj.com/article/SB10001424053111904009304576528484179638702.html> (subscription required).

^{xxxiv} Katy Stech, "Norse Energy's U.S. Unit Files for Chapter 11," *Dow Jones*, December 7, 2012, <http://online.wsj.com/article/SB10001424127887323501404578165540473583564.html> (subscription required).

^{xxxv} Bertrand Marotte, "Talisman Suspends Shale Gas Exploration in Quebec," *The Globe and Mail*, October 30, 2012, <http://www.theglobeandmail.com/globe-investor/talisman-suspends-shale-gas-exploration-in-quebec/article4753334/>.

^{xxxvi} Edward McAllister, "Insight: N.Y. Gas Drillers' Victory Soured by Tough New Rules," *Reuters*, October 21, 2011, <http://www.reuters.com/article/2011/10/21/us-newyork-shale-idUSTRE79K4YT20111021>.

^{xxxvii} U.S. Department of Energy Secretary of Energy Advisory Board, "Shale Gas Production Subcommittee Second Ninety Day Report," November 18, 2011, page 9, http://www.shalegas.energy.gov/resources/111811_final_report.pdf.