



**SIERRA
CLUB**
FOUNDED 1892

**MASSACHUSETTS
CHAPTER**

Massachusetts Sierra Club
10 Milk Street, Suite 632
Boston MA 02103-4621
www.sierraclubmass.org
office@sierraclubmass.org
(617) 423-5775

June 6, 2011

Chairman John Keenan
Joint Committee on Telecommunications, Utilities and Energy
State House, Room 473B
Boston, MA 02133

Chairman Ben Downing
Joint Committee on Telecommunications, Utilities and Energy
State House, Room 413F
Boston, MA 02133

Re: .Testimony in Support of H.3055, *An Act Related to Hydraulic Fracturing*

Note: The US Congressional Report on chemicals used in fracking can be obtained via the following link: <http://tinyurl.com/68spmj6>

Dear Chairman Downing, Chairman Keenan, and Members of the Committee,

Thank you for providing this opportunity to offer our comments on H.3055, *An Act Relative to Hydraulic Fracturing*. The Sierra Club wishes to express our strong support in favor of H.3055.

The Sierra Club is the oldest and largest non-profit, non-partisan organization environmental organization in the country. With over a forty year history in this chapter, the Massachusetts Sierra Club represents about 22,000 members throughout the state and nearly one million nationwide. We fight for clean air, clean water, the preservation of the Commonwealth's most precious natural spaces, and healthy, vibrant communities.

This bill would require energy utilities that generate electricity from natural gas in Massachusetts to disclose the chemicals that their suppliers used during the natural-gas extraction process. It would also require them to certify that the process did not contaminate any drinking water.

The Sierra Club recognizes that natural gas is an important transitional fuel as the United States moves away from fuels that emit large quantities of greenhouse gases to clean, affordable renewable energy sources. Natural gas, on average, is potentially a cleaner source of energy than coal. For the equivalent amount of heat, natural gas produces about 45% less carbon dioxide during its combustion than coal. The United States will need to develop affordable natural gas supplies in the immediate future.

However, that does not mean the Commonwealth should ignore the problems caused by natural gas extraction, storage, or delivery. Natural gas drilling and production comes

with a significant cost to the ecology. The present gas rush in the Marcellus Shale formation will cause water pollution problems throughout the northeastern United States. But with no imminent threat of fracking here in Massachusetts, why should we care? For the same reason that we don't buy animal furs of endangered species. The buyer who creates the demand is the one who creates the problem.

In Massachusetts, more than half of our electricity (52.9%) and 40% of our residential heating comes from natural gas.¹ The gas is piped into Massachusetts from the Gulf coast, western New York, Ohio, Pennsylvania, and Canada as well as other sources. While Massachusetts is not in imminent danger of having fracking take place within our borders, the natural gas we're using – and doing so in ever increasing quantities – has the potential of causing irrevocable and severe environmental damage.

Hydraulic fracturing (fracking) is the process of creating fractures in underground shale rock formations that contain natural gas. Energy/drilling companies use it to extract gas in 90% of U.S. wells. The process usually involves drilling a vertical borehole and then, as deep as 20,000 feet below the surface, drilling horizontally. The drillers then force highly pressurized water containing sand and a cocktail of over 750 chemical additives into the rock to cause it to break up. The natural gas flows out of the rock and is pumped to the surface along with the chemical/wastewater solution. The gas is retrieved and the wastewater, up to a million gallons per mining event, is stored in pools, released to the environment, or trucked to wastewater plants. The wastewater may also be recycled in another drilling event but will eventually be treated the same as the above wastewater, but with increasingly more concentrated contaminants every time it is reused. And it's not as if each well is fracked once during its lifetime - a single natural gas well can be potentially fracked up to 18 times.² Once this toxic fluid is in the ground under pressure it can migrate unpredictably in all directions including upwards. Most of the chemicals are extremely toxic and will remain potent for thousands of years. This is the time period when an explosion or major blowout can happen, spilling tens of thousands of gallons of fluid out onto the ground and into local bodies of water. This effects livestock, wildlife and plant life and could injure or kill numerous individuals.

Fracking used to be subject to the requirements of the federal Safe Drinking Water Act but was exempted by Congress in 2005 during the Bush administration at the request of several energy/drilling companies. This bill seeks to close the loophole created by that exemption by using state law as legislators did in Colorado and Wyoming.

The greatest danger is that due to a Bush era law, due to an exemption known as the "Halliburton Loophole," these gas companies are exempted from the federal Safe Water Act.³

The most dramatic visual that you may have seen is people lighting their tap water on fire. While this is impressive, what you can't see is far more dangerous – and the list of what's being pumped into the ground as fracking fluid is even more frightening

The undisclosed nature of fracking has lead many watchdog organizations, such as Food and Water Watch and research groups, such as MIT's Center for Future Civic Media, to determine what's going on. Since 2008, MIT's Center for Future Civic Media has been researching and documenting the impacts of natural resource extraction on human health and the surrounding environment. Wellwatch.org, a site to come out of the group's research, is a powerful tool that collects and organizes personal health stories of those living near fracking sites. The personal stories, of which there are hundreds, speak for themselves. Common health complaints include loss of hair, poor

or blurry vision, rashes, dizziness and headaches. Also commonly reported is a loss of livestock and area wildlife.

Despite enormous resistance by the Gas Industry, the United States House of Representatives began investigating the chemicals that were being used and just published their report.⁴ While many of the chemicals are benign, like sucrose, sodium carbonate, and guar gum, many are toxic, highly carcinogenic, and prohibited under the clean water act.

Between 2005 and 2009, the oil and gas service companies used hydraulic fracturing products containing 29 chemicals that are (1) known or possible human carcinogens, (2) regulated under the Safe Drinking Water Act for their risks to human health, or (3) listed as hazardous air pollutants under the Clean Air Act." Of the 29 chemicals, 13 are classified as carcinogens, 8 are Safe Drinking Water Act regulated chemicals, and 24 are hazardous air pollutants. Many of the chemicals fall into more than one category.

Methanol, a toxic air pollutant, was the most widely used chemical during the time period studied, as measured by the number of compounds containing the chemical. Other hazardous air pollutants included hydrogen fluoride (systemic poison, potentially fatal), lead (reproductive disorders, high blood pressure, nervous system disease, especially among children), hydrogen chloride and ethylene glycol.

The chemical called 2-BE (shorthand for 2-butoxyethanol) is another common toxic constituent. It is used as a foaming agent or surfactant. "According to EPA scientists, 2-BE is easily absorbed and rapidly distributed in humans following inhalation, ingestion, or dermal exposure. Studies have shown that exposure to 2-BE can cause hemolysis (destruction of red blood cells) and damage to the spleen, liver, and bone marrow." And rare adrenal tumors. Texas topped the list of states with 12 million gallons of fluid containing 2-BE injected into the ground. As noted above, WV and PA were below 1 million.

Among the list of carcinogens used are formaldehyde (also a hazardous air pollutant), diesel, naphthalene and chemicals in the BTEX compound group (benzene, toluene, ethylbenzene and xylene). "The BTEX compounds appeared in 60 hydraulic fracturing products used in the 5-year period and were used in 11.4 million gallons of hydraulic fracturing fluids." Most of those tainted fluids, 9.5 million gallons of the 11.4 million, were used in Texas. Less than 100,000 gallons were used in Pennsylvania and West Virginia.

In addition, the hydraulic fracturing companies injected more than 30 million gallons of diesel fuel or fracturing fluids containing diesel fuel in wells in 19 states." In a 2004 report, the EPA stated that the use of diesel fuel in fracturing fluids poses the greatest threat to underground sources of drinking water.

Many chemical components of hydraulic fracturing fluids used by the companies were listed on the MSDSs as "proprietary" or "trade secret." The hydraulic fracturing companies used 93.6 million gallons of 279 products containing at least one proprietary component between 2005 and 2009. In these cases, it appears that the companies are injecting fluids containing unknown chemicals about which they may have limited understanding of the potential risks posed to human health and the environment.

Clearly, the energy companies are not concerned about the likely leakage of these chemicals into the groundwater, despite countless reports of well poisonings, toxic

ground runoff and animal kills. Allowing the natural gas companies to self-police has resulted in a toxic free-for-all.

While the Marcellus Shale Formation doesn't touch Massachusetts – its nearest point is about 50 miles west of Great Barrington,⁵ our use of natural gas obtained from the environmentally catastrophic practice makes us rethink our participation in this practice. By passing H.3055, we can help move away from this practice.

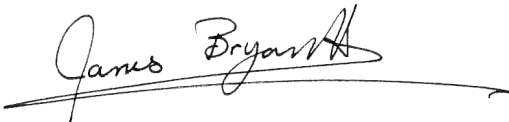
Additional fracking facts

- How large is the horizontal hydraulic fracturing drilling pad? Many web sites report 5-8 acres, with as many as 5 or 6 wells, each drilled horizontally for up to a mile.
- How many trucks of water (laced with chemicals) will be pumped under the land to frack each well? A Chesapeake Energy Company web site says 3-5 million gallons for each well, must be trucked in.

The natural gas industry is investing billions of dollars in the Marcellus Shale drilling and stands to make billions of dollars in profit. Gas exploration in and production from the Marcellus Shale will be going on for decades. Similarly, the environmental consequences of exploration and production will be with us for decades – and longer. Drilling activity will not cease due to environmental requirements. The gas industry states that it wants to implement “best practices.” We have an opportunity to ensure that “best practices” are implemented. We are still living with the legacy of oil and gas drilling from a century ago – thousands of abandoned well sites, oil and gas seeps, and denuded landscape. We have the opportunity to correct past mistakes.

Because this proposed legislation would help decrease the amount of environmental destruction, threats to public health, threats to wildlife, and irreparable damage to the safe water supplies of communities throughout the United States, the Sierra Club strongly supports this bill and respectfully requests that this committee report these bills favorably. Furthermore, we hope that these bills receive the full support by all members of the Senate and House of Representatives.

Respectfully,



James McCaffrey
Director
Massachusetts Sierra Club

¹ Institute for Energy Research, retrieved May 2011, www.instituteforenergyresearch.org/state-regs/pdf/Massachusetts.pdf

² A Town Called Athens: Athens area must fight against fracking, Athens Post (OH) May 23, 2011

³ Federal oversight of fracking in dispute, Pittsburgh Post-Gazette, Jonathan D. Silver, April 3, 2011

⁴ Chemicals Used In Hydraulic Fracturing, US House of Representatives, Committee on Energy and Commerce, Minority Staff, April 2011. Prepared under the leadership of US House Representatives Henry Waxman (D-CA), Edward Markey (D-MA), and Dianna DeGuetta (D-CO). Available at <http://tinyurl.com/68spmj6>.

⁵ Water Resources and Natural Gas Production from the Marcellus Shale, Daniel J. Soeder and William M. Kappel; U.S. Geological Survey Fact Sheet, 2009