Fracking Pros and Cons: Is There a Way to Satisfy Both Sides?

By Karole McKalip, Elizabeth Lonoff, and Rona Ackerman

Hydraulic fracturing or fracking represents two methods of natural gas extraction. The first is a process that involves drilling a deep hole in dense shale rock and then blasting a mixture of water, sand, and chemicals down inside the hole at extremely high pressure to fracture or crack open the surrounding rock and release natural gas and in some cases oil into the water so it can be captured. A second technique called horizontal drilling allows companies to drill vertically, then laterally through shale formations. This second method also uses a mixture of water, sand, and chemicals. These methods can be applied to wells for shale gas, tight gas, tight oil, and coal seam gas. The term “fracking” is currently used to refer to either method. They are considered cost efficient ways to access natural gas and other fuel deposits that might otherwise be inaccessible. Fracking has increased known gas reserves. Some believe that these gas supplies will last for more than 100 years.

“Many sandstone, limestone and shale formations far below ground contain natural gas, which was formed as dead organisms in the rock decomposed. This gas is released, and can be captured at the surface for our use, when the rocks in which it is trapped are drilled. To increase the flow of released gas, the rocks can be broken apart, or fractured. Early drillers sometimes detonated small explosions in the wells to increase flow. Starting in the 1940s, oil and gas drilling companies began fracking rock by pumping pressurized water into it. Approximately one million American wells have been fracked since the 1940s. Most of these are vertical wells that tap into porous sandstone or limestone. Since the 1990s, however, gas companies have been able to harvest the gas still stuck in the original shale source.”

“Although the first version of hydraulic fracturing was patented in the USA in 1949, it has come into greater use over the last decade in combination with other advances in drilling technology (such as horizontal drilling), which have made many reserves of oil and natural gas economically viable that were previously considered prohibitively difficult to exploit. These reserves are in many cases contained within shale, a formation low in permeability and porosity, which previously made tapping the gas and oil held within the formations very difficult.” Fracking has made many of these previously known formations commercially viable, and facilitated the discovery of new reserves as companies seek gas and oil in new locations.

For 2013, the US Energy Information Administration (EIA) estimated that 35.1 percent of America’s energy use by source came from petroleum, 26.6 percent from natural gas, and 18.1 percent from coal. Nuclear power accounted for 8.3 percent, and renewable energy—such as wind, solar, geothermal, or hydropower—supplied 9.3 percent. The EIA states that the numbers “may not add to 100 percent due to independent rounding.”

Fracking proponents cite economic benefits, to include not only making the United States more energy independent but also to allow for the exportation of natural gas. Opponents are primarily concerned about the impact of fracking to human health and the natural environment. World-wide reactions to its use are mixed; some countries allow fracking while others ban it.

The use of hydraulic fracturing has broad implications for our country: the economy, the environment, and human health. For citizens to have an impact on public policy, understanding how fracking works, its pros and its cons are critical.
Protecting the Public Health and Public Lands

While federal regulation of hydraulic fracturing has been stalled in Congress, the U.S. Department of Interior and the Bureau of Land Management have proposed rules to regulate it on public lands that are leased for energy production. According to its website, the U.S. Environmental Protection Agency (EPA) and the Departments of Energy and the Interior have been working together since 2012 to provide technical guidance and implementation support to states and tribes to help ensure that natural gas extraction does not come at the expense of public health and the environment. The EPA’s focus and obligations under the law are to provide oversight, guidance and, where appropriate, rulemaking that achieve the best possible protections for the air, water and land. The Agency is investing in improving our scientific understanding of the potential impact of hydraulic fracturing on air, water quality, aquatic ecosystems, and health, providing regulatory clarity with respect to existing laws, and using existing authorities where appropriate to enhance health and environmental safeguards. The EPA expects to release a draft report on fracking’s potential impact on drinking water resources in December.

In May the EPA furthered its response to a 2011 petition from Earthjustice and 114 others in announcing that it is considering rules under the Toxic Substances Control Act requiring oilfield service companies to submit details on the health safety of their fracking chemicals. With continuing pressure from industry, the Agency said it instead might decide to use incentives or voluntary steps. Meanwhile, some states have enacted mandatory disclosure laws for the chemicals used in fracking.

According to the Natural Resources Defense Council, federal and state governments need to adopt strong enforceable laws and standards that protect the environment, public health, and communities. Protections based on robust scientific research on health and environment impacts are needed to:

- Reduce water pollution
- Reduce air pollution
- Protect communities and residential areas, i.e., keep fracking away from homes and schools
- Protect wilderness on federal public lands
- Dispose of hazardous waste properly and
- Require public disclosure of chemicals used

Many localities are taking initiatives to contain, control, or ban fracking. One successful example has occurred in Dryden, New York. The New York State Court of Appeals ruled in favor of Dryden and another town, Middlefield, in their clarification of zoning laws, road use regulations, noise limits, and environmental protections in order to ban hydraulic fracturing. This court ruling is expected to “reverberate nationally.” Other localities in California, Colorado, Michigan, New Jersey, Ohio, Pennsylvania, and North Carolina are passing resolutions and proposals to ban or limit fracking and the disposal of fracking waste. The New York Court ruling has significance beyond the state of New York in that it encourages other towns across the country to pursue limitations on fracking.

The Community Environmental Defense Council claims to have helped 200 New York municipalities either to ban or put a moratorium on fracking in accordance with the State’s Constitution. Its founder addressed a Norman, OK, public meeting about fracking in August. He said that Oklahoma law allows cities to regulate for the health, welfare, and safety of its citizens. He gave an example of some cities around the country having used home rule to require setbacks of 3,000-5,000 feet for drilling operations.

Several oil and gas companies want drilling permits to explore natural gas opportunities in Garrett County, MD, where Deep Creek Lake is located. In 2011 Governor Martin O’Malley issued an executive order establishing the Marcellus Shale Safe Drilling Initiative to study drilling impacts before any natural gas wells could be built in Maryland. The first report covered the desirability of legislation to establish revenue sources, such as a state-level severance tax and standards of liability for damages caused by gas exploration and production. In 2014 the University of MD contributed a report on potential public health impacts which warns that drilling could pose a threat to air quality, increasing the risk of “adverse birth outcomes including congenital heart defects, sinus problems, eye burning, severe headaches, persistent cough and skin rashes.” The report recommends strong police and state agency monitoring of fracking operations if they are allowed Maryland. Later this year, Maryland’s last report will cover possible contamination of groundwater, handling and disposal of wastewater, environmental impacts, impact to forest and important habitats, greenhouse gas emissions and economic impacts.

Where Is Fracking Taking Place?

“Fracking is currently taking place in approximately 30 states, without sufficient safeguards and typically under out-dated regulations and inadequate enforcement. The oil and gas industry is seeking to expand fracking nationwide to extract gas from previously inaccessible sites...Over the...
last decade, the industry has drilled tens of thousands of new wells in the Rocky Mountain region, the South, and the eastern United States. In the East, the latest hotbed of activity, the focus has been on a massive 600 miles-long rock formation called the Marcellus Shale, which stretches from West Virginia, through Ohio and Pennsylvania, and into New York State.”

“In 2000, there were about 276,000 natural gas wells in the United States. But by 2010, that number had almost doubled to 510,000, according to the U.S. Department of Energy (DOE). And every year, about 13,000 new wells are drilled. The areas where fracking is most profitable include the Great Plains from Canada south into Texas, the Great Lakes region and an area known as the Marcellus Shale… according to the U.S. Energy Information Administration (EIA).”

The shale boom is not limited to the United States. Fracking is going global. The following chart was cited in an article in the Washington Post (The Face of Fracking in Britain by Edward Robinson, April 27, 2014). The data as of May 2013 came from Bloomberg company reports and the U.S. Energy Information Administration.

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<tr>
<th>Top Shale Oil Finds (Billions of barrels)</th>
<th>Top Shale Gas Finds (Trillions of cubic feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Russia, 75</td>
<td>1. China, 1,115</td>
</tr>
<tr>
<td>2. United States, 58</td>
<td>2. Argentina, 802</td>
</tr>
<tr>
<td>3. China, 32</td>
<td>3. Algeria, 707</td>
</tr>
<tr>
<td>5. Libya, 26</td>
<td>5. Canada 573</td>
</tr>
</tbody>
</table>

In that same Post article, John Browne, a member of the House of Lords and a director in the British government’s Cabinet Office and a former chief executive of British Petroleum (BP) says “fracking would secure a new domestic energy source, create thousands of jobs, generate billions of pounds in tax revenue and be a cheaper alternative than constructing nuclear plants….Shale gas could be very, very important for this county; it could be transformative.”

Fracking in the George Washington National Forest

At nearly two million acres, The George Washington National Forest (GW) is the largest national forest in the East. “The GW plays an important role in providing water for much of our region as it is located entirely within the watershed of the James and Potomac Rivers, which supply drinking water to Richmond, VA, and Washington, D.C., and ultimately flow into the Chesapeake Bay. It is a direct source of drinking water for over 262,000 people in local communities in and around Virginia’s historic Shenandoah Valley. Further downstream more than 4.5 million people in northern Virginia, the Washington, D.C. metro area, and Richmond rely on the forest to protect many headwaters of a safe, high-quality drinking water supply.”

“…The U.S. Forest Service…is considering allowing George Washington to become the first national forest to permit high-volume hydraulic fracturing, or fracking. The million-acre forest sits on the eastern edge of the Marcellus shale formation, whose vast deposits of natural gas have touched off a drilling bonanza in Pennsylvania and West Virginia. Fracking currently is permitted on only two Forest Service preserves, both in the West: Dakota Prairie National Grasslands in North Dakota and Pawnee National Grassland in Colorado.”

Selc supports cleaner alternative energy sources such as natural gas that will help move our region away from coal but strongly objects to the destructive ways natural gas is now being extracted—and to the lack of environmental oversight. Its highest priority in Virginia is to keep fracking...
out of the George Washington National Forest, more than half of which overlies the Marcellus Shale formation. SELC is working intensely to convince the U.S. Forest Service to stick with its proposal to ban horizontal drilling on any land leased for oil or gas production in the national forest, which would provide a significant check on high-volume fracking. It also insists that drinking water supply watersheds be made off-limits to all forms of drilling.17

Arguments for and Against Hydraulic Fracturing

Pro:

1. Natural gas produced by fracking has an environmental advantage over coal mining. Shale gas emits half the carbon dioxide per unit of energy as does coal. Coal burning emits metals such as mercury into the atmosphere that settle back into our land and waters. The oil and gas industry argues that natural gas is a cleaner fuel than coal so fracking would result in a reduction of greenhouse gas emissions.

2. Short-run economic interests support fracking, saying that natural gas is leading to lower energy prices, greater energy independence, and more jobs with higher salaries.

3. States where fracking takes place have seen an increase in tax revenue.

4. Fracking increases the energy security of the U.S. and improves the abilities to generate electricity, heat homes and power vehicles for generations to come.

5. The U.S. Geological Survey is studying the source and composition of current and future water produced as a result of fracking. 18

Con:

1. Chemical contamination of ground water and local drinking water sources can occur by way of leaks, spills, erosion, and runoff from drilling operations. Companies have been granted special exemptions from existing federal environmental laws (i.e., Clean Air Act, Clean Water Act, Safe Drinking Water Act) and are not required to disclose some of the chemicals they use.

2. Air pollution results from emissions from drilling rigs, storage tanks, compressor stations, and truck traffic, contributing to harmful ozone levels and human health problems.

3 Wells, roads, and pipelines can displace wildlife and harm habitats.

4. Methane emissions from production sites and pipelines contribute to climate change.

5. Concerns about earthquakes possibly resulting from the injecting of wastewater from drilling, creating fluid pressure below the surface are being substantiated by the US Geological Survey.19

Outlook

“The International Energy Agency suggests that for oil and gas producers to make peace with adversaries and move forward, they should take common-sense steps: improve transparency about the chemicals they use; engage communities better; monitor wells more effectively; toughen rules on well design and surface spills; manage water supplies carefully; and reduce methane emissions. The IEA reckons that implementing such measures would add just 7 percent to total well costs, and would go a long way toward pacifying critics.” The industry is still in its “adolescence.”20

“The accurate and unbiased scientific data provided by ‘federal agencies’ are crucial to the Federal and State resource managers to meet the challenge of balancing America’s needs for unconventional resources and a clean and healthy environment.”21 Currently, government studies are being developed to identify the impact of fracking in the environment more definitively. As yet, we have no national standards in place; instead the affected states have differing requirements for fracking operations. Nationally, environmental laws are being administered through the Environmental Protection Agency, Department of Interior, the Bureau of Land Management, and the U.S. Forest Service.

Hydraulic fracturing presents opportunities and challenges to our area and to our country. Legislative oversight both at federal and state levels must be developed. We must be cognizant of the potential impacts on public health and the environment. But the economics of the process also can positively influence our domestic economy and our international standing. Further understanding of the pros and cons of fracking is critical and localities must weigh its costs and benefits. The development of cleaner, sustainable energy sources is also critical.

Endnotes


www.lwv-fairfax.org
3. U.S. Energy Information Administration, Monthly Energy Review, Table 1.3 (May 2014), preliminary 2013 data
7. Steven Mufson, Small towns shake up national drilling debate, July 3, 2014
15. Sarah Francisco, an attorney with the Southern Environmental Law Center, (as cited in the January 22, 2014, Los Angeles Times, by Neela Banerjee)
18. EnergyFromShale.org as cited in “What is Fracking by Marc Lallanilla, July 17, 2013 at www.livescience.com
20. From Chapter 7 (The Future of Fracking) in Hydrofracking by Alex Prud’homme, Oxford University Press, 2014

Shale Gas Formations in the United States