

The Site Selection Energy Report



A publication of **SITE** Selection



May 17, 2010

Vol. 2, Issue 02

Shale Gas: Economic Development Opportunity or Environmental Threat?

Abundant supplies of shale gas, at least 90 years' worth at current demand of 23 TCF/year, continue to dominate the natural gas market and domestic exploration and production activity. In 2009, the U.S. passed Russia as the world's leading gas producer. This cost-effective, low-carbon fuel is reshaping energy markets and "changing the game" as described in the article "[Shale Gas: Site Selection Game-Changer](#)" in the November 2009 Site Selection Energy Report. Drilling activity is ongoing, [supply chains are shifting](#), and infrastructure and retrofit projects are underway as the industry shifts to take advantage of the low price and the resource locations (see Map 1).

by **CHARLOTTE BASTON**
editor@conway.com



Charlotte Baston is an Energy Analyst for Tamerica Management Company

And natural gas is playing a larger role in companies' long-term strategies as well. ExxonMobil, the largest publicly traded western oil company, is expanding its position in shale gas and other unconventional gas plays in its move last December to acquire XTO Energy, a domestic top ten gas producer with assets in the [Bakken, Barnett, and Marcellus Shales](#), for \$41 billion. This deal signaled a recovery in the mergers and acquisitions activity and was hailed as a positive sign for the broader economy. The Wall Street Journal estimates that companies have a higher percentage of cash in their portfolios now than at any other time in the last 40 years, an estimated \$1.8 trillion in the hands of the Fortune 1000 companies, and at least \$75 billion with the major oil companies. Investment in new locations, equipment, infrastructure and acquisitions is expected.

Because the merger would create the largest natural gas producer in the U.S., Congress called a hearing before the House Energy and Environment Subcommittee of the Energy and Commerce Committee to look into the effects of the merger on competition in the industry, the role of natural gas in the U.S. energy mix and environmental questions about the extraction techniques of producing shale gas.

Break It Down

The primary technology in question is called hydraulic fracturing or "frac jobs" which, in combination with horizontal drilling, stimulate the production of natural gas from shale formations previously believed to be uneconomical. Advocates point out that hydraulic fracturing has been a common industry practice for more than 60 years and in more than a million wells with no adverse environmental impact. Critics contend that this extraction technology and its components have a negative environmental impact, particularly on the water supply.

The ExxonMobil executives were clearly aware of the political risk. The merger agreement includes a contingency that Exxon can back out of the agreement if Congress outlaws hydraulic fracturing, or restricts and regulates the activity to the point of rendering shale gas not commercially viable.

As well described by [Chesapeake Energy's Web resources](#) on the practice, hydraulic fracturing is a process done during the drilling of wells in which water, sand or other particles (called "proppants"), and additives are pumped into a well at pressures high enough to crack the rock formation. As the process continues, experts continually monitor the pressures and fluids, slowly increasing the density of the slurry of sand and water. This process may be done in stages, with the wellbore temporarily plugged in between each stage to maintain the

highest water pressure possible and get the

Shale Gas Plays in the Continental U.S. (Map 1)

maximum results in the rock formation.

The frac plugs are then drilled or removed from the wellbore and the well is tested for results. Finally, the water pressure is reduced and fluids are returned up the wellbore for disposal or treatment and re-use. The sand grains or other proppants remain in the cracks afterward to keep them slightly open, thereby releasing the gas. This process is done a substantial vertical distance from groundwater supplies, easily 1.5 miles and even more than two miles in many cases (see Figure 1). In addition, the

ON TRACK.
ON TIME.
ON TARGET.

GO TO PEKA

WE CAN DO THAT



Source: EIA

shallower portions of the well with freshwater sandstones are protected with multiple layers of metal pipe called casing that are set during the drilling process.

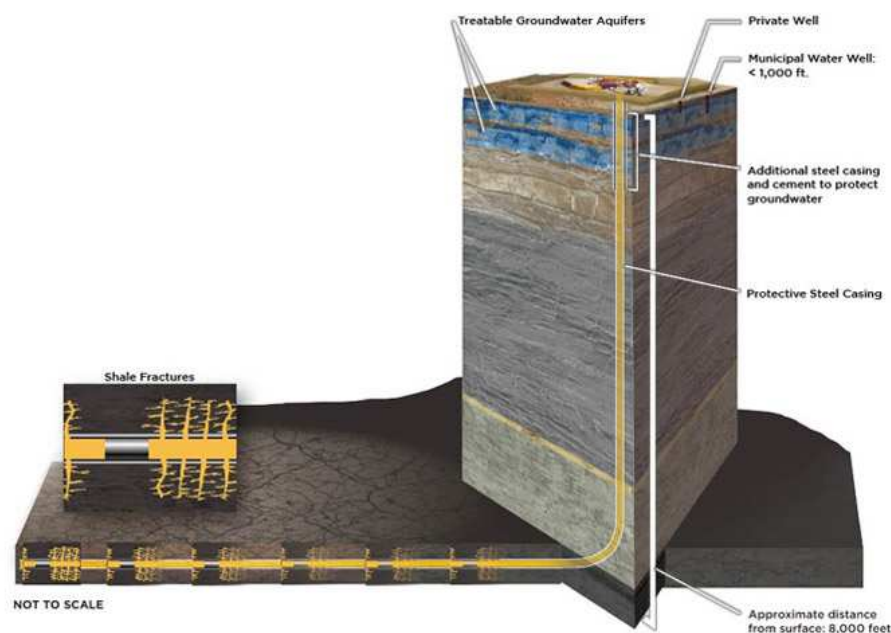
After the Congressional hearing on January 20, the Subcommittee issued information requests to eight companies engaged in the process to disclose the chemicals used and the potential impact on the environment and public health. Congress

subsequently authorized the EPA to conduct a new study on the risk to the drinking water supply posed by hydraulic fracturing. Past studies by EPA have shown no such risk from hydraulic fracturing, including a study on the process of coalbed methane extraction, which occurs geologically at much shallower depths than shale gas.

Can Trade Secrets Be Extracted?

U.S. Representatives Diana DeGette (D-Colo.) and Maurice Hinchey (D-N.Y.) have co-sponsored legislation in the House to extend the Safe Water Drinking Act to drilling and injection wells, thereby putting them under the regulation of the EPA. A similar bill has been introduced in the Senate. Currently, hydraulic fracturing is regulated by the states, and information on chemical additives used is typically held confidential as a trade secret, disclosed only to local regulators. House Energy and Commerce Committee members John Sullivan (R-Okla.) and Mike Ross (D-Ark.) said that passing the legislation before completion of the EPA study, expected to take two years, would be unwise.

Hydraulic Fracturing (Figure 1)



Source: Chesapeake Energy, www.hydraulicfracturing.com

EPA and U.S. Geological Service representatives have taken the position that the states are currently doing a good job with regulating frac jobs, that water contamination is more likely to occur as companies process the wastewater from the process, and that perhaps wastewater treatment technology has not caught up. Some municipal water systems have reported higher levels of heavy metals and radioactivity. Water treatment and wastewater treatment are already regulated by the EPA under the Safe Drinking Water Act.

Rep. Hinchey has taken the additional step of urging the Dept. of the Interior to require disclosures of drilling fluids on federal lands and leases, which could potentially include all federal offshore leases.

Oil and gas industry representatives welcome the study, and say they believe that hydraulic fracturing will be found to be safe, and that concerns for groundwater contamination are unfounded as long as existing state regulations are followed. Rep.

DeGette says the previous studies were incomplete and lack credibility, and admits that the study, expected to take up to two years, will be a challenge since the oil companies are not currently required to disclose the chemicals used.

Industry analysts are wondering why there is such sudden interest from Congress and the EPA in a long-standing industry practice extending back 60 years, especially considering the positive environmental potential from an energy source that is strongly positioned to play a key role in reducing carbon emissions.

Charlotte Batson is an Energy Analyst for [Tamerica Management Company](#) and Editor of the Tamerica-SBS Alternative Energy News.

www.siteselection.com

[TOP OF PAGE](#)

[Top of Page](#) | [Letter to Editor](#) | [Site Selection Online](#) | [SiteNet](#)



Site Selection Online – The magazine of Corporate Real Estate Strategy and Area Economic Development.
©2010 Conway Data, Inc. All rights reserved. SiteNet data is from many sources and not warranted to be accurate or current.