HYDRAULIC FRACTURING

Fact Sheet

Since the 1940s Hydraulic Fracturing Has Been Used in the U.S.

Hydraulic Fracturing is Necessary for Shale Gas Development

Hydraulic Fracturing Makes Shale Gas Development Economical

WHAT IS HYDRAULIC FRACTURING?

- Hydraulic fracturing is a process that uses high pressures and "fracturing fluids" to break open natural gas-bearing rocks and create pathways for gas flow that allow production of these valuable resources.
- Fracturing fluids consist primarily of water, sand, and some chemical additives.
- Induced fractures are kept open with sand, or proppant, to ensure the continued flow of natural gas.
- Hydraulic fracturing has been used safely since the 1940s in more than one million wells in the United States.[1]

WHAT ARE THE BENEFITS OF HYDRAULICALLY FRACTURING SHALE GAS?

- Gas-bearing shales are classified as "unconventional" reservoirs, meaning that although they may contain significant quantities of natural gas, this gas cannot be produced without fracturing the rock to liberate gas and allow it to flow to production wells in commercial quantities.
- The combination of high-volume hydraulic fracturing and long-reach horizontal well drilling have proven to be necessary to establish conditions that allow sufficient gas to be produced to make these wells commercially viable. In general, without these technologies, production of gas from shales would not be economically feasible.[2]
- The lower 48 states have a wide distribution of shales that contain vast resources of natural gas. The Potential Gas Committee concludes that the growing importance of shale gas is substantiated by the fact that shale gas accounts for 616 Tcf or approximately 33% of the United States total potential gas resources.[3]
- Production of shale gas is expected to increase from a 2007 US total of 1.4 Tcf to 4.8 Tcf in 2020.[4]

WHAT ARE THE RISKS AND POSSIBLE IMPACTS?

- There are concerns that the chemicals added to the hydraulic fracturing fluid to enhance the performance and effectiveness of the treatment may impact surface water and ground water resources and may pose a risk to public health.
- There are concerns that injecting fluids into a well with sufficient force to break or fracture the gas-bearing rocks poses a risk from uncontrolled movement of the fracturing fluid into fresh water aquifers or other formations underground.
- The water necessary for hydraulic fracturing may be withdrawn from surface or ground water sources and either trucked or piped to the area of operations and stored in impoundments. Acquiring, transporting, and storing large volumes of water poses potential impacts to surface water and ground water resources, local roads and infrastructure, and typically requires more surface area to be cleared at well locations.

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- Collecting, transporting, and disposing of the fluids that flow back out of wells after hydraulic fracturing operations poses risks to surface waters, local roads, and infrastructure.

HOW ARE THE RISKS AND IMPACTS MANAGED AND REDUCED?

- State oil and gas regulatory programs are charged with mitigating the risks and potential impacts from oil and gas operations, including hydraulic fracturing. State regulators are best situated to do this because they are empowered with the necessary statutory authority and are attuned to the unique geological and geographic characteristics of their state and the needs of its citizens.
- Risks and impacts from hydraulic fracturing of shale wells are managed and reduced through rigorous state regulatory programs. For example, these include:
    - Technical review of well drilling permit applications, including hydraulic fracturing plans, by professional staff with experience in oil and gas well drilling, production, and geology.
    - Installation of multiple layers of protective steel casing and cement in the well bore to protect fresh water aquifers and to isolate other hydrocarbon zones and the producing zone.
    - Operational controls and construction standards for fluid handling at the well site, including hydraulic fracturing chemicals and additives.
    - Requirements for disclosure of the chemical additives used in hydraulic fracturing.
    - Water source review and limits and/or controls on water withdrawal activities.
    - Review and approval of fluid disposal plans.
    - Well site monitoring and inspections by state regulators during well drilling and hydraulic fracturing to ensure compliance with statutes, regulations, and standards.
    - Requiring operators to submit records and reports describing the completion of the well, including hydraulic fracturing operations.

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1 American Petroleum Inst., Hydraulic Fracturing, available at http://www.api.org/policy/exploration/hydraulicfracturing/index.cfm; see also Interstate Oil and Gas Compact Comm'n, Testimony Submitted to the House Committee on Natural Resources Subcommittee on Energy and Natural Resources (Washington, D.C. June 18, 2009), available at http://www.iogcc.state.ok.us/Websites/iogcc/Images/Additional-IOGCC-Testimony-June2009.pdf.

2 U.S. Dep't of Energy and Nat'l Energy Tech. Lab., Modern Shale Gas Development in the United States, at ES-1 (2009).

3 Potential Gas Committee, Potential Gas Committee Reports Unprecedented Increase in Magnitute of U.S. Natural Gas Resource Base (2009), available at: http://www.energyindepth.org/wp-content/uploads/2009/03/potential-gas-committee-reports-unprecedented-increase-in.pdf.

4 Supra, n. 1.

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