

## North Carolina Mineral Rights / Access to Shale Gas

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Shale gas is natural gas (methane) found within hydrocarbon-rich sedimentary rocks. The gas is located in “shale gas plays” – gas-rich rock formations with similar geologic properties and geographic distribution. Nationally, significant shale gas plays include the following: Marcellus (Ohio, Pennsylvania, New York); Haynesville, Barnett, Eagle Ford, Fayetteville and Woodford (Texas, Louisiana, Arkansas, Oklahoma); Antrim (Michigan); Hilliard (Wyoming); and others.

The following figure from the Energy Information Administration illustrates shale gas plays in the contiguous United States. Note that no North Carolina shale gas plays are depicted.

Shale gas development has grown significantly over the past five years. Shale gas production was approximately 2 trillion cubic feet in 2008, a more than 70% increase over the previous year. In 2009, national production grew to more than 3 trillion cubic feet. Shale gas accounts for over twenty percent of natural gas produced in the United States today and is projected to account for almost fifty percent of natural gas production by 2035. Estimates of the extent of technically recoverable shale gas reserves in the U.S. have ranged from somewhere in the neighborhood of 400 trillion cubic feet to upwards of 800 trillion cubic feet. For additional perspective, the United States consumption of natural gas in 2011 was approximately 24 trillion cubic feet.

This recent growth in shale gas development is due to the refinement and implementation of advanced horizontal drilling and hydraulic fracturing technologies over the past decade. Very simply, these developments have allowed for horizontal drilling that allows a single vertical well shaft to access a larger area of rock underground. A vertical well is drilled, then a special drilling head is placed in the well and a horizontal well is drilled into the gas-rich rock. Usually, multiple horizontal wells are drilled from a single vertical well shaft.

Hydraulic fracturing (sometimes called “hydrofracturing” or “fracking”) is then employed to crack open hydrocarbon-rich shale and extract natural gas. Hydraulic fracturing is the process by which high volumes of water mixed with sand, and smaller volumes of various chemicals, are pumped under high pressure into the horizontal wells. The sand functions as a propping agent, holding or propping open the fractures created so that natural gas is able to flow up the well and be collected. The other chemicals include lubricants, surfactants, gelling agents, scale inhibitors, acids, corrosion inhibitors, antibacterial agents, and clay stabilizers, among others. The composition and proportion of these chemicals is often considered a proprietary trade secret.

**PEOPLE**

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