

# SHALE GAS IN THE U.S.

## Fact Sheet

### Shale Gas Development Creates New Jobs

### Lower Emissions into the Environment

### U.S. is the Largest Natural Gas Producer

#### WHAT IS SHALE GAS?

- Shale is a type of rock created millions of years ago, usually in a deep ocean or lake environment. Over geologic time, mud, silt, and organic life forms are compressed and subjected to intense heat and pressure, creating oil and natural gas. Shale formations are “tight” formations meaning that they have low permeability and low porosity, prohibiting the free migration of oil and natural gas.

#### WHERE CAN SHALE GAS BE FOUND?

- Hydrocarbon-bearing shale formations can be found throughout the United States. Some of the prolific “shale plays” are the Marcellus Shale in the northeastern United States, the Barnett Shale in north-central Texas, the Haynesville Shale in northwestern Louisiana and eastern Texas and the Bakken Shale in North Dakota and parts of South Dakota.<sup>1</sup>
- Productive shale formations are found deep within the surface of the earth. The depth of productive shale formations ranges anywhere from 1000 feet below the earth’s surface to as much as 13,500 feet below the surface.<sup>2</sup>

#### WHY IS SHALE GAS IMPORTANT

- Shale gas formations in the United States hold approximately 649.2 trillion cubic feet of technically recoverable natural gas.<sup>3</sup>
- The United States has overtaken Russia, becoming the world’s largest producer and consumer of natural gas.<sup>4</sup>
- In 2009, the United States produced more than 22 trillion cubic feet of natural gas compared to Russia’s production of 20.5 trillion cubic feet.<sup>5</sup>
- Because of the low emissions of natural gas, it will play an important role in promoting environmental well-being. Further, as the Environmental Protection Agency and other federal and state regulatory agencies take a harder look at emissions, natural gas will be an important fuel alternative for electric power generation.
- The abundance of natural gas contained in shale plays represents a viable alternative to the United States’ dependence on foreign sources of energy. Natural gas in shale plays also will serve as a bridge fuel to a cleaner energy economy. Without natural gas, the transition to a “green” energy economy would be impossible.

#### HOW IS SHALE GAS PRODUCED?

- Shale gas was once thought to be too costly to produce.
- The gas trapped in shale formations are by nature subject to low porosity and low permeability. Technology has overcome these barriers to recovery.



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- Advances in drilling technique and technology now make the recovery of these vast resources possible. Horizontal drilling is opening up vast reserves that were once thought untouchable. Horizontal drilling also has decreased the average footprint of drilling operations by allowing recovery from one well-bore what typically would have taken dozens of well-bores to recover. Hydraulic fracturing is allowing operators to create channels for oil and gas to flow through, allowing for the recovery of resources contained shale formations. Hydraulic fracturing occurs at depths and in controlled environments that ensure the protection of groundwater resources.

### STATE REGULATIONS AFFECTING THE DEVELOPMENT OF SHALE GAS

- All states have regulations addressing casing and cementing requirements. Proper casing and cementing ensures that fracture fluids injected into the formation being fractured remain in that formation.
- Oil and gas conservation experts review the geologic information to ensure there is an impervious stratum above the formation fractured.
- All states utilize inspectors, who observe the actual hydraulic fracturing operation to ensure that the operation is conducted properly so that no harm is caused.
- All states have enforcement authority to ensure compliance with applicable statutes and regulations.

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<sup>1</sup>U.S. Energy Information Administration, United States Shale Gas Plays.

<sup>2</sup>U.S. Dept. of Energy, *Modern Shale Gas Development in the United States: A Primer*, at 17 (2009).

<sup>3</sup>*Id.*

<sup>4</sup>*World's largest producer of natural gas?:* Now it's U.S., available at <http://seekingalpha.com/article/182347-worlds-largest-producer-of-natural-gas-now-it-s-u-s>.

<sup>5</sup>*Id.*