

Shale Gas Development Challenges – A Closer Look

Surface Impacts (non-water)

Key Points:

- There are many local economic and energy benefits from shale gas development; there is also an inherent risk of increased traffic or other habitat disturbances that could affect residents, agriculture, farming, fishing and hunting.¹
- Shale gas development can lead to socio-economic impacts and can increase demands on local infrastructure, traffic, labor force, education, medical and other services.² Federal and state laws are designed to mitigate the impact of these challenges.
- The rapid expansion of shale gas development and hydraulic fracturing has increased attention on potential effects on human health, the environment and local wildlife habitat. Vegetation and soils are disturbed where gas wells require new roads, clearing and leveling.
- The degree of surface impacts can be affected by many factors, such as location and the rate of development; geological characteristics; climatic conditions; the use by companies of new technologies and best practices; and regulatory and enforcement activities.
- Advanced horizontal drilling and hydraulic fracturing technologies increasingly allow energy companies to access far more natural gas with fewer wells and disturbed acres.



¹ National Conference of State Legislatures, "Natural Gas Development and Hydraulic Fracturing: A Policymaker's Guide," June 2012, page 3.

² National Petroleum Council, "Prudent Development: Realizing the Potential of North America's Abundant Natural Gas and Oil Resources," 2011, Tale 2-2, page 181.

A number of studies have begun to document potential impacts and risks of shale gas development, including increased **truck traffic** from construction of the **well pad, access road** and other **drilling facilities**; **noise** and **degradation of air quality** from truck traffic and heavy machinery needed for drilling and fracturing; possible human health issues from **silica sand** used in the hydraulic fracturing process (see “*Shale Gas Development Challenges – A Closer Look: Air*”); **degradation of water quality** (see “*Shale Gas Development Challenges – A Closer Look: Water*”); **erosion** from the earth-disturbing activities (clearing, grading and excavating) necessary for well development; and **wildlife and habitat impacts**, such as clearing land of vegetation, leveling the site to allow access to the resource, and construction activities.

The **Government Accountability Office (GAO)** notes that because shale development is relatively new in some areas, “the long-term effects – after operators are to have restored portions of the land to pre-development conditions – have not been evaluated. Without these data, the cumulative effects of shale oil and gas development on habitat and wildlife are largely unknown.”³ GAO also found that, in general, shale gas development impacts can vary significantly even within shale basins.



There are inherent risks of surface impacts with any type of energy development, including shale wells and hydraulic fracturing. Many of these impacts are temporary in nature, and federal and state laws and regulations are designed to mitigate harmful effects. Additionally, new technologies and sound operator practices can have a positive effect on lessening surface and other socio-economic impacts. Photo source: U.S. Department of Energy

³ U.S. Government Accountability Office, Report to Congressional Requesters, “Oil and Gas: Information on Shale Resources, Development, and Environmental and Public Health Risks,” page 52, GAO-12-732, September 2012.