Shale Gas Development Challenges – A Closer Look

Water

Key Points:

- As with conventional oil and gas development, requirements from eight federal (including the Clean Water Act) and numerous state and local environmental and public health laws apply to shale gas and other unconventional oil and gas development. Consequently, the fracturing of wells is a process that is highly engineered, controlled and monitored.

- Shale gas operations use water for drilling; water is also the primary component of fracturing fluid.

- This water is likely to come from rivers, lakes, ponds, groundwater aquifers, municipal supplies, reused wastewater, or recycled water from earlier fracturing operations. Operators are guided by all applicable laws and regulations in water acquisition.

- As much as 10 million gallons may be pumped into a single well. Although this amount is relatively small when compared to other major water uses (such as agriculture), its cumulative effect could impact aquatic habitats or water availability, especially where water is a limited resource.

- A number of studies and publications caution that surface and groundwater contamination remains a risk; some studies document contamination from above-ground chemical spills, leaks, wastewater mishandling and other incidents. How significant these risks are over the long term is presently unclear and in need of continued study.
Although closely monitored at all stages, the fracturing of shale wells requires **large amounts of water**. However, this amount of water is considered relatively small when compared to other major uses, such as agriculture and industrial purposes. Operators are pursuing a variety of techniques, including recycling and reusing produced water, to reduce freshwater demand. Research is under way to find improved methods of treating fracture flowback water so it can be reused more effectively. In some areas of the country, significant water use for shale production may affect the availability of water for other uses. The National Petroleum Council (NPC) has concluded some “widely publicized instances of water wells being contaminated by methane” are unrelated to hydraulic fracturing and due instead to drilling encountering “shallow geologic zones” containing natural gas, which migrated to drinking water aquifers and domestic wells (“Prudent Development: Realizing the Potential of North America’s Abundant Natural Gas and Oil Resources,” page 195). Additionally, the Environmental Protection Agency is expected to release a report in 2014 that examines, among other things, hydraulic fracturing and potential drinking water impacts.

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