

IADC Briefing Book

Hydraulic Fracturing: Water Usage



Drilling and hydraulically fracturing wells can use between one to seven million gallons of water, per well. At first glance, the total volume of water used to complete a hydraulically fractured well can seem large, however, when compared to the amount of water needed to produce other forms of energy, hydraulic fracturing activities use significantly less, while providing an important energy resource. [4]

Key Messages

- Water volume used in hydraulic fracturing activities is rarely over 1 to 2% of the total water used in areas where hydraulic fracturing is practiced, according to numbers cited by FracFocus. [2]
- In 2011, according to Energy in Depth, all shale gas wells drilled and completed in the US in that year consumed approximately 135 billion gallons of water, equivalent to 0.3 percent of total US freshwater consumption. [3]
- Water usage for hydraulic fracturing activities is far less when compared to usage in other industries. For instance millions of gallons are used per day for the following:
 - Irrigation – 115,000 millions of gallons per day
 - Thermo-electric power generation – 161,000 millions of gallons per day
 - Domestic fresh water usage – 42,000 millions of gallons per day
 - 2 billion gallons *per day* for US golf course irrigation. [4]
- Within the US public sector, leakage from residential and industrial fresh water supply lines is estimated at almost 6 billion to 2.1 trillion gallons per year. [4]
- Hydraulic fracturing water sources include surface water, fresh water wells, salt water from oil field produced water and other brines that contain too much saline for agricultural use. [2]
- Fracturing fluids are primarily fresh or produced-water based fluids with additives for special purposes. The industry is working on water use alternatives like water recycling, and the use of seawater and wastewater. [6] Many of the chemicals used in fracturing fluids are the same as those used in food products and the cosmetic industry. [5]

Resources

1. The Energy Collective:
<http://www.theenergycollective.com/jessejenkins/205481/friday-energy-facts-how-much-water-does-fracking-shale-gas-consume>
2. FracFocus Chemical Disclosure Registry: <http://fracfocus.org/groundwater-protection>
3. Energy in Depth: <http://energyindepth.org/national/infographic-the-facts-on-hydraulic-fracturing-and-water-use/>
4. GEK Engineering:
http://gekengineering.com/Downloads/Free_Downloads/WaterUseofDrillingandfracturing.pdf

5. Washington Post: <https://www.washingtonpost.com/news/morning-mix/wp/2014/11/13/study-fracking-chemicals-found-in-toothpaste-and-ice-cream/>
6. EPA Hydraulic Fracturing Study Technical Workshop: Water Resources Management: [https://www.epa.gov/sites/production/files/documents/09_Mantell - Reuse 508.pdf](https://www.epa.gov/sites/production/files/documents/09_Mantell_-_Reuse_508.pdf)