

Water use for fracking oil resembles use for conventional production

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(Phys.org) —Producing oil through hydraulic fracturing, or fracking, uses similar amounts of water on average as producing oil by conventional means, according to a new study by The University of Texas at Austin's Bureau of Economic Geology.

Bridget Scanlon, a senior research scientist at the bureau and lead researcher on the study, said the findings are important because of the current debate about the amount of [water](#) used to produce energy.

"This analysis of [water demand](#) for hydraulic fracturing is critical for assessing the adequacy of [water resources](#) to support unconventional energy production," Scanlon said. "Results of this study can be used in future economic and policy studies about environmental impacts of unconventional energy production."

The study, which has been posted on the website of the *Environmental Science & Technology* Journal, compared water use in hydraulic fracturing operations in the Eagle Ford and Bakken formations with previous estimates of water use in conventional operations throughout the country. The Eagle Ford play in Texas and Bakken play in Montana and North Dakota account for about two-thirds of the oil produced by hydraulic fracturing in the United States.

Water use for hydraulic fracturing varied significantly between the Eagle Ford and Bakken plays, primarily due to variations in geology, but in both formations the proportion of water used per unit of energy gained

was comparable to conventional oil production. The ratio of water used for hydraulic fracturing to oil produced ranged from 0.2 to 0.4 gallons of water for each gallon of oil produced over the lifetime of a well for both the Eagle Ford and the Bakken. This translates to 0.03 to 0.06 gallons of water used per million British thermal unit (Btu) of energy gained. That is in the lower end of the ratio for conventional production in the U.S. from previous studies, which ranges from 0.1 to 5 gallons of water for each gallon of oil produced over the lifetime of a well (corresponding to 0.01 to 0.7 gallons of water per million Btu).

Hydraulic fracturing is a process in which liquid is injected into geological formations at high pressure to extract oil or natural gas. Because of economics, in recent years production has shifted from predominantly dry gas plays, such as the Barnett and Marcellus formations, to more oil-rich plays in the Eagle Ford, Permian and Bakken formations.

The public perception, Scanlon said, is that [hydraulic fracturing](#) uses extremely large quantities of mostly fresh water. This underscores the importance of quantifying water use. The study found that increases in water use for oil production are due to increased [energy production](#) and not a higher intensity of water use.

The oil and gas industry is using more water because they have increased the rate of production in the United States and are producing more domestic [energy](#)," Scanlon said.

More information: "Comparison of Water Use for Hydraulic Fracturing for Shale Oil and Gas Production versus Conventional Oil." Bridget R Scanlon , Robert C. Reedy , and Jean-Philippe Nicot. *Environ. Sci. Technol.*, Just Accepted Manuscript, [DOI: 10.1021/es502506v](https://doi.org/10.1021/es502506v)

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