

## New research suggests fracking could undermine water availability in Texas

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There has been much debate in recent years about the potential environmental impacts of hydraulic fracturing (fracking) for oil and gas. This debate has largely centered around the potential impacts of fracking on water quality. Those impacts are explored in a new [report](#), published last week by the U.S. Environmental Protection Agency (EPA). The EPA report found that, while there is no evidence of “widespread, systemic impacts” from fracking, the practice has led to some instances of water contamination. In addition to affecting the quality of water, fracking may also impact water quantity, particularly here in Texas.

As [previously reported](#), fracking involves the injection of fluid underground at high pressure to fracture the rock to release oil and gas. The fracking fluid is comprised principally of water, mixed with chemicals and a proppant, such as sand or ceramic beads. The amount of water required varies depending on several factors including formation geology, well length, and drilling method. The EPA estimates that, nationwide, the median volume of water used in fracking is 1.5 million gallons (per well). Water use is highest in south central states, where the fracking of a single well uses 5 million gallons of water. By comparison, in the west, just 1 million gallons of water are used in each fracked well.

Recent studies estimate that, nationwide, approximately 44 billion gallons of water are used in fracking activities each year. While this may sound like a lot, it represents just 1 percent of national water use. Other sectors, particularly agriculture, account for the bulk of water use. Notably however, unlike agricultural activity which is [spread throughout the nation](#), fracking tends to occur in more [limited areas](#). In those areas, fracking may place considerable stress on water resources.

Historically, relatively little was known about the impact of fracking on individual water resources. The EPA report, however, sheds new light on this issue. The EPA analyzed water use in the fracking of 38,000 wells located in more than 400 counties across 20 states. It found that, in 26 counties, fracking operations accounted for 10 percent or more of total water use. In fact, in several counties, 30 or even 50 percent of total water use was in fracking.

With such high rates of water use, fracking operations may contribute to water shortages, particularly in areas with low water availability. A recent study by the [World Resources Institute](#) found that, nationwide, over 35 percent of shale resources are located in areas that are either arid or under high or extremely high water stress. In many of those areas, there is already significant demand for water from agricultural and other users. Increasing extraction for fracking and/or other activities may therefore lead to the depletion of water resources. This is already becoming a problem in parts of Texas.

Across Texas, 85 percent of all oil and gas wells are developed using fracking. Much of the water required for fracking comes from underground aquifers, which are also relied upon by agricultural producers and other water users. These users are, together, contributing to depletion of the aquifers. A recent [study](#) found that aquifers in the Eagle Ford shale are being overdrawn by approximately 65 billion gallons of water per year or nearly 2.5 times their recharge rate.

The EPA has also emphasized the risk of groundwater depletion. In its study published last week, the EPA concluded that “[s]outhern and western Texas are two locations where hydraulic fracturing water use, low water availability, drought, and reliance on declining groundwater has the potential to affect the quantity of drinking water resources.” Recognizing this, the question then becomes what can be done to minimize these effects? The answer may lie in the experience of other states.

The EPA found that the potential for fracking to adversely affect water resources is lower in northeast states, particularly Pennsylvania. This is due, in part, to differences in geography and climate; Pennsylvania has significantly higher rates of water availability than other states. Additionally, in Pennsylvania, there is less demand for water from fracking operators. This is because, rather than using freshwater, many operators recycle fracking wastewater. (As [previously reported](#), a portion of the water injected during fracking returns to the surface, along with water occurring naturally in the shale formation. This so-called “flowback fluid” can be reused, either by blending it with freshwater or treating it to remove impurities).

It is estimated that 18 percent of all water used in fracking in Pennsylvania is recycled flowback fluid. In contrast, recycled flowback fluid makes up just 5 percent of the water used in Texas. Fracking operators in Texas have little reason to recycle flowback fluid as it can be easily disposed of in underground injection or disposal wells. The [Texas Railroad Commission](#) estimates that there are 35,000 active injection and disposal wells in Texas. By comparison, in Pennsylvania, there are just 7 such wells.

Due to the lack of injection wells, fracking operators in Pennsylvania have been forced to truck flowback fluid to neighboring states for disposal. Faced with the high cost of trucking, some operators have elected to recycle and reuse flowback fluid in their operations. This has reduced the amount of freshwater required by operators, helping to ease pressure on water resources.

Limiting underground disposal of flowback fluid could have similar benefits in Texas. Recognizing this, policy-makers have proposed various limits in recent years. As an example, a bill introduced in the 83<sup>rd</sup> legislative session would have prohibited the underground disposal of any flowback fluid capable of being recycled and reused. Another bill, also introduced in the 83<sup>rd</sup> legislative session, would have imposed a fee on disposal. Unfortunately however, neither bill passed. Perhaps it is time they were given a second look.

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