

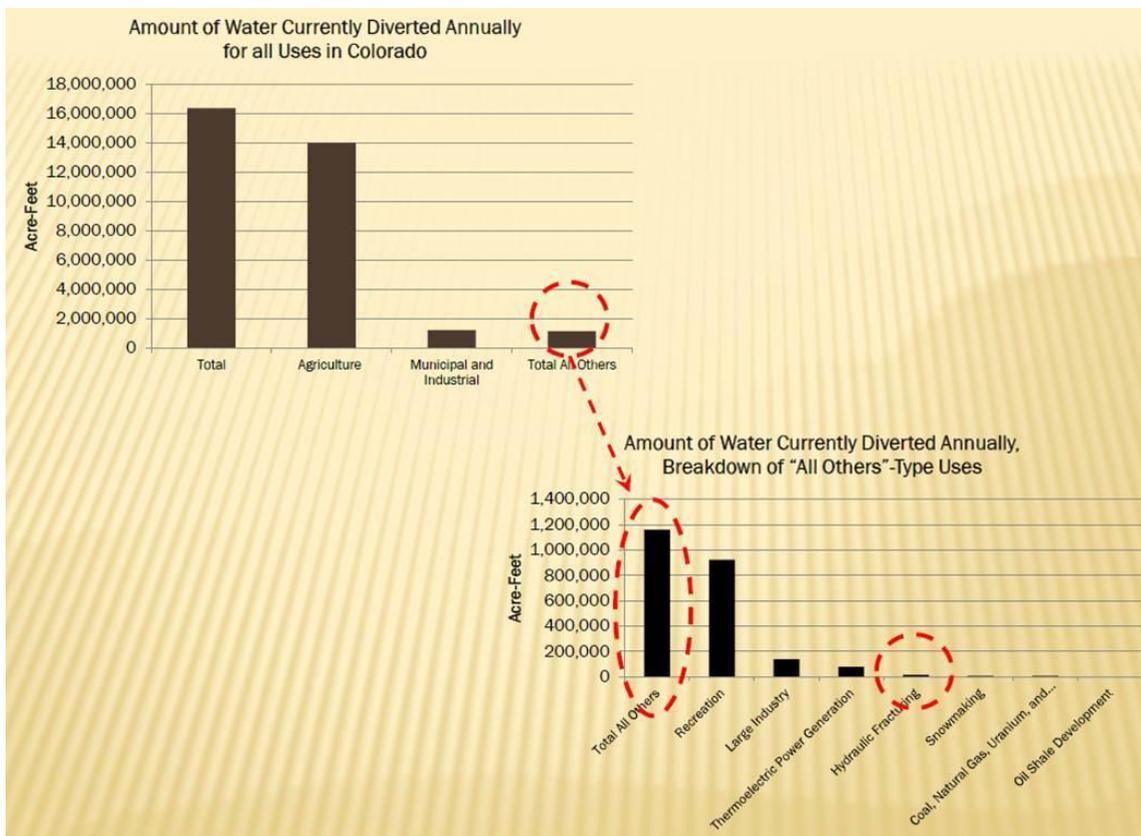
Water Quantity [1]



Oil and natural gas operations consume a small amount of total water use. According to the [U.S. Geological Survey](#) [2], the entire mining sector, which includes coal, minerals, gravel, and oil and natural gas, represents less than 1% of total water use nationally. This is remarkably low when compared to other economic sectors. For example, thermoelectric power plants accounted for 45% of total U.S. water use and irrigation used 33%. Across the West, oil and natural gas water consumes a very small proportion of overall water use. See our [Western Water Study](#) [3] for more information.

In addition to low overall water consumption, oil and natural gas production leads to lower [water consumption](#) [4] in other industries. As the U.S. has increased natural gas electricity generation, water consumption by the power sector has declined significantly. Between 2005 and 2012, water use for power plant cooling fell by 36%.

Water used for drilling is a very small fraction of overall water use, but fracking may require up to five million gallons of water per well. While this may seem like a lot of water, it must be put in the proper context of other water uses. Oil and natural gas operations consume well under one percent of total water usage. For example, only 0.08% of water use in [Colorado](#) [5] is used for fracking.



Source: [Colorado Division of Water Resources](#) [5]

Oil and natural gas companies are continuously developing ways to recycle and reuse water. Many operators reuse water that returns to the surface after fracking, called flowback water, or produced water to fracture new wells. Companies are

also developing ways to frack with less or even no fresh water, such as by using air, nitrogen or propane. Recycling and reusing water also cuts out water hauling truck trips, reduces air quality impacts, and conserves freshwater. For more information on the ways companies are reducing water use, see our [Source Rock Blog](#) [6].

Feature content:

No

Quick Facts:

- Increased natural gas electricity generation has resulted in a [36% decrease](#) [4] in the water used by the power sector for plant cooling. Since power plants use 45% of total U.S. water, this represents a significant water savings thanks to natural gas.
- Fracking uses large volumes of water, but it saves far more elsewhere in the water system. Replacing coal steam turbine plants with natural gas combined cycle plants achieves water savings that are [25–50 times greater](#) [7] than the amount of water used for fracking.
- Industry is constantly looking for ways to reduce freshwater use, including increased water recycling and [waterless fracking alternatives](#) [8] like foams, nitrogen, and carbon dioxide.

Related Content:

[Government Accountability Office Assessment of Water in the Energy Sector](#) [9]

[State of Colorado Hydraulic Fracturing Water Demand Study](#) [5]

[NETL Modern Shale Gas Development in the U.S.](#) [10]

[Water Footprint of Hydraulic Fracturing](#) [11]

Source URL: <https://www.westernenergyalliance.org/knowledge-center/water/water-quantity>

Links:

[1] <https://www.westernenergyalliance.org/knowledge-center/water/water-quantity>

[2] <http://pubs.usgs.gov/circ/1405/pdf/circ1405.pdf>

[3] <http://www.westernenergyalliance.org/sites/default/files/WesternWaterUseStudy.pdf>

[4] <http://www.climatecentral.org/news/water-use-declines-as-natural-gas-grows-19162>

[5]

<http://water.state.co.us/DWRIPub/CGWC%20Meetings%20and%20Process%20Documents/Oil%20and%20Gas%20Water%20Sources%20Fact%20Sheet%20-%20Final.pdf>

[6] <http://www.westernenergyalliance.org/blog/collaboration-water-lifecycle-management>

[7] <http://iopscience.iop.org/article/10.1088/1748-9326/8/4/045033/meta;jsessionid=E5AFB33CD23BA6440210F35382574A96.c4.iopscience.cld.iop.org>

[8] <http://www.netl.doe.gov/File%20Library/Research/Oil-Gas/Natural%20Gas/shale%20gas/09122-02-final-report.pdf>

[9] <http://www.gao.gov/assets/680/671913.pdf>

[10] <https://www.netl.doe.gov/File%20Library/Research/Oil-Gas/shale-gas-primer-update-2013.pdf>

[11] <http://pubs.acs.org/doi/pdf/10.1021/acs.estlett.5b00211>