



## Trends and Values for Hydraulic Fracturing for Unconventional Plays Compared to Haynesville

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### ABSTRACT

In the last 20 years, directional drilling and hydraulic fracturing (HF) been improved so as to have a major impact on oil and gas field development. The result is wells with horizontal laterals and pay zones of a mile or two compared to 100s of feet for vertical wells. The resulting volumes of water used have increased tremendously. For example, the average water used for a single Haynesville shale in Louisiana in 2018 was approximately 20 million gallons (20 MG). The question are the values and trends for HF the Haynesville similar to other major unconventional plays?

This study's analysis on FracFocus data included approximately 120,000 hydraulic fracturing jobs primarily between 2012 and 2018 throughout the United States. Between 2013 and 2018 were base fluid was noted water was used for over 99.6% of HFs and other non-water fluids were used for 14% of HFs.

Past studies have noted that there has been a general increase in water used for HF in the United States. For this study, the median volume used for fracturing a well in the United States has increased by approximately 350% between 2012 and 2018, while share of wells fractured with 10 MG or 20 MG has increased, 1.55% to 50.5% and 0.12% to 13.9% respectively.

Usually past studies considered HF for single fields. This study noted increases of average water use for 18 of 19 shales between 2012 and 2018, and tripled for 9 shales. Haynesville is 10 th among fields with increase of water volume of approximately 200%. Largest rates of increase were for fields in semi-arid and arid areas in Colorado, southwest Texas, Utah, and Wyoming. Average volumes of water use for re-HF a well increase by 100% for the Haynesville. Results are similar for the Bakken, Eagle Ford and Wolf-bone Shale.