

ENVIRONMENTAL BENEFITS OF HYDRAULIC FRACTURING AND HORIZONTAL DRILLING



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While the combination of hydraulic fracturing and horizontal drilling are best known for helping make the U.S. the world's largest producer of oil and natural gas and delivering significant economic benefits to the U.S. economy, the innovative combination has delivered significant environmental benefits as well. Hydraulic fracturing, commonly known as fracking, has long been recognized as an advanced completion and stimulation technology capable of increased resource recovery and reduced waste. Furthermore, horizontal drilling allows producers to drill multiple wells from a single well pad site, reducing surface disturbance and minimizing impacts on species and landscapes.

BACKGROUND:

As early as 1999, the Department of Energy (DOE) recognized the environmental benefits provided by fracturing. In its report titled *Environmental Benefits of Advanced Oil and Gas Exploration and Production Technology*, hydraulic fracturing was identified as an advanced completion and stimulation technology. DOE recognized environmental benefits to include: increased recovery, lower waste volumes, fewer wells drilled (more resource contacted and ability to drill multiple wells from a single well pad), protection of ground water resources and less surface disturbance.

Today, operators can do even more with less. Conventional vertical drilling requires many wells spaced out over a wide area to effectively produce oil or gas. In horizontal drilling, however, up to 20 wells can be built on a single well pad.

Each unconventional well is drilled down to the natural gas and oil-bearing rock, up to a mile or more below the surface, and then gradually turns horizontal, moving laterally along the formation for thousands of feet. This exposes far more of the targeted rock per well than vertical drilling, permitting much higher levels of production. The advantage is multiplied as different wells can originate from the same well pad, each branching out horizontally in different directions below the surface.¹ Consolidating wells onto one pad site results in as much as a 90 percent reduction in overall surface presence. In addition, this allows companies to reduce the number of access roads and pipelines needed to service dozens of wells, further lowering the operation's footprint.²

The entire process of setting up a hydraulic fracturing/horizontal drilling operation takes approximately four to eight weeks, from preparing the site for development to beginning production. Once the drilling activities are done and the wells are flowing (for perhaps 20 to 40 years, depending on the formation), all the heavy equipment is removed. The land around the site pad is restored to its original use, and all that remains on the pad are valves, flow lines and storage tanks.

FURTHER READING:

A June 2016 report from the Western Energy Alliance and the Petroleum Association of Wyoming titled, *Gaining Ground*, shows how technological advances in drilling techniques and operations have dramatically lowered surface disturbance, which reduces impacts on wildlife and minimizes habitat fragmentation.³

REFERENCES:

1. Pad Drilling: Innovation in the Oil and Gas Industry (May 29, 2014) <https://www.visualcapitalist.com/pad-drilling-innovation-in-the-oil-and-gas-industry-infographic>
2. Benefits of Oil and Natural Gas (June 30, 2019) <https://www.xtoenergy.com/energy-and-environment/unconventional-resource-development/benefits-of-natural-gas-and-oil#:~:text=The%20result%20has%20been%20increased,energy%20security%20for%20the%20nation.>
3. https://www.westernenergyalliance.org/uploads/1/3/1/2/131273598/gaining_ground_final.pdf.

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