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Refracturing may not be all it's cracked up to be

Restimulating oil and gas wells that have been fracked will be worthwhile in some cases, but not all.

[David Kramer](#)



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Physics Today **70**, 11, 27 (2017); <https://doi.org/10.1063/PT.3.3761>

Hydrofracturing, or fracking, has been extremely effective in unlocking natural gas and oil from shale and other low-permeability rock formations in the US. So it might seem intuitive that refracturing the tens of thousands of existing fracked wells could unleash a second boom at comparatively low cost and without the environmental effects of drilling new wells. Experts say it's not so simple.

A recent analysis by Richard Middleton and colleagues at Los Alamos National Laboratory (LANL) of 20 000 shale gas wells in Texas concluded that refracturing previously fracked horizontal wells “has profound implications in the potential revitalization of the hundreds of thousands of shale gas wells across the United States.” Refracturing the wells could turn them into higher-producing assets, said the study, published in the online journal *Applied Energy* in May.

The combination of horizontally drilled wells and fracking with large volumes of fluid has resulted in a dramatic increase in US gas and oil production since the turn of the century (see the articles by Donald Turcotte, Eldridge Moores, and John Rundle, *Physics Today*, [August 2014, page 34](#), and by Michael Marder, Tadeusz Patzek, and Scott Tinker, *Physics Today*, [July 2016, page 46](#)). Separately, many conventional vertical oil and gas wells are fracked at lower pressures and with smaller volumes of water to stimulate continued production. Most horizontal wells run 1 km or more through the shale reservoir. Vertical wells, by comparison, penetrate the reservoir for a far shorter distance.

According to the LANL analysis, on average just 13% of the gas from any given US shale is recovered. The potential for restimulating existing wells is therefore huge. What's more, notes Hari Viswanathan, a coauthor of the LANL paper, drillers have learned a lot in recent years about controlling the fracking process and how to create well-connected fracture networks.

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William Forrest • a month ago

This article by David Kramer promoting hydraulic fracturing extraction of fossil fuels is a travesty and an abomination in 2017. The burning of fossil fuels is threatening the future of our world through the production of the greenhouse gases carbon dioxide and methane. There is not one mention of this threat to our future in this article. There is not one mention of global warming and climate change. This article has no place in the important physics journal Physics Today. Especially troubling since it supports the denials of these risks by many politicians these days.

This article follows the similarly flawed article 'Physics, Fracking, fuel, and the Future' by Marder, Patzek and Tinker in the July 2016 issue. Evidently the editors of Physics Today approve of these dangerous and harmful articles. The editors of Physics Today should resign and new ones appointed.

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