

Fracking Impacts



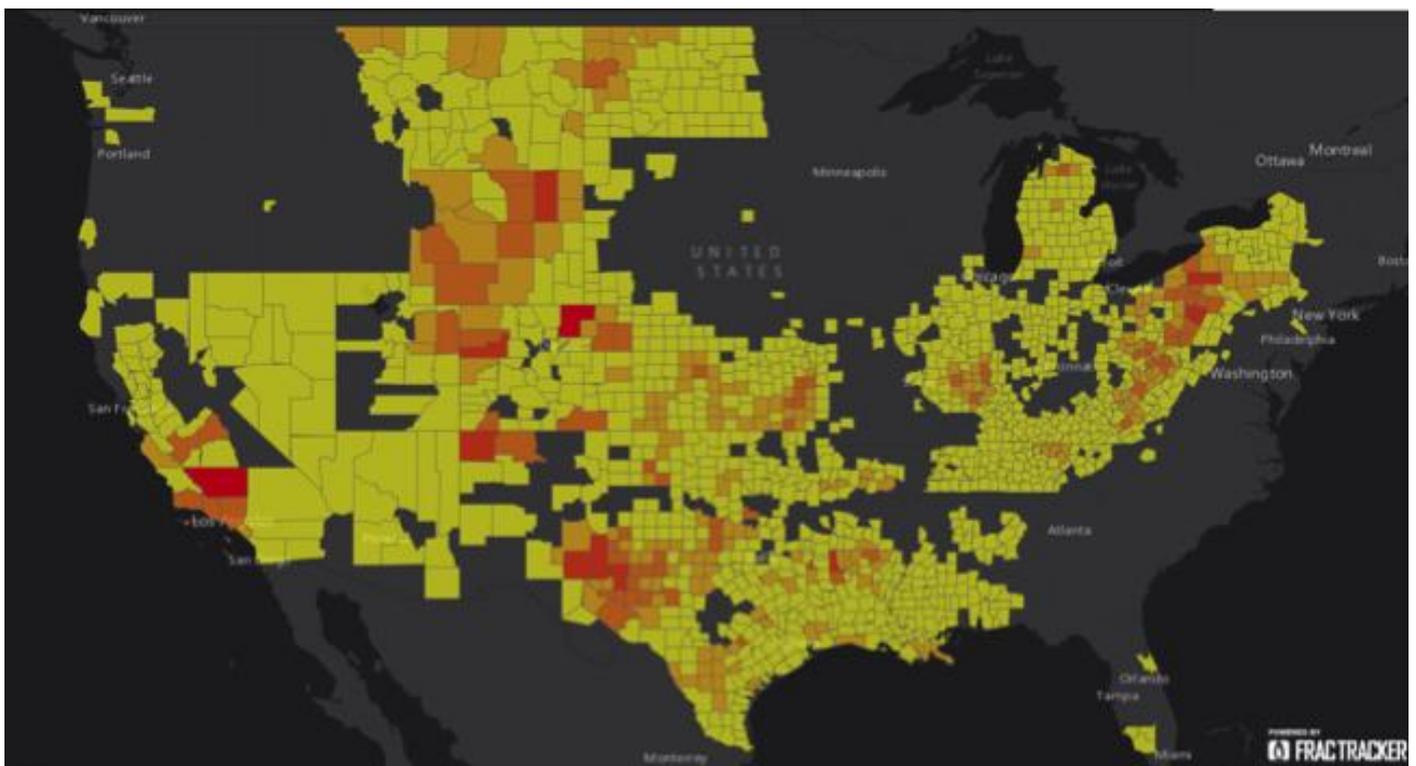
Drilling score card

- The United States has 1.7 million active oil and gas wells, many of which are being stimulated or fracked in some way.
- In just one state in the US, Pennsylvania (PA), there are now 9,341 unconventional drilling wells. Since 2005, PA has seen 5,345 violations by operators and contractors of those wells.
- Even with the best regulations on the books, this industry is inherently risky. Spills, fires, and other accidents will happen – especially where enforcement and compliance are lacking.
- Unforeseen, but serious, issues in the U.S. have included inducing earthquakes, waste disposal capacity, and worker safety.

What's at risk?

- Human health
- Aquifers and complex groundwater systems
- Agriculture
- Tourism
- Unique and fragile ecosystems, on land and offshore
- Endangered wildlife species

“Almost all casings or cement sheaths will fail at some point over the course of their lifetimes. And their lifetimes are forever.” – Anthony Ingraffea, Cornell University



Density map of active oil and gas wells in the United States by county

Focus on Climate Change



- 🌿 Rising global methane emissions, 72 times global warming potential of CO₂ over 20 years
- 🌿 Inventories understate leakage of CH₄, bottom-up monitoring is not yet established
- 🌿 Data from PA show large regional flux of **2-14 g CH₄/s/km² for 2,800 km² resulting in leak rates of 3-17%, midrange 7%**
- 🌿 **Small number of high emitters** causes the majority of leakage: **opportunity for high-impact mitigation measures**
- 🌿 Natural gas can only contribute to mitigating climate change **if leakage is kept below 3.2%** and only for electricity generation.
- 🌿 Total fossil fuel GHG emissions are comparable with or without major use of unconventional oil and gas.



Flaring at a well pad in Pennsylvania © FracTracker

Fracking will not reduce GHG emissions

- 🌿 **Fracking displaces all other energy sources**, esp. coal, but also renewables. Max. CO₂ reduction with 100% natural gas is 20%. Realistic reduction is a fraction of the above.
- 🌿 Fracking and related activities lead to severe land use change, resulting in loss of carbon sequestration potential and biodiversity.
- 🌿 Fracking entails increased road transport and thus road traffic GHG emissions.
- 🌿 Fracking diverts investments from renewables and energy efficiency. Lower natural gas prices **discourage energy efficiency** and lead to **increased energy use**.
- 🌿 Investment in fracking and natural gas leads to a **lock-in into fossil fuel infrastructure**.

Sources:

Caulton et al. (2014), Howarth (2014), McJeon et al. (2014)