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Finding the ways that work

By the numbers: Marginal oil and gas wells

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Ownership data shows that the nation's low-producing wells are overwhelmingly owned by large companies, not "mom and pops."

Cutting emissions of methane – the main component of natural gas – from oil and gas production is a commonsense step to stop the waste of a valuable energy product, protect air quality, and cost-effectively address climate change.

Marginal oil and gas well are low-production sites with average combined oil and gas production of less than 15 barrels of oil equivalent per day.[1] They are also a significant source of methane waste and pollution, according to peer-reviewed research. EDF analysis finds 7 million Americans live within a half mile of an active marginal oil or gas well.

There are over 565,000 actively producing marginal well sites in the country, representing 80% of all active U.S. oil and gas production sites. However, these sites account for a very small share of national production—just 6.2% of oil, 5.5% of gas, and 5.8% of combined oil and gas production.[2] In addition, ownership data show that these marginal sites are overwhelmingly owned by large companies.

Who really owns marginal wells?

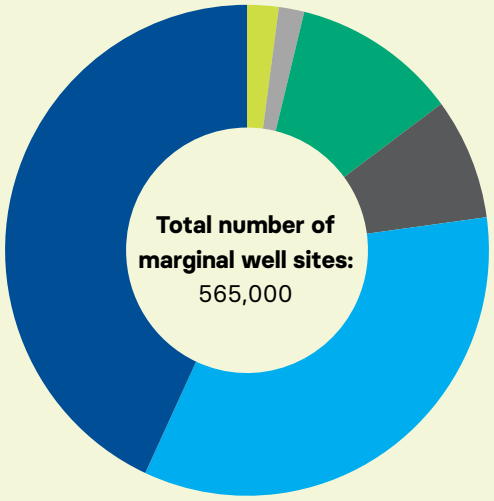
Some industry trade associations portray marginal well owners as universally small businesses or "mom and pops" who can't afford to take steps to reduce emissions, the data tells another story. The vast majority of marginal wells are owned by large companies with the resources to deploy commonsense solutions to reduce energy waste and stop pollution.

Analysis of marginal well site ownership data[3] shows that:

- Fewer than 100 very large companies, (defined as owning over 1,000 operating well sites) dominate ownership of the nation's marginal well sites. These firms control nearly half of all marginal well sites and had average gross revenues of $1.8 billion in 2019.
- More than 3/4 of marginal well sites are owned by companies with more than 100 active wells who averaged gross revenues of nearly $335 million in 2019.
- Very small companies, or those with fewer than 10 operating sites, control just 4% of marginal well sites.

Infrared footage reveals significant methane emissions from a pump jack in the Permian Basin

Figure 1: Marginal well site ownership profile.



# of owned sites per operator

- **1-5** 2.0%
- **5-10** 1.7%
- **10-50** 11%
- **50-100** 8%
- **100-1000** 34%
- **1000+** 43%

An outsized source of pollution

Although marginal well sites account for only 6% of the nation's oil and gas supply, scientific research repeatedly underscores that they are responsible for an outsized share of the industry's methane emissions. This finding is supported by several recent peer-reviewed studies focused on low-production well sites:

- For the very low production category of 0-1 boed wells that contribute just 0.2% and 0.4% of national oil and gas production, respectively, research in the Appalachian Basin estimate that wellhead[4] methane emissions account for 11% of the production-related methane emissions in the EPA's Greenhouse Gas Inventory."
- The same research observed that many marginal wells emit as much or more gas than they reported producing – in a region where natural gas is the primary product operators are aiming to sell.
- In West Virginia, researchers found that wellhead methane emissions from marginal wells were 7.5 times larger than EPA's estimate, with an average methane loss rate of 8.8% of production leaked at the wellhead.[5]
- In the Appalachian Basin, researchers reported that marginal well sites in Pennsylvania and West Virginia have methane loss rates ranging from 0.35% to 91% of their production.
- Based on a preliminary analysis of recent site-level measurements in the Permian Basin, the nation's largest oil field, nearly half of observable production site methane emissions are from marginal well sites.[6]

[1] 1 barrel of oil equivalent per day = barrels of oil produced per day + (1,000 scf of gas produced per day)/6.

[2] EDF analysis of Enverus Prism well-level data for reporting year 2019, the latest year for which complete data are available. A marginal well site may have one or multiple wells on the pad (average 1.07 wells/site, based on EDF analysis). EDF analysis includes only the actively producing well sites in onshore oil and gas basins.

[3] EDF analysis of Enverus Prism oil and gas data and operator data for 2019.

[4] This study focused on the very low production category of 0-1 boed sites and measured only methane emissions from wellheads, excluding other sources such as tanks, separators and other methane sources. The estimate is therefore conservative.

[5] This study also measured only wellhead emissions, excluding tanks and separators and other methane sources.

[6] EDF preliminary analysis of site-level methane emissions data collected as part of the PermianMAP campaign (permianmap.org).

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