

Why marginal wells matter so much in the fight against climate change



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The greenhouse gases emitted around the world are the primary drivers of global warming. Scientists agree that significantly reducing these

emissions is the only way for us to limit average global temperature rise to less than 2° Celsius, which we must do if we are to avoid the most catastrophic impacts of climate change. And these same scientists believe that reducing the atmospheric presence of one highly potent greenhouse gas in particular – [methane](#) – could yield dramatic near-term climate benefits.

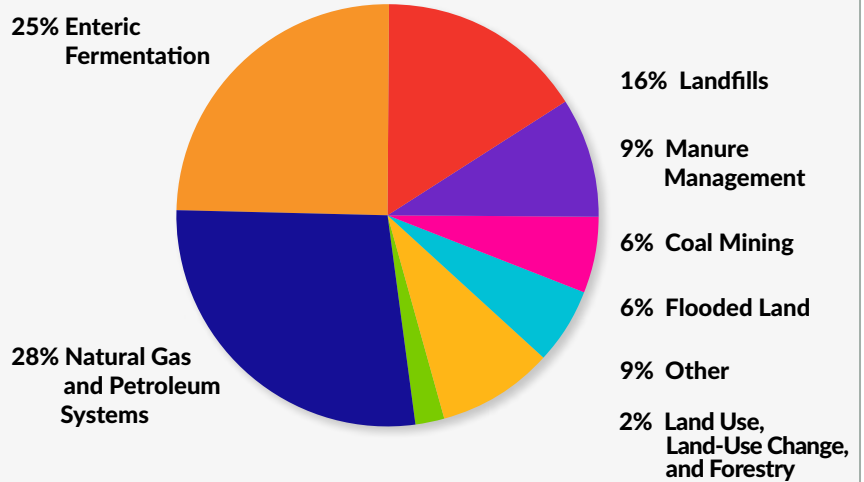
Methane is [86 times more potent](#) than carbon dioxide at trapping heat in the earth's atmosphere over a 20-year time span. Scientists and other experts therefore point to large-scale methane reduction as one of the most effective strategies to address climate change that we have at our disposal. And because nearly a quarter of the methane emissions that are a result of human activity come from [the oil and gas sector](#), it's also why they see this sector as abundant with opportunities for slashing these emissions.

Of the roughly 913,000 active wells currently producing oil and gas in the United States, more than 700,000 are [officially considered "low-producing,"](#) meaning that they generate no more than 15 barrels of oil (or oil

equivalent) per day. According to the Environmental Defense Fund, low-producing wells in the U.S. are responsible for [emitting more than 4 million metric tons](#) of methane into the atmosphere every year, at a rate that is 6 to 12 times higher than the national average for all oil and gas wells. These wells are a big reason why the oil and gas sector is currently the [second largest source](#) of U.S. methane emissions after agriculture.

But thanks to new investments, incentives and approaches for reduction, these wells also represent a strong opportunity for operators to dramatically slash methane emissions from the sector.

U.S. Methane Emissions, By Source



Note: All emission estimates are sourced from the [Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2022](#).

THE ECONOMICS OF EMISSIONS

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The average oil well has a life span of between [20 and 30 years](#), though productivity may begin to wane well before then. Eventually, however, every well reaches the end of its useful life; at that point its operator is responsible for abandoning the well, although not before plugging it (typically with concrete, and at a [significant cost](#)) such that it won't leak any hazardous substances – not just methane, but also toxic chemicals like benzene and hydrogen sulfide – into the soil, water or air. How much methane might an individual well be leaking by that point? It's not always clear: The vast majority of low-producing wells aren't connected to advanced technologies that allow for remote emissions detection and accurate, consistent data collection.

Given the costs associated with plugging and remediation, an operator might well decide that it makes more financial sense to keep an old well pumping to the point of depletion than it does to plug it near the end of its productive life. But for as long as that low-performing well remains operational or unplugged, methane may continue to escape.



IMPACTS, RISKS AND OPPORTUNITIES

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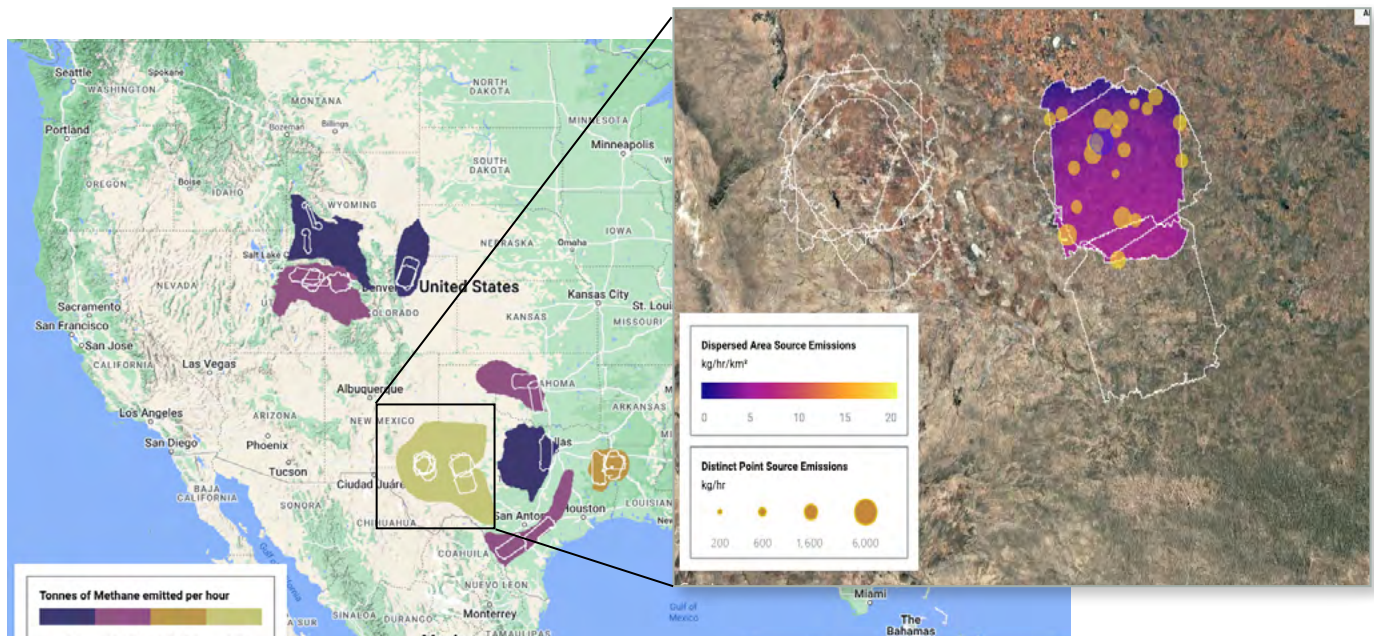
The [World Bank](#) has identified the rapid reduction of methane emissions as “probably the single most important climate action we can undertake in the short-term,” which is one reason why governments and other stakeholders have been [ramping up investment](#) in technologies for methane detection and mitigation, and why oil and gas companies are [accelerating their efforts](#) to measure, report and reduce their emissions.

The International Energy Agency has noted that fully [40 percent of methane emissions](#) in the oil and gas industry could be reduced at no net cost (using 2023 prices) using existing technologies. Operators seeking to reduce methane escaping from their facilities may want to consider availing themselves of these technologies to capture fugitive emissions, as methane that is saved is methane that can be sold: According to the [Environmental Defense Fund](#), the amount of it currently leaking out of low-producing wells in the U.S.

every year was valued at about \$700 million at 2019 prices. The necessary fixes, according to the organization, would easily “pay for themselves.”

Fortunately, the possibilities for collaboration and innovation are expanding. Under the 2022 Inflation Reduction Act, the U.S. Environmental Protection Agency and the U.S. Dept. of Energy were authorized to create and administer the [Methane Emissions Reduction Program](#) (MERP), a federal initiative dedicated to reducing methane leakage from the oil and gas sector. Already, [\\$350 million](#) has been allocated to this initiative to fund projects in 14 states that will help the operators of low-producing wells identify, monitor and eliminate methane emissions from their operations.





TECHNOLOGIES AND STRATEGIES

Against this new investment backdrop, new and improved methods for methane detection and mitigation are emerging every day, and the operators of low-producing wells have more options than ever before. In addition to sensors that can be mounted on planes or drones – or even [satellites](#) – ground-based mobile and fixed-position sensors that allow for 24-7 monitoring have evolved rapidly, and are currently available on the market. Similarly, methods for avoiding fugitive emissions that utilize technologies like [biomineralization](#) are becoming more available as solutions for energy companies of all sizes.

For energy companies, the current moment represents an opportunity. With \$350 million of federal funding to invest, states can work with them to help make low-producing wells run as cleanly as possible for the remainder of their productive lives. To maximize benefits to both the climate and their bottom lines, operators of low-producing wells should consider:

- Consulting with methane experts, engineers and insurers to identify which improvements and/or technologies are most likely to result in reduced emissions at their facilities and the reduced risk of liability and penalties. Chubb offers methane-specific [risk engineering services](#) for its energy sector clients.
- Comparing the costs of installing new methane-detecting and methane-saving technologies or procedures with the financial benefits that come with selling saved methane on the natural gas market, assuming that these emissions can successfully be captured and transferred to a sales line.
- Reaching out to state environmental regulators to explore collaboration on methane reduction measures using the \$350 million in MERP funding. (A list of state selectees, and the amount of funding each has received, can be found [here](#).)

In terms of reducing methane emissions from oil and gas operations, low-producing wells are low-hanging fruit. By taking action now, operators can realize significant benefits for themselves and for the planet.