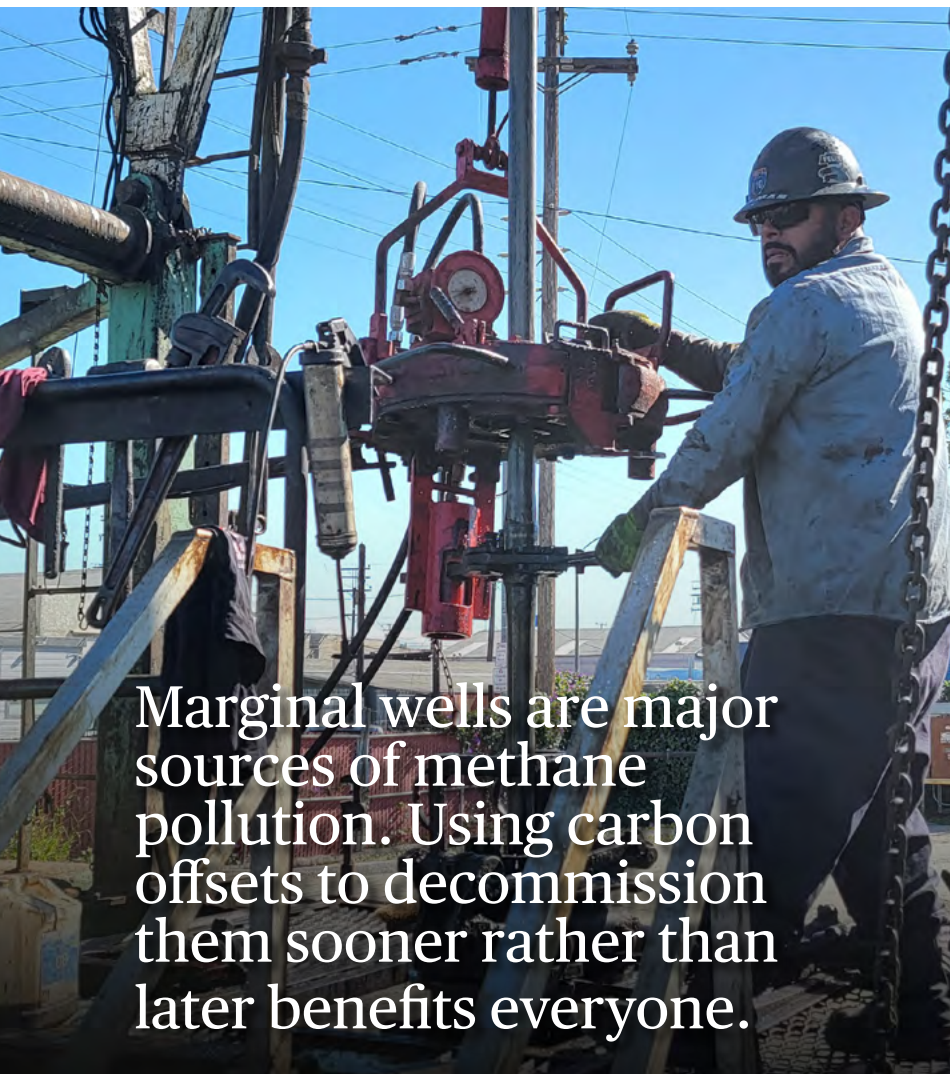


An Early Retirement Plan for Low-producing Oil and Gas Wells



Marginal wells are major sources of methane pollution. Using carbon offsets to decommission them sooner rather than later benefits everyone.

CHUBB®



Approximately 70 percent of the more than 900,000 onshore oil and gas wells in the United States are low-producing wells, also known

as marginal wells, meaning they produce equal to or less than 15 barrels of oil equivalent (or 90 thousand cubic feet of natural gas) per day. Although these wells account for only about 7 percent of U.S. oil and gas production, they are responsible for more than half of all methane emissions from the oil and gas sector. It's currently estimated that low-producing wells in the U.S., which are typically older and not profitable enough to justify robust leak detection and repair, emit more than more than 4 million metric tons of methane into the atmosphere every year.

Methane is a greenhouse gas (GHG) known to be 86 times more potent than carbon dioxide at trapping heat for the first 20 years after its release into the atmosphere. For this reason, scientists and other experts believe that reducing atmospheric methane is absolutely key to the ongoing fight against climate change. And given the demonstrable connection between marginal wells and methane pollution, many of them



also believe that permanently plugging and decommissioning these low-producing wells sooner rather than later could represent one of the quickest means of slashing methane emissions from the oil and gas sector – resulting in an immediate climate benefit.

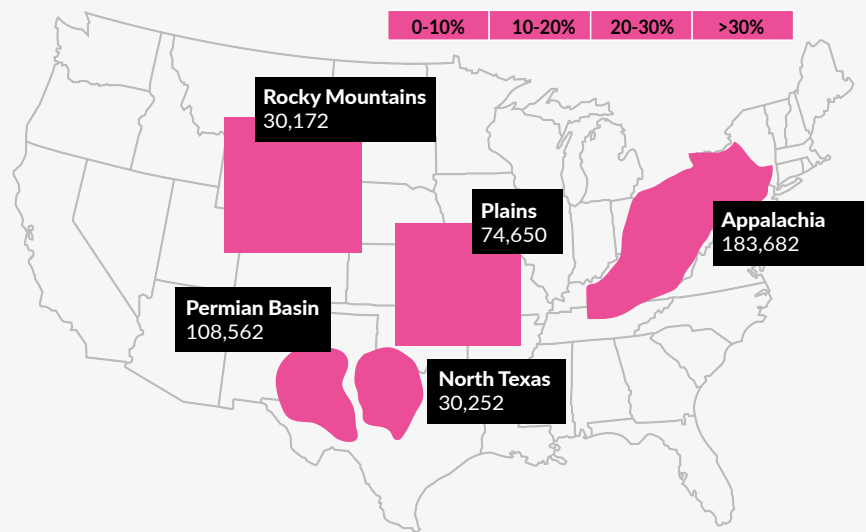
**MARGINAL WELLS:
LITTLE OIL OR GAS,
BUT LOTS OF
METHANE EMISSIONS**

The average cost of plugging a well is about \$30,000

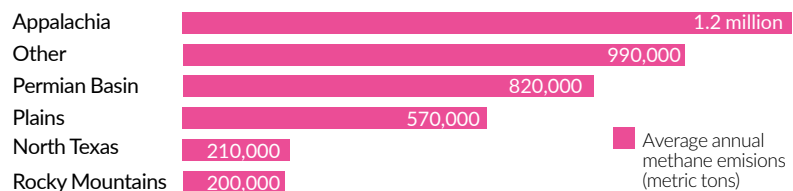
For most oil and gas wells, the majority of their yield takes place within the first 3 years. After that, production declines and levels off. Wells past the three-year mark may produce only small amounts of oil or gas for decades. Still, a well can go on producing for a period of between 20 and 30 years; many marginal wells, in fact, have been producing for more than 50 years. When a well finally stops producing, however, its operator is legally required to plug it, typically with cement. Plugging is necessary to keep a decommissioned well from releasing not only the methane that typically leaks from open wellheads, but also hazardous chemicals such as benzene and hydrogen sulfide.

Though plugging a well at the end of its productive life is something that operators are required to do by law, it doesn't come cheaply: The average cost of doing so in the U.S. is about \$30,000. For many operators, especially those who own a number of old wells that are declining in production, this expense can be a deterrent. And marginal wells are still producing, meaning operators have no legal requirement to plug them at this stage. But delaying the process can result in more methane escaping into the atmosphere as time goes on – even as these wells yield less and less in the way of oil or gas.

U.S. Regions With Highest Percentage of Low-producing Wells



Low-producing well pollution by region



Source: Environmental Defense Fund

FROM MARGINAL TO MARKETABLE: THE ROLE OF THE VOLUNTARY CARBON MARKET

Now these operators may have a new opportunity that merits investigating. Reid Calhoun is the president and founder of [ClimateWells](#), a Texas-based business that is leveraging the [voluntary carbon market](#) (VCM) to incentivize the early decommissioning of wells that, in his words, “will otherwise continue to produce only small amounts of oil or gas, even as methane emissions increase, for very long periods of time.”

Calhoun believes his ClimateWells model has significant potential not only for reducing methane emissions from the oil and gas sector, but also for helping the operators of old wells minimize or even neutralize the costs associated with plugging – as long as these operators are willing to take action early. This is a compelling idea for some operators, since plugging costs can prove financially ruinous for a smaller company with multiple wells to decommission. “Eventually, the last company to own the wells – which may have only five or six people – can’t afford the liability they’ve come to bear,” he says. “They’ve got to write a check for \$50,000 a well, but they can’t do that. And so they decide to file for bankruptcy.”

When that happens, Calhoun adds, “those wells become wards of the state.” The nationwide problem of these orphaned wells, as they have come to be known, is [well documented](#). Officially there are about 130,000 of them spread out across the country, but most experts and analysts believe the actual number is more than five times higher than that – probably closer to 750,000.

ClimateWells was born out of a question that Calhoun, whose background in the oil and gas sector stretches back more than a dozen years, kept asking himself as he observed a familiar pattern:

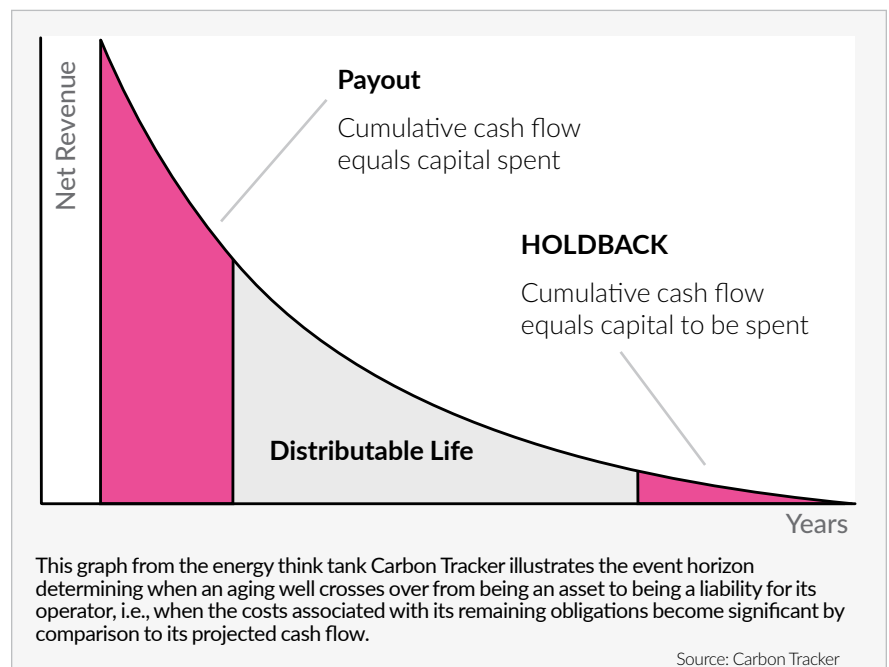
wells changing hands multiple times as they neared the end of their economic viability, almost always being sold by a larger operator to a smaller one who would then end up with an asset yielding little in the way of oil or gas but plenty in the way of methane, liability and financial risk. “We wanted to know: How do we incentivize an operator to plug a well earlier, so that we’re not only cutting off the emissions for the rest of that well’s life, but also preventing it from becoming an orphan and a burden on taxpayers?”

In the VCM, carbon offset credits are created and issued upon the successful and verified completion of emissions-reduction projects. These offsets can then be purchased by companies or organizations that are trying to meet their GHG emissions targets, with each purchasable offset representing the removal of one metric ton of carbon dioxide or its GHG equivalent.

The ClimateWells model works by finding operators who are willing to

decommission their wells earlier in exchange for a financial incentive, generating carbon credits that can be attributed to the emissions reduced through the projects and supplying these credits to businesses seeking to purchase offsets. In targeting new projects, Calhoun says, “we look for wells that have the lowest amount of economic value but cause the highest amount of environmental harm. Unfortunately, there are hundreds of thousands of wells that fit in that category.”

The model has benefits for multiple stakeholders. Operators who are willing to give up future production can obtain the necessary financing to cover plugging costs. State governments and their taxpayers are spared the expense of dealing with yet another orphaned well. By purchasing the carbon-offsetting credits generated by the project, organizations move that much closer to their climate goals and – should the project be tied in any way to their local community – garner public trust and goodwill. And because it takes a concerted effort by engineers, truckers, welders, cement workers and others to plug wells, communities benefit from local job creation, as well as the measurable reduction in local pollution.



CASE STUDY: LOS ANGELES, CA



The Wilmington neighborhood in Los Angeles, CA, is home to the [third-largest oil field](#) in the United States in terms of cumulative oil production. It also happens to have some of the [highest rates of asthma and cancer](#) in the state. ClimateWells recently [partnered with](#) an operator in the Wilmington area who was willing to expedite the shutdown of seven wells over three different sites, some of them located just a few hundred feet from schools and hospitals in this largely Latino community of roughly 60,000. Without intervention, these wells would not have been required to shut down for decades.

The project created new local jobs as workers set about plugging the wells and shutting down their associated infrastructure over a six-month period. Pollution in Wilmington, which is among the [most polluted areas](#) in Los Angeles County, was reduced as a result. And for its part, the corporate purchaser of the generated offsets got more than carbon credits: They also got the assurance that they were making a difference in their community.

“As a buyer of credits, you’re often buying an esoteric representation of

something that already happened, that you had no control over and that probably would have happened whether you bought that credit or someone else did,” Calhoon says. “Being able to say ‘This literally will not happen unless you finance it’ provides a new layer of impact and control for the purchaser. They may also be building goodwill in the areas where their employees and customers live. In the long term, we think that rises to the top of demand for credits.”



MEASURING ACTION AND ASSESSING IMPACTS

According to the [International Carbon Registry](#), decommissioning and plugging all of the marginal wells in the U.S. would address more than half of the country’s onshore oilfield methane emissions – as much as 7 billion metric tons of CO² equivalent over 10 years. And while that threshold is unlikely to be reached anytime soon, the organization emphasizes that any level of remediation in the near term is likely to result in “immediate positive environmental impacts on the quality of water, air, climate, and human ecosystem health with the added societal benefits such as the wellbeing of nearby communities, jobs creation and economic stimulation.”

As the idea of using carbon offsets to spur methane abatement in the oil and gas sector gains more currency, other U.S.

companies are emerging to create a burgeoning field. One of them, [Zefiro](#), develops projects for plugging orphaned wells and then generates and sells its own carbon offset credits based on those projects after a methodologically rigorous process of evaluation and certification by independent [carbon offset registries](#). These registries develop the standards and protocols that determine project creditworthiness, manage the activity of credits in the marketplace and oversee the legal and financial details surrounding credit purchases and retirements – all with full public transparency. Some of the more established and well-known registries operating today include the [American](#)

[Carbon Registry](#), the [Gold Standard Impact Registry](#) and [Verra](#).

Any business considering the purchase of carbon offsets will want to be sure that they can trust in the quality of what they're buying – that each offset actually reflects a real-world reduction of one metric ton of carbon or its equivalent from the atmosphere. Some corners of the VCM, which isn't regulated in the same rigorous manner as other financial markets, have recently come under scrutiny after reports of lax auditing practices resulting in offsets that [haven't truly delivered](#) on their promised reductions.

Companies that purchase credits from ClimateWells only receive an offset credit once the plugging and remediation of a well (or wells) have been completed and independently verified in a transparent process that includes the use of a rigidly structured [emissions quantification tool](#) developed by [RMI](#), a highly regarded independent environmental nonprofit with an international profile. ClimateWells' Wilmington project received an ["A" rating](#) from BeZero, the global carbon credit ratings agency. This distinguishes it as a top-rated energy-sector carbon credit project and places it in the top five percent of the more than 500 projects that the firm has rated so far.

AN APPROACH WORTH EXPLORING

Mobilizing carbon finance to incentivize the early decommissioning of wells, as ClimateWells does, has benefits for a variety of stakeholders: well operators, the companies that purchase generated carbon offsets, communities, states and (of course) the planet. Oil and gas companies should evaluate the current productivity and long-term profitability of their older wells and investigate whether retiring them earlier with VCM-based financing makes sense for their businesses. Between its multiple lines of [energy insurance](#) and its unsurpassed expertise in helping energy clients develop risk management strategies, including [methane reduction](#), Chubb is a valuable partner for oil and gas companies of all sizes that seek to mitigate their financial risks and ensure their continued business health.

