

Abandoned and Dangerous: The Orphaned Wells Pollution Crisis

Fossil fuel companies have left behind a legacy of inactive oil and gas wells. Scattered across the country, these abandoned, often unplugged wells pose a threat to our climate and public health. The systems in place to manage this growing threat have proven to be woefully inadequate, but opportunities exist to address the crisis. A just transition plan to plug orphaned wells can help support displaced fossil fuel workers, reduce climate-destroying emissions and protect the public from the dangers that these emissions pose.

Orphaned wells 101

When oil and gas wells reach the end of production, they must be plugged and the sites reclaimed. In a functioning system, operators are expected to clean up the mess they have left behind or to provide upfront financial assurances (such as bonds) to cover the cost of cleanup. The reality, however, is far from adequate and leaves room for oil and gas companies to leave behind “orphaned wells.” Orphaned wells are inactive and unplugged wells with unknown or insolvent operators. The burden often falls on government agencies — the public — to clean them up.¹

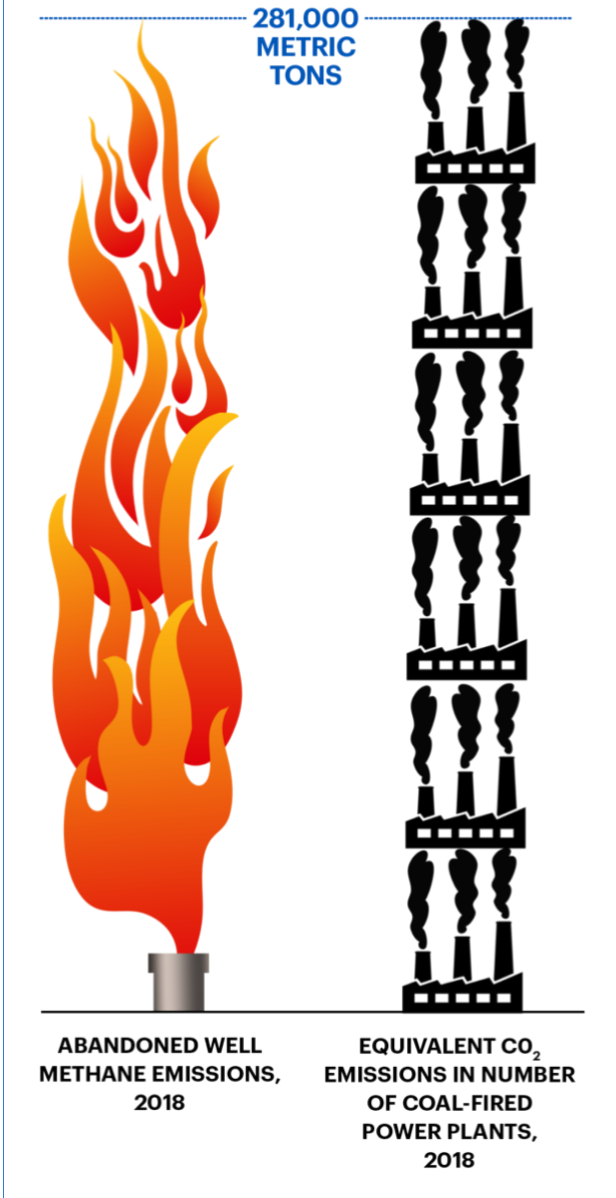
Estimates for the number of orphaned wells vary due in part to poor record-keeping of old historic wells.² The U.S. Environmental Protection Agency (EPA) estimates that there are more than 3.2 million abandoned wells in the United States — although “abandoned” includes both orphaned wells and plugged/unplugged inactive wells with known operators.³ The Interstate Oil & Gas Compact Commission (IOGCC) surveyed state agencies and identified more than 92,000 orphan wells littered across the country, in addition to an estimated 310,000 to 800,000 undocumented orphan wells.⁴ FracTracker and the National Parks Conservation Association put the estimate at more than 214,000 orphaned wells.⁵

Orphaned and Abandoned wells threaten our climate, water and health

Although the exact number of orphaned wells is uncertain, there is mounting evidence of their environmental harm. They leak methane, a climate-destroying greenhouse gas that is far more potent than carbon dioxide (CO₂).^a According to EPA estimates, abandoned oil and gas wells in the United States emitted 281,000 metric tons of methane in 2018, the CO₂ equivalent of six coal-fired power plants (see Figure 1 on page 2).⁶ A study of abandoned wells in Pennsylvania

^a The EPA estimates that only one-third of all abandoned wells in the United States are plugged.

FIG. 1: Abandoned Oil and Gas Well Leaked Methane Emissions Compared to Equivalent Coal Plant CO₂ Emissions



estimated that their methane leaks accounted for 5 to 8 percent of the state’s human-caused methane emissions.⁷ Despite the documented threat that these wells pose to the environment, there are no federal requirements to track methane emissions from inactive wells, and little progress has been made to plug the millions of legacy wells left behind.⁸

Wells can leak toxic gases when their aging steel and cement lining wells corrode. Disturbingly, some orphaned wells are insufficiently “plugged” with nothing more than rocks or plywood.⁹ Contaminants such as benzene can also leak into the groundwater, polluting drinking water sources in areas littered with old wells, including ranches and tribal lands.¹⁰

The impacts from orphaned wells are not limited to rural areas. Orphaned wells are hidden threats buried under residential neighborhoods and cities — under office buildings, parking lots and malls. More than 1,000 orphaned wells are sprinkled across Los Angeles, California alone.¹¹ In Colorado, a methane leak in a home basement sparked an explosion that killed two people; the neighborhood was developed on improperly abandoned oil and gas infrastructure.¹² Elevated benzene and carbon dioxide levels shuttered a Wyoming school near an abandoned well for over a year after students and teachers

reported headaches.¹³ Abandoned offshore wells also cause harm; in Santa Barbara County, California, century-old oil wells are leaking oil into the ocean that seeps onto beaches.¹⁴

Orphaned well cleanup is a financial mess

Without an accountable party, governments are often left to manage and clean up orphaned wells. States are struggling to keep up with the costs and volumes of orphaned wells, and poor record-keeping makes it difficult to locate wells and to budget for cleanup. Pennsylvania, for example, has just enough money to plug a dozen or so wells a year. At this rate, it would take the state more than 17,000 years to plug them all. In California, after a company went bankrupt and

was absolved of its financial responsibility to clean up its mess, the city and school district coughed up \$11 million each to plug 19 wells abandoned at a high school.¹⁵ This burden should not fall on taxpayers; however, the systems that are in place to hold industry accountable are falling short.

Financial assurance requirements are insufficient

Prior to drilling, operators provide financial assurance that there will be money to plug a well if the operator fails to do so itself. Requirements and values vary by state, but this assurance is typically offered for either single wells or blanket coverage (covering multiple wells). Actual costs for plugging wells and reclaiming sites depends on several factors such as well depth, and is substantially higher for fracked wells. Unfortunately, bond values are often woefully inadequate.¹⁶

In California, for example, individual bonds start at \$25,000, while the average plugging cost is estimated at \$68,000 and could run as high as \$391,000. Blanket bonds further reduce the available amount to less than \$300 per well. Currently, California's available bonds are half a billion dollars short of the price tag for plugging the state's 5,500 wells that are likely orphaned or at risk of becoming so.¹⁷

In Pennsylvania, the cleanup of just three fracked wells in 2008 cost \$2.9 million (adjusted for inflation). However, individual and blanket bonds for fracked wells start at a mere \$10,000 and \$600,000, respectively.¹⁸ When bond values fall short, the burden for plugging orphaned wells falls on state governments. Wyoming spent \$11 million plugging orphan wells between 1997 and 2014, with most of the cost coming from the state's conservation tax fund.¹⁹

The U.S. Bureau of Land Management (BLM) is responsible for overseeing the nearly 100,000 wells on federal land. The BLM collects bonds for leases (as opposed to wells). Individual lease bonds start at \$10,000, but operators can opt for a statewide bond (\$25,000) or a nationwide bond (\$150,000).²⁰ These bonds have not been adjusted since the 1950s and 1960s (not even for inflation) and do not account for the location, depth or even number of wells per lease. For instance, one single BLM bond covered nearly 6,700 wells.²¹

Poor bonding mechanisms led the U.S. Government Accountability Office to conclude that "bonds are not sufficient to prevent orphaned wells in part because they do not reflect full reclamation costs for the wells they cover." In 2018, the average BLM bond value per well was just \$2,122, although the cost of reclaiming a well ranges from \$20,000 to \$145,000. Operators are left with no incentive to clean up their mess — it is cheaper to leave wells unplugged than to restore the site and collect the bond.²²

A robust orphaned well program can be part of a just transition

Eliminating fossil fuel emissions is critical to stabilizing our climate. An orphaned well program will not only reduce emissions from inactive wells but also provide jobs for oil and gas workers

displaced by a fossil fuel phaseout. The Bipartisan Infrastructure Package signed by President Biden in November 2021 allocated \$21 billion for cleaning up legacy pollution. This includes capping tens of thousands of abandoned wells, in addition to reclaiming mined land and cleaning up Superfund and brownfield sites. The Infrastructure Package promises to create good, union jobs and to address environmental injustice.²³ This is an important step in the right direction but underestimates the investment needed to tackle legacy pollution from orphaned wells.

In 2020, the oil and gas industry employed 541,000 people nationally — less than 0.4 percent of all jobs in the United States.²⁴ The necessary shift away from fossil fuels will disproportionately harm these workers as well as their communities, with falling incomes undercutting local funding for schools and other social services.

A genuine just transition program would provide wage insurance to ensure that transitioning workers maintain their incomes and benefits; protect and shore up the pensions of fossil fuel workers; provide job training and re-skilling, educational opportunities and relocation assistance; and invest in communities to develop new industries to replace lost fossil fuel extraction or generation jobs.²⁵ These programs must fully compensate workers and their families for the loss of their livelihoods, prevent fossil fuel workers from bearing the brunt of the costs of decarbonizing the economy and provide a pathway to comparable, meaningful work for younger workers or a bridge for older workers to reach retirement and safeguard their pensions.²⁶

Conclusion and Recommendations

A plan to clean up orphaned wells is a critical component of meaningful climate action and provides opportunities for oil and gas workers impacted by the transition away from fossil fuels.

Food & Water Watch recommends:

- An immediate national ban on fracking.
- An orphaned well program that supports a just transition for displaced oil and gas workers.
- Increased bond requirements to cover the full cost of plugging and restoring oil and gas wells.
- A one-time fee on oil and gas revenue to pay costs associated with locating, plugging and restoring orphaned well sites and repairing inadequately plugged and abandoned wells.

Endnotes

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- 18 Lee (2020); Lee (2019).
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- 23 The White House. [Press release]. "The Bipartisan Infrastructure Law advances environmental justice." November 16, 2021.
- 24 FWW analysis of U.S. Department of Labor. Bureau of Labor Statistics. Quarterly Census of Employment & Wages. Annual Employment by North American Industry Classification System (NAICS) Sector. Accessed June 2021. FWW created a model using a definition that encompasses only jobs directly involved with domestic oil and gas production, specifically: oil and gas extraction; support activities for oil and gas operations; drilling oil and gas wells; oil and gas pipeline construction; and pipeline transportation. Employment changes in these sectors track much more closely to the advent of fracking than broader models used in industry estimates. For example, gas station jobs (including those with convenience stores) accounted for about half of the direct jobs in industry studies, but employment in this sector predictably has almost no relationship to domestic oil production. See: FWW. "Phantom Jobs: Fracking Job Creation Numbers Don't Add Up." March 20, 2020.
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