

Issue: Old Wells, New Jobs

Plugging Old Oil and Gas Wells Puts People to Work

Introduction

Take a walk in Pennsylvania's Allegheny National Forest and you might find pieces of old oil and gas pipelines poking out of the ground or smell something unnatural mixed in with the fresh forest air. Inherit a home on farmland and you may find unidentified old rusty tanks or pumps out in a field.

These old relics from past oil and gas operations pose serious risks when they allow methane and other gasses to leak into the air, harming the environment and exacerbating climate change; when stray liquids pollute streams or water wells; or in the extreme, when odorless, flammable gases ignite and explode.

(For more on the seriousness of the climate change consequences of leaking methane, see the Local Majority paper titled "[It's a Win: Good Jobs and Cleaner Air.](#)")

A Pennsylvanian's story

Charlie Brethauer smelled gas in his backyard in Richland Township, just north of Pittsburgh. Thinking it might be related to a gas line to his garage, he took a shovel and began to dig—an action not recommended. Anyone who smells gas should clear the area and alert the local gas company and all Pennsylvanians should call 811 before digging a hole, anywhere, to find out whether there are any known gas lines beneath their feet. Charlie found a buried underground bucket, covering a steel pipe, which turned out to extend 1,800 feet downward to an abandoned gas well. Upon finding out how unlikely it would be to get the DEP to help remediate the situation, given funding shortfalls, he turned to the Commonwealth Financing Authority, which has grants available from oil and gas impact fees. Even though the fumes originated just 20 feet from his home and presented a real risk of igniting, it took two years for Charlie to receive funding. Ultimately, extracting all the cables and casings and filling the well with cement took a contractor three weeks to complete at a cost of \$126,000.¹

Scope of the problem

Pennsylvania has about 110,000 conventional wells, some over 100 years old, and about 12,000 unconventional—shale natural gas—wells registered as active with the Department of Environmental Protection (DEP) and assumed to be productive.² In today's low-price market, some of these wells may have been shut down and not yet registered as inactive.

In addition to the productive wells, there are an estimated 200,000 abandoned or orphaned oil and gas wells—meaning they are inactive, have not been properly decommissioned or plugged with cement, and may have no known owner.³ Approximately 8,000 of these have a pinpointed location and are registered with the DEP. The rest are in fields or forests, scattered across the state. Abandoned wells, tanks and lines have even been found under homes and schools, and discovered hundreds of feet underground.^{4,5}

The 2015-2019 low-price market for oil and natural gas drove a number of companies into bankruptcy in 2019 and the even lower prices and demand in 2020 threaten more bankruptcies.^{6,7} This could compound the number of orphan wells.

Costs to clean up and plug wells

The cost of plugging an abandoned well depends on the depth, location and complication of removing the well bores but will generally cost from \$20,000 to \$145,000, according to the U.S. Government Accountability Office.⁸

So, if you multiply the 200,000 orphaned wells by any reasonable average cost, the total reaches into billions of dollars.

Current bonding regulations

Since the 1980's, companies drilling wells have been required to post bonds designed to incentivize well owners to decommission and cleanup well sites as they were shut down. However, the bond amounts cover only a fraction of the true end-of-life costs.^{9,10}

Charlie Munger, a famous businessman, said "Show me the incentive and I will show you the outcome." As it now stands, most companies forfeit the bonds and abandon their responsibility for end-of-life well costs, leaving the government and taxpayers to pay the costs of remediation and removal.

Here is what this process often looks like. In the boom and bust cycle of oil and gas, when prices rise, more wells get drilled, which is when companies post bonds. At some point, production exceeds demand and prices begin to fall. As wells, particularly unconventional shale wells, lose productivity and experience lower yields, they are often sold to smaller operating companies. When this transfer occurs, the original companies often walk away from their bonds and do nothing to ensure that the liability of decommissioning the wells can actually be covered by the buying company. Often the smaller companies do not have the funds to cover the full costs of plugging and cleaning up sites, even if the Department of Environmental Protection regulations require them to take these actions.¹¹

See Appendix A for Pennsylvania bond amounts.

How plugging wells could employ oil and gas workers

According to Columbia University's Center on Global Energy Policy and the energy economics think tank, Resources for the Future, funding for a "green stimulus" could create over one hundred thousand jobs across the country, and by extension, many thousands in Pennsylvania, to address this orphan well problem and put furloughed or unemployed oil and gas workers back to work plugging the same kinds of wells they spent years drilling.¹²

This concept is backed by many stakeholders, with support from environmentalists, oil industry groups, and state regulators, including the DEP. The environmentalists want any stimulus to be tied to tighter requirements that ensure well operators cannot avoid cleanup costs going forward.¹³

Mark Cline, president of the Pennsylvania Independent Petroleum Producers Association has said: "Companies in Pennsylvania's traditional oil and gas industry have the skills, equipment and

knowledge to plug wells, but those assets will be wiped out if small producers don't survive the current downturn. Find us the money to do this and we'll keep working."¹⁴

Ideas

Many other states share the costly problem of abandoned and polluting wells. A group of 31 states including Pennsylvania, working through the Interstate Oil and Gas Compact Commission, are asking the federal Department of Energy for "stimulus funds" to address this matter, which would put unemployed oil and gas workers back to work and stop the wells from polluting our air, water and land. Canada has just announced a similar \$1.2 billion plan to plug abandoned wells to help their oil and gas industry.^{15,16}

Pennsylvania's bond requirements could be increased to ensure this problem does not grow. 2016 legislation (HB2277) to increase bond amounts was proposed but not voted on.¹⁷

In the last few years, the DEP has been more aggressive in its oversight of sales of wells to companies that cannot afford remediation costs. In 2019, the DEP negotiated a settlement with Diversified Gas & Oil Corp and its subsidiaries to post a \$7 million bond to cover costs to either plug or put into production 1,400 wells they bought from CNX Gas and XTO Energy, a subsidiary of Exxon Mobil.¹⁸ These kinds of agreements could allay some of the growing costs going forward.

The DEP has a well-plugging program that relies on funds from new well permit fees which, as of August 2020, increased to \$12,500 per shale gas well, but were offset by the drop in new drilling permits. These fees are a tiny fraction of what is necessary to address the orphan well problem, or to sustain staffing at the DEP.¹⁹ The DEP is understaffed and underfunded, so only the wells threatening imminent harm are addressed and only a dozen or so remediation projects are completed per year. Additional funding would help.^{20,21}

Conclusion

This ever-growing problem of abandoned wells, costs of clean-up, and damage to the environment leaves taxpayers with an enormous bill. Even so, that bill must be paid because we cannot sacrifice the environment any longer. Meeting this challenge will put thousands of people to work and make our state a safer place to live.

Appendix A—Pennsylvania Oil and Gas Well Bonding Requirements

Conventional Wells

Act 13 increases well bonding requirements, which are currently established at \$2,500 per well or \$25,000 for a blanket bond covering any number of wells.²²

Unconventional Wells

For wells with total well bore lengths less than 6,000 feet:

- For up to 50 wells - \$4,000/well not to exceed \$35,000
- For 51-150 wells - \$35,000 plus \$4,000/well not to exceed \$60,000
- For 151-250 wells - \$60,000 plus \$4,000/well not to exceed \$100,000
- For more than 250 wells - \$100,000 plus \$4,000/well not to exceed \$250,000

For wells with total well bore lengths 6,000 feet or greater:

- For up to 25 wells - \$10,000/well not to exceed \$140,000
- For 26-50 wells - \$140,000 plus \$10,000/well not to exceed \$290,000
- For 51-150 wells - \$290,000 plus \$10,000/well not to exceed \$430,000
- For more than 150 wells - \$430,000 plus \$10,000/well not to exceed \$600,000

These bond amounts are current as of the date of this paper and are taken from the Department of Environmental Protection's website "Act 13 Frequently Asked Questions" at this link:

<https://www.dep.pa.gov/Business/Energy/OilandGasPrograms/Act13/Pages/Act-13-FAQ.aspx>

For a more complete explanation of bonding rules, liabilities, and exceptions, please refer to the legislation:

<https://www.legis.state.pa.us/WU01/LI/LI/CT/HTM/58/00.032.025.000..HTM>

¹ <https://www.eenews.net/stories/1060364121>

² http://cedatareporting.pa.gov/Reportserver/Pages/ReportViewer.aspx?/Public/DEP/OG/SSRS/OG_Well_Inventory

³ <https://www.reuters.com/article/us-usa-drilling-abandoned-specialreport/special-report-millions-of-abandoned-oil-wells-are-leaking-methane-a-climate-menace-idUSKBN23N1NL#:~:text=She%20concluded%20in%202016%20that,there%20maybe%20for%20100%20years.>

⁴ <https://www.post-gazette.com/business/powersource/2020/05/14/plugging-orphan-abandoned-oil-gas-wells-coronavirus-bust-Pennsylvania/stories/202005080040>

⁵ <https://www.npr.org/2016/05/30/474100388/hidden-abandoned-dangerous-old-gas-and-oil-wells-in-neighborhoods>

⁶ https://www.washingtonpost.com/business/energy/shales-bust-shows-basis-of-boom-debt-debt-and-debt/2020/07/22/0e6ed98c-cc41-11ea-99b0-8426e26d203b_story.html

⁷ <https://www.statista.com/statistics/204740/retail-price-of-gasoline-in-the-united-states-since-1990/>

⁸ <https://www.reuters.com/article/us-usa-drilling-abandoned-specialreport/special-report-millions-of-abandoned-oil-wells-are-leaking-methane-a-climate-menace-idUSKBN23N1NL#:~:text=She%20concluded%20in%202016%20that,there%20maybe%20for%20100%20years.>

⁹ <https://www.gao.gov/products/GAO-19-615>

¹⁰ <https://www.eenews.net/stories/1060364121>

¹¹ <http://vpasec.org/wells/owplugging.html#:~:text=The%20cost%20depends%20on%20the,for%20a%20shale%20gas%20well.>

¹² <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/green-stimulus-to-plug-wells-could-create-oil-jobs-cut-emissions-8211-report-59520029>

¹³ <https://www.post-gazette.com/business/powersource/2020/05/14/plugging-orphan-abandoned-oil-gas-wells-coronavirus-bust-Pennsylvania/stories/202005080040>

¹⁴ Ibid

¹⁵ <https://www.reuters.com/article/us-global-oil-usa-wells/states-ask-trump-administration-to-pay-laid-off-oil-workers-to-plug-abandoned-wells-idUSKBN22I2KA>

¹⁶ <https://www.reuters.com/article/us-health-coronavirus-canada-stimulus-fa/factbox-canada-offers-c2-5-billion-for-hard-hit-energy-sector-as-part-of-covid-19-stimulus-idUSKBN21Z2YO>

¹⁷ <https://www.legis.state.pa.us/cfdocs/billinfo/billinfo.cfm?year=2015&kind=0&body=H&type=B&bn=2277>

¹⁸ <https://stateimpact.npr.org/pennsylvania/2019/03/11/state-reaches-7m-agreement-over-1400-abandoned-oil-and-gas-wells/>

¹⁹ <https://www.post-gazette.com/business/powersource/2020/08/06/Marcellus-shale-gas-drilling-permit-fee-increase-Pennsylvania-DEP/stories/202008050127>

²⁰ <https://www.fractracker.org/2019/08/pa-abandoned-wells/>

²¹ <http://paenvironmentdaily.blogspot.com/2020/07/dep-unconventional-drilling-well-permit.html>

²² <https://pelcentral.org/wp-content/uploads/2013/11/Oil-and-Gas-Well-Drilling-and-Production-in-Pennsylvania.pdf>