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Remediation of Orphan Oil & Gas Wells in COVID-19 Stimulus

Policy Proposal

The U.S. federal government should provide funding to close the backlog of orphaned oil and gas wells in need of remediation, while at the same time greatly strengthening policies to ensure that no oil or gas well drilled today will become orphaned in the future. Additionally, the federal government should provide funding to review and, where necessary, re-plug older wells that were plugged before modern standards were put in place. Such policies would create or maintain thousands of jobs and provide stimulus in regions that have historically depended on employment in the oil and gas sector, while removing hazards to public health and safety, and reducing carbon emissions.

The full scale of well remediation needs across the U.S. is uncertain. This is due to both a lack of consistent data on existing orphan wells, as well as large uncertainties around how many new orphan wells will be created by the market downturn and the predicted wave of oil and gas bankruptcies.¹ We propose funding of approximately \$4 billion per year over a period of 5 years — or however much is needed to remediate all wells that match the below criteria. This level of funding could be sufficient to remediate 250,000 orphaned or leaking wells — 50,000 wells per year at a cost of roughly \$80,000/well (see below for details).

Federal stimulus should only be enacted in tandem with strong reforms to the current dysfunctional well bonding and retirement system. **Funding should be provided to the relevant state regulatory agencies only if the following criteria are met:**

- Direct federal funding is provided only for wells that are orphaned — meaning no operator or owner is known. Direct federal funding is not available for any well where there is a reasonable chance of recovering closure costs from current or previous well owners or operators.
- Congress must pass a national standard ensuring that no new oil or gas well can be permitted anywhere in the U.S. without the operator providing upfront, life-of-well bonding for all of its existing and proposed wells. These bonds must cover the full cost of remediation, taking into account well-depth, site-specific costs, full labor costs, inflation, etc.
- Congress must pass a national standard ensuring that idle fees for non-producing wells increase over time and requiring any well with negligible production for more than 24 months to be plugged immediately.

¹ Egan, M. 2020. A wave of oil bankruptcies is on the way. *CNN*, April 2. <https://www.cnn.com/2020/04/02/business/oil-crash-bankruptcies-whiting/index.html>

- To reclaim well cleanup costs from the industry in the longer-term, Congress must adopt a Superfund-style tax on current oil and gas operators.
- Guarantee strong labor standards for the workers, including a prevailing wage guarantee, Local Hire Agreements (with preference given to fossil fuel industry workers who have been laid off since March 1, 2020), apprenticeship standards, and Project Labor Agreements where available by law.
- For wells on federal lands and waters, the Department of the Interior shall adopt the same reforms around full cost bonding, idle fees, and mandatory closure after 24 months.
- Congress must end all federal subsidies to the oil and gas industry and prohibit all new oil and gas leasing on federal lands and waters.
- There should be no reduction of legal liability for oil and gas companies.

Discussion

The EPA estimates that methane emissions from abandoned oil and gas wells totaled 7.0 MtCO₂-eq in 2018.² Abandoned wells can also pose serious public health and safety concerns due to both air and water pollution, particularly when located near to homes, schools, and other places where people work and play.³ In general, oil and gas companies are legally required to plug their wells and restore the well site once production is finished. States typically require companies to post a bond to ensure that clean up happens, but bonding levels are often much smaller than average well remediation costs, leaving taxpayers on the hook to clean up these orphan wells.

The “polluter pays” principle calls for holding the industry accountable for keeping their promises, which is why any federal stimulus money must be carefully targeted and paired with reforms to the currently dysfunctional asset retirement system. If taxpayers are going to clean up the current mess left behind by a reckless industry, we need to ensure it doesn’t keep happening.

State estimates indicate that over half of the unplugged wells in the U.S. could be concentrated in just three states: Texas, Oklahoma and Pennsylvania. Fifteen states (Texas, Oklahoma, Pennsylvania, Ohio, Louisiana, Kansas, California, Kentucky, Illinois, Wyoming, West Virginia, Indiana, New Mexico, Colorado, Montana) could account for a large majority of abandoned wells, and it is likely that economic stimulus from this program would be concentrated in these regions.⁴

Estimating Counts of Orphan and Leaking Wells

As of 2016, the EPA estimated that there were 3.11 million “abandoned” oil and gas wells across the U.S., of which 31% (960,000) are “plugged” and 69% (2,150,000) are “unplugged.”⁵ These unplugged wells reported zero oil or gas production in the previous year. A fraction of these unplugged wells are considered “orphaned” (where no responsible operator exists to fulfill the remediation requirements) or are at “high risk of becoming orphaned” (operator may technically exist but is small, inactive, or insolvent).

2 U.S. EPA. Inventory of U.S. Greenhouse Gas Emissions and Sinks. <https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks>

3 Pianko, M. 2020. California Lagged in Capping Century-old Oil Wells Leaking Under Homes of LA Residents Plagued by Illness and Odors. *DesmogBlog*, February 13. <https://www.desmogblog.com/2020/02/13/los-angeles-vista-hermosa-cap-orphan-oil-wells-leaking-doggr>

4 U.S. Geological Survey. U.S. Historical Oil and Gas Production. https://certmapper.cr.usgs.gov/data/energyvision/index.html?config=config_Historical.json

5 U.S. EPA. 2018. *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2016: Abandoned Oil and Gas Wells*. April. https://www.epa.gov/sites/production/files/2018-04/documents/ghgemissions_abandoned_wells.pdf

The percentage of unplugged wells that are orphaned or high-risk is likely to vary widely from state to state. A recent report by the California Council on Science and Technology (CCST) found that orphan and high-risk wells made up 19% of inactive wells in California (although defined as zero production over *two years* rather than one).⁶ A review of orphan well counts in Pennsylvania,⁷ Texas,⁸ Louisiana,⁹ and Alberta, Canada¹⁰ indicates that orphan/high-risk wells comprise roughly 5% of all unplugged or inactive wells in those regions. We note that definitions, well count completeness, and oil/gas production levels vary significantly from state to state, making these estimates highly uncertain.

Applying a very rough estimate of 5%-10% to the 2,150,000 unplugged wells gives a range of 107,000 to 215,000 existing orphan/high-risk wells across the U.S. The current market downturn and the anticipated wave of oil and gas bankruptcies could significantly increase these numbers, potentially converting inactive wells into orphans (depending on state policies).

EPA's estimate of 960,000 plugged wells likely includes some older wells that were plugged before modern standards designed to prevent air and water pollution. The CCST report estimates that roughly one-third of wells in California were plugged prior to stronger 1978 standards and some may require re-working. An ideal policy would include reviewing and measuring plugged well emissions and then prioritizing action to re-plug wells with the worst emissions. More research is needed here to identify the scale and geography of the problem, although there could well be more than 100,000 plugged wells nationwide in need of work.

There is a wide range in estimates for the per well cost of remediation. CCST finds an average across 86 California wells of \$68,000 per well, but notes that costs are roughly 3 times higher in urban areas such as Los Angeles. A GAO study looking at orphan wells on BLM land found "low-cost wells typically cost about \$20,000 to reclaim, and high-cost wells typically cost about \$145,000 to reclaim."¹¹

Noting the large uncertainties in these estimates, for the purposes of this policy brief we assume there are 250,000 wells nationally that are in need of remediation. This estimate comes from 150,000 orphan/high-risk unplugged wells (roughly the midpoint of the above range) plus 100,000 plugged wells. We use an average cost of \$80,000 per well, and do not currently account for existing bonds. These assumptions give us a total national cost of \$20 billion, to be spread out over several years.

Future research aims to estimate how many jobs or FTEs would be created by such a program, refine well count and cost estimates, and better understand the structure of the current remediation sector and state-level programs to remediate orphan wells.

6 Boomhower et al. 2018. *Orphan Wells in California: An Initial Assessment of the State's Potential Liabilities to Plug and Decommission Orphan Oil and Gas Wells*. California Council on Science and Technology. November. <https://ccst.us/reports/orphan-wells-in-california/>

7 Pennsylvania Department of Environmental Protection (DEP), Office of Oil and Gas Management. Orphan and Abandoned Wells. http://www.depreportingservices.state.pa.us/ReportServer/Pages/ReportViewer.aspx?/Oil_Gas/Abandoned_Orphan_Web

8 Texas Railroad Commission (RRC). Orphan Wells with Delinquent P-5 Greater Than 12 Months. <https://www.rrc.state.tx.us/oil-gas/research-and-statistics/well-information/orphan-wells-12-months/>

9 Schleifstein, M. 2020. Audit: No. of 'orphaned' wells could cost state millions. *The Times-Picayune*, April 19. https://www.nola.com/news/business/article_313d8dd2-7a9d-11ea-b4a4-e7675d1484f7.html

10 Department of Finance Canada. 2020. Canada's COVID-19 Economic Response Plan: New Support to Protect Canadian Jobs. Orphan and Inactive Oil and Gas Wells. https://www.canada.ca/en/department-finance/news/2020/04/canadas-covid-19-economic-response-plan-new-support-to-protect-canadian-jobs.html#Orphan_and_inactive_oil

11 U.S. GAO. 2019. Bureau of Land Management Should Address Risks from Insufficient Bonds to Reclaim Wells. GAO-19-615. <https://www.gao.gov/assets/710/701450.pdf>