

Zefiro  
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# Unplugged Wells: The Hidden Threat in Our Backyards

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# The Unseen Threat

- Millions of Americans live within a mile of orphaned oil and gas wells<sup>1</sup>.
- Many wells are leaking harmful gases and toxins into surrounding areas<sup>1</sup>.
- Proximity poses a direct health risk to nearby residents and impact extends to communities nationwide, not just in isolated regions.

<sup>1</sup> <https://www.doi.gov/orphanedwells>









# Proximity to Society

- Operations are not limited to abandoned oil fields or remote forests.
- The issue is not geographically isolated; it's a nationwide concern.
- Unplugged wells are often close to homes, schools, hospitals, and factories.

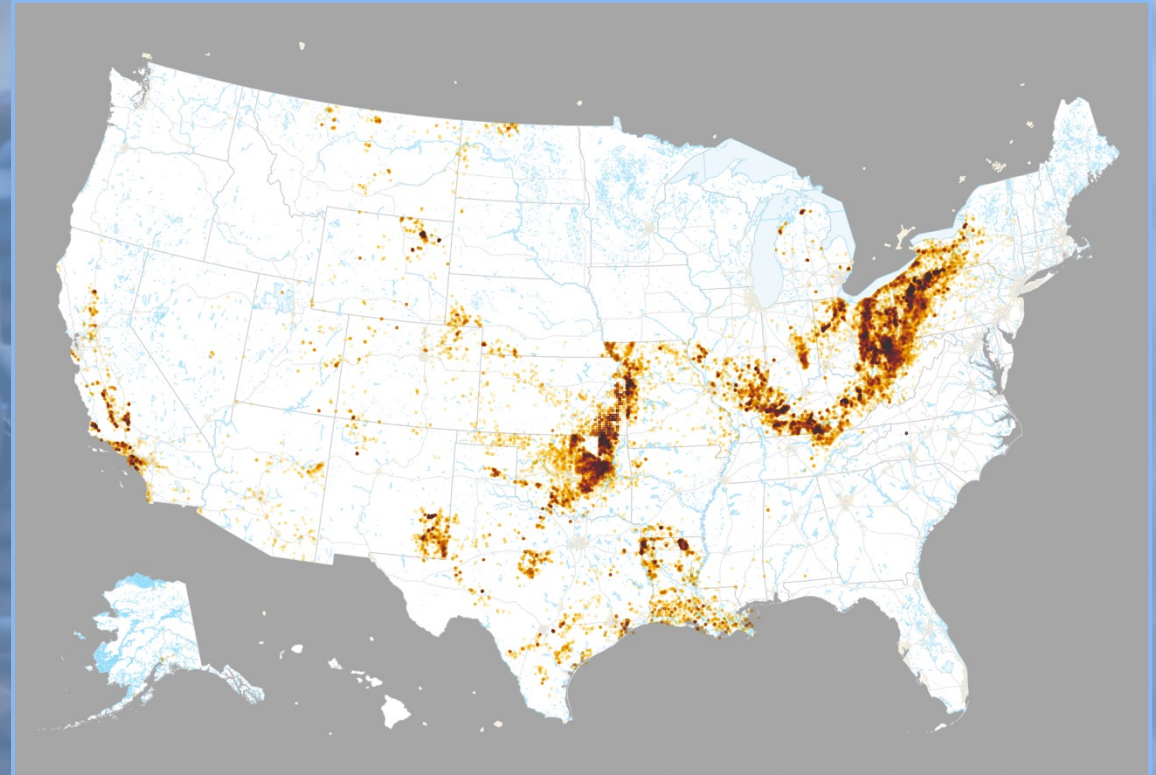




# The Unfunded Well Liability Problem

*Millions of AOOG Wells*

- Millions of orphaned and abandoned wells (AOOGs)<sup>1</sup> across 26 states as of 2020
- Up to half a billion tons of CO2 equivalent<sup>2</sup> offset potential
- Current Federal Government funding covers a small percentage<sup>3</sup> of wells requiring plugging



Potential cost of hundreds of billions<sup>4</sup> to fix the current problem

Map created by Zefiro as a visual approximation of data pulled from government sources.

<sup>1</sup> See US EPA (2022) "Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2020"

<sup>2</sup> See [https://www.epa.gov/sites/default/files/2018-04/documents/ghgemissions\\_abandoned\\_wells.pdf](https://www.epa.gov/sites/default/files/2018-04/documents/ghgemissions_abandoned_wells.pdf), <https://accarbon.org/methodology/plugging-orphaned-oil-and-gas-wells/>

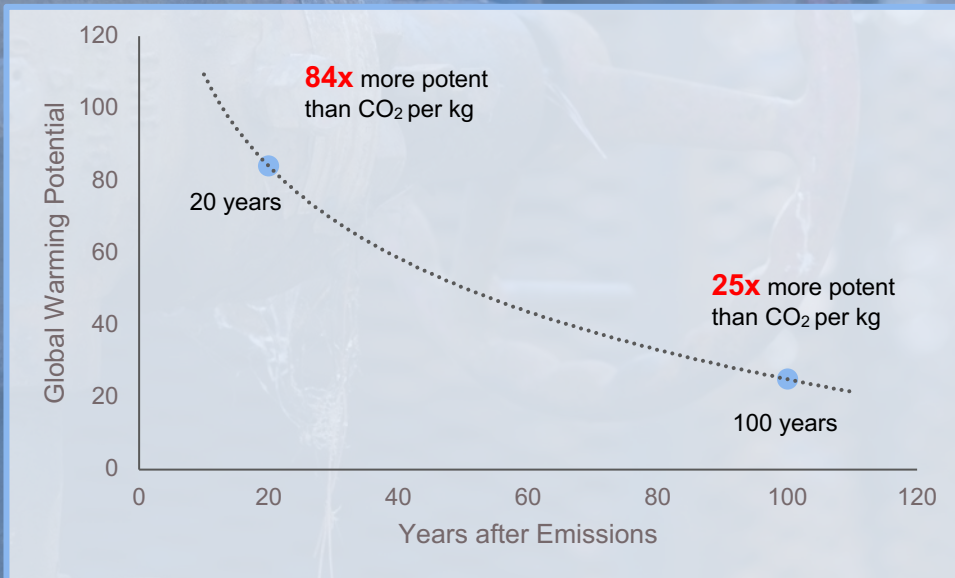
<sup>3</sup> The Bipartisan Infrastructure Law allocated US\$4.7 billion to plugging of AOOG wells,

<sup>4</sup> See Carbon Tracker (2020), "Billion Dollar Orphans". Available online at <https://carbontracker.org/reports/billion-dollar-orphans/>



# Orphaned and Abandoned Wells... Leak Methane

## Direct and Indirect Warming Over Time<sup>2</sup>



## Methane Impact

# Industry apathy and market failures drive disastrous results...

- Many orphaned and poorly maintained wells leak natural gas (primarily methane).
- Methane, one of the worst emission sources for our climate, is **25x – 84x<sup>1</sup>** more potent than CO<sub>2</sub>.
- Our field team encounter leaks regularly when surveying wells.

<sup>1</sup> Source: IPCC (2006). Global Warming Potential is the relative greenhouse (warming) effect of Methane emissions over a given time horizon compared to CO<sub>2</sub>. The value declines over longer time periods as methane breaks down.

<sup>2</sup> Trendline is given for illustrative purposes only.



# Health and Environmental Impact

- Sustained methane emissions can negatively impact air quality<sup>1</sup>.
- Drinking water and land resources can be compromised by unplugged wells<sup>2</sup>.
- Methane emissions pose a significant threat to the overall well-being of communities<sup>1</sup>.

<sup>1</sup> <https://www.epa.gov/newsreleases/us-sharply-cut-methane-pollution-threatens-climate-and-public-health>

<sup>2</sup> Our field team encounter this issue regularly. Photo taken from a well where water quality was impacted.





# Urgent Action Needed

- Immediate risk to residents, commercial operations, and natural ecosystems.
- The potential risks to businesses and communities demand prompt action.
- Neglecting the issue could lead to irreversible damage to ecosystems.





# Institutional Challenges

Institutional challenges include:

- Lack of accurate well location data
- Ongoing training
- Labor shortages





## Active Sustainability

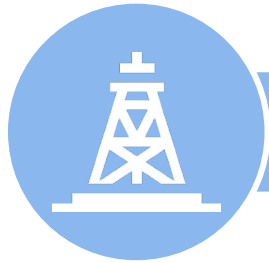
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Effective remediation operations that help build a cleaner, safer, and more economically robust future without compromising the needs of modern society.



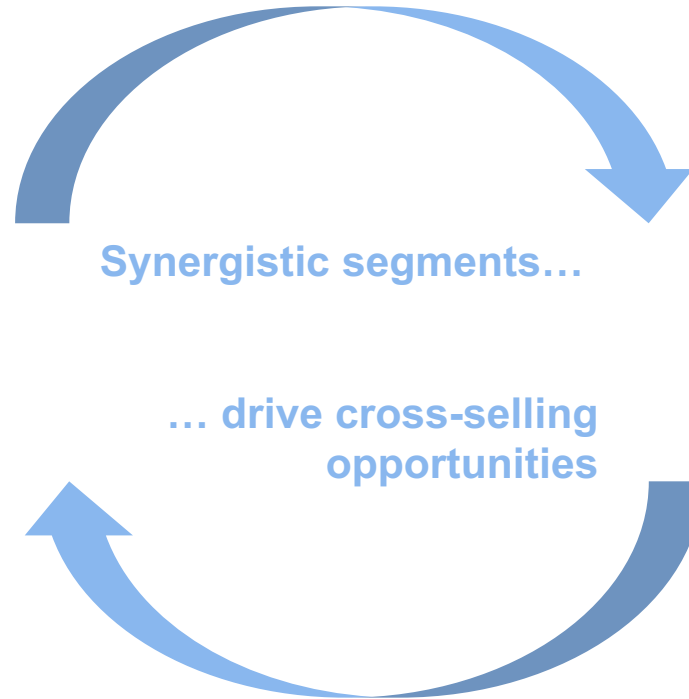


# Zefiro's Impact

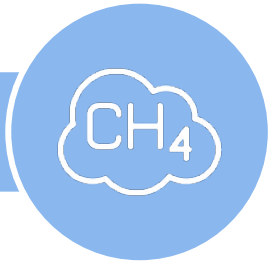


## Asset Retirement Services

- Well-established leader in plugging abandoned oil wells
- 50+ year history successfully operating in the Appalachian Basin, with multiple corporate and government contracts in place that provide strong revenue visibility



## Environmental Markets



- Leverages detection and quantification systems to detect methane emissions
- Systems deployed across a number of projects and geographies
- Monetizes carbon credits generated by Zefiro

*Zefiro is forging solutions to return land, water and sky to uses beyond energy*

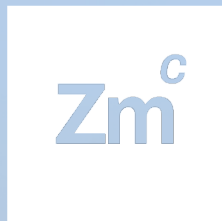


# Conclusion

- There are millions of orphaned and abandoned oil and gas wells across the United States, many with the potential to leak methane.
- Methane leaks have a negative impact on a global and local level.
- We must use our capital resources to effect structural change to solve this crisis in our generation.







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**Thank You**

**Contact**

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