

Idle Well and Orphan Well Management in California

 fractracker.org/2024/05/california-must-improve-management-of-idle-wells

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Key Findings

From 2018 through 2021, idle well counts have increased over 32%.

In 2021, a total of 1,195 operators were eligible for Idle Well Management Plans (IWMPs) or long term idle well (LTIW) fees. However, a total of 1,149 (96%) operators chose not to file idle well management plans (IWMPs), and 1,151 operators were without compliant IWMPs.

In 2021, a total of 1,037 (87%) operators did not have compliant idle well management plans and did not pay their long term idle well (LTIW) fees.

In 2021, of the 17,888 LTIWs, 2,642 (15%) were owned by operators who did not pay their fees.

Based on the most stringent well plugging requirements outlined in AB 2729, it would take well over a full century for current operators to plug just their current portfolios of idle wells.

Implementation of AB 1866 would reduce the estimated time frame for plugging the current portfolios of idle wells to about 34 years, a 67% time reduction.

If California Resources Production Corporation takes over management of Aera Energy, LLC, it would result in the formation of an operator with an estimated 12,600 idle wells.

Overview

California's current regulations under AB 2729 have been inadequate to reduce the state's counts of idle wells. This issue needs to be addressed immediately, before the state of California is exposed to additional economic risk. [1] This analysis by FracTracker Alliance used CalGEM data to show that additional regulations, including stricter plugging requirements are necessary to require California operators to plug idle wells, which will prevent them from being orphaned in the future and reduce environmental health risks to frontline communities.

Assemblymember Gregg Hart's proposed AB 1866 provides a commonsense approach for California to manage idle oil and gas wells. [2] It would require oil companies to put additional skilled laborers to work, plugging and remediating the well sites that have generated billions of dollars in profits for California's oil companies, rather than allowing idle wells to be neglected and orphaned to the state, and potentially, taxpayers. [3]



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Idle Well Management in California

California's current regulatory framework to manage idle wells is not currently sufficient to actually lower idle well counts in the state. The current rule, established by [Assembly Bill 2729](#), provides a framework for operators to slowly plug their existing portfolios of [long term idle wells \(LTIWs\)](#). [4][5] While the current regulation has only been in place since 2016, the data trends for idle well counts and well plugging counts show that AB 2729 is insufficient to

address the full scope of the idle wells issue in California, in order to prevent idle wells from becoming orphaned.

It is incredibly important to assure that idle wells are plugged as quickly as possible. The conditions of idle wells quickly deteriorate due to the inactivity at the wellhead. Operators have few regulatory requirements to inspect and maintain the conditions of idle wells, and since the wells are no longer producing oil and gas, there is not a financial incentive to do so either. As a result, idle wells can quickly start to leak hydrocarbons into the air. A report by researchers Lebel et al. (2020) sampled 121 wells in California to measure for methane leakage. The majority of wells were identified as leaking, including 11 of the 17 idle wells, four of the six active wells, and 34 of the 97 plugged and abandoned wells. The results show that idle wells commonly leak, and the average measured leakage rate of 35.4 g CH₄ h⁻¹ shows that the leaking volumes are substantial. **At that rate, an average idle well leaks one-third of a ton of methane each year (not to mention the cocktail of other air toxics, carcinogens, and greenhouse gasses). With ~35,000 idle wells in California, idle wells are estimated to leak about 12,000 tons of methane each year.** Hydrocarbon leakage is not a small issue limited to a subset of wells. It is a systemic issue that exists industry-wide and will continue to get worse as well-site infrastructure ages and decays. [Optical gas imaging inspections by FracTracker Alliance in the summer of 2023 identified dozens of leaking idle wells in California with leaks sufficient for violations.](#)

There are several mechanisms that have historically increased the likelihood of wells becoming orphaned in California. Chief among them are an unwillingness to spend the capital necessary to plug dry wells, and the ability to shed bad assets to smaller shell companies with relative impunity. Earlier this year, FracTracker released a report showing that the vast majority of California oil and gas companies, including all of California's oil majors, are producing increasingly marginal volumes of oil and gas, while not plugging their wells that are running dry. [In a 2023 report, FracTracker Alliance outlined](#) how these same companies have been divesting their dry wells to smaller, financially unviable companies to avoid plugging costs and reclamation responsibilities; a growing trend since 2010. [6]

On October 7, 2023, Governor Newsom signed into law [Assembly Bill 1167 \(AB 1167\)](#), which imposes more stringent financial assurance requirements on persons who acquire the right to operate a well or production facility in the state of California, requiring them to file either an individual indemnity bond for single-well or production facility acquisitions, or a blanket indemnity bond for multiple wells or production facilities. [7] Upon signing AB 1167, Governor Newsom called for further legislative changes to these new requirements to mitigate against the potential risk of the implementation of AB 1167 ultimately increasing the number of orphaned idle or low-producing wells in California. [8] **The Governor is correct, and the**

state legislature must follow his guidance to establish a regulatory framework to assure oil and gas operators are not allowed to ignore their well plugging obligations.

Using CalGEM data, this short report provides a summary of the current state of the idle wells situation in California, how it has progressed under the current regulatory framework, and why additional regulation is necessary to make sure that idle wells are plugged in a timely fashion. According to the annual idle well management reports, “While the new idle well regulations have jump started the plugging and abandonment by operators of their long-term idle wells, at the current rate of plugging and abandonment it will take decades to fully remediate these wells.” [9]

FracTracker’s findings show “decades” is a vast underestimation, and that it could take well over a century under the current system.

This interactive map shows the locations of idle wells in California, as identified by CalGEM (dataset updated 3/11/24). Data from the CalGEM AB 2729 (2021) idle well reports has been appended to the “AllWells” dataset, filtered for just idle wells. The data reports the status of idle well management for operators, at the individual well level. Additionally, the dataset of CalGEM Likely Orphaned Wells has been mapped (March 2023), as well as an additional dataset of likely orphaned wells, identified by FracTracker Alliance.

View the map “Details” tab below in the top right corner to learn more and access the data, or click on the map to explore the dynamic version of this data. Data sources are also listed at the end of this article. In order to turn layers on and off in the map, use the Layers dropdown menu. This tool is only available in Full Screen view. Items will activate in this map dependent on the level of zoom in or out.

[View Full Size Map](#) | Updated 3/14/2024 | [Map Tutorial](#)

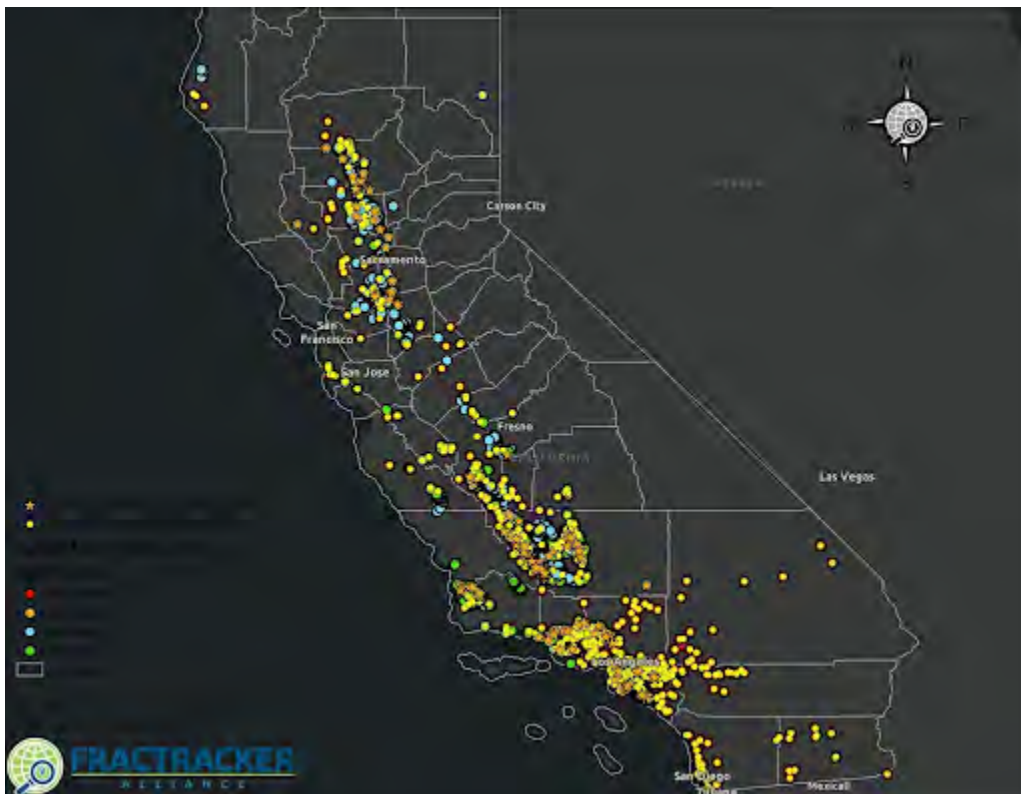
Orphan and Idle Well Counts

Since the implementation of AB 2729 in 2018, the annual idle well reports show that the counts of idle wells have been increasing each year. The large increase from 2018 to 2019 is in part due to the redefining of idle wells, as outlined in AB 2729. [10] The figures below in Table 1 show that between 2018 and 2022, idle well counts have increased over 32%, and continued to increase. Long term idle well counts have also increased during this time frame. **While plugging counts have been increasing each year, the annual reports show that there has not been enough wells plugged to decrease idle well counts. There are more wells transitioning from active to idle status than wells being plugged.**

Table 1. Counts of idle, long term idle and idle to plugged well counts.

Year	Idle Well Count	Long Term Idle Well Count	Idle Status to Plugged Status
2018	29,292	17,576	1,346
2019	37,095	17,560	1,972
2020	37,612	17,786	2,154
2021	38,759	17,888	2,703

To complement the analysis of AB 2729, FracTracker also reviewed CalGEM's documents to better predict the count of orphan or likely orphan wells in the state. CalGEM publishes a dataset of likely orphan wells titled Department of Conservation Likely Orphan and Deserted Well Inventory List (N=5,699), which is mapped below in Figure 1 below (dataset updated March 2023). [11] According to the CalGEM AllWells dataset, there are 101,332 unplugged wells currently operating in California, as of March 11, 2024. Screening the dataset for operators with unplugged wells who did not report production figures in 2022 results in a count of 3,352 likely orphaned wells owned by 1,009 operators. ***Screening this dataset against the Department of Conservation Likely Orphan and Deserted Well Inventory List identified an additional 338 likely orphan wells not listed in the CalGEM dataset.*** These wells are mapped alongside the Likely Orphan and Deserted Well Inventory List.



[Figure 1. Map of Idle and Orphan Wells](#). The map shows the locations of idle and orphan wells, as identified by CalGEM. An additional subset of idle wells are identified as likely orphan by FracTracker Alliance, based on the portfolios of those operators.

Idle Well Management Shortcomings

The following figures were derived [from the 2021 AB2729 Idle Wells Report](#). [12] Appendix-1 provides the annual inventory of idle wells and distinguishes which wells are considered long term idle wells.

Management Plans and Fees

The dataset in Appendix 1 identifies 1,200 unique operators who operated long term idle wells (LTIWs). The dataset in Appendix 5 identifies 51 unique operators that have idle well management plan (IWMP) agreements with CalGEM. Appendix A-9 of the report identifies LTIWs that have not paid their fees. [These fees are as low as \\$150 per year](#). [13] The operators, along with their well counts, are presented below in Table 1, and the locations of their idle wells mapped above in Figure 1.

- *As stated in the report, of the 1,195 operators with LTIW obligations, 51 filed IWMPs (4.3%), and 49 were in compliance with IWMPs (4.1%).*
- *A total of 1,149 operators failed to file IWMPs (96%), and 1,151 operators were without compliant IWMPs.*
- *A total of 1,037 (87%) operators did not have compliant IWMPs and did not pay their LTIW fees.*
- *Of the 17,888 LTIW's, 2,642 (15%) were owned by operators who did not pay their fees.*

The table below shows that large counts of idle wells make up a large percentage of the unplugged wells in the portfolios of California's oil majors, such as Aera, Chevron, and California Resources Production Corp (CRC). More than half of CRC's unplugged wells are idle, and CRC has the highest percentage of LTIWs. While there are many small likely insolvent or already bankrupt operators, such as HVI Cat Canyon, with lots of retirement obligations on their books, the majority of California's idle wells are currently managed by the larger operators. This provides an opportunity for California to assure these wells are plugged, by requiring operators to leverage their existing capital to plug and remediate their wells. As production continues to decline, this opportunity will not last.

Table 1. Idle well and Long Term Idle Well Counts by Operator. Operators are ranked by long term idle well (LTIW) counts.

LTIW Count Rank	Operator Name	Unplugged Well Count	Idle Well Count	LTIW Count	LTIW Percent
1	Aera Energy LLC	23,756	9,108	3,167	34.8%
2	Chevron U.S.A. Inc.	26,215	8,915	2,402	26.9%
3	California Resources Prod Corp	6,590	3,346	2,065	61.7%
4	California Resources Elk Hills, LLC	7,548	2,856	1,571	55.0%
5	E & B Natural Res. Mgmt. Corp.	2,974	1,363	745	54.7%
6	Berry Petroleum Company, LLC	5,100	2,488	728	29.3%
7	CalNRG Operating, LLC	1,529	715	661	92.4%
8	Sentinel Peak Resources California LLC	6,515	2,087	493	23.6%
9	Crimson Resource Management Corp.	1,626	486	251	51.6%
10	HVICC	223	223	223	100.0%
11	Team Operating LLC	341	341	197	57.8%
12	Seneca	190	190	190	100.0%
13	Bridge Energy LLC	494	178	178	100.0%
14	Signal Hill Petroleum, Inc.	481	248	150	60.5%
15	Cat Canyon Resources LLC	503	288	147	51.0%
16	West Energy Operating, LLC	383	202	138	68.3%

17	Holmes Western Oil Corporation	813	184	119	64.7%
18	Carbon California Operating Company, LLC	546	123	117	95.1%
19	Shadow Wolf Energy, LLC	328	177	97	54.8%
20	San Joaquin Facilities Management, Inc.	324	134	94	70.1%
21	Petro-Lud, Inc.	267	116	88	75.9%
22	Tidelands Oil Production Co.	960	249	84	33.7%
23	THUMS Long Beach Co.	1,581	210	71	33.8%
24	Bridgeland Resources LLC/WG Holdings SPV, LLC	493	260	67	25.8%
25	L.A. Terminal & Transport Co.	62	62	62	100.0%
26	Warren E&P, Inc.	278	88	62	70.5%
27	J.P. Oil Company, LLC	110	62	58	93.5%
28	Pacific Coast Energy Company LP	490	201	58	28.9%
29	Vaquero Energy, Inc.	57	57	57	100.0%
30	Caltico Oil Corp.	55	55	55	100.0%

Well Plugging Timespans

FracTracker has calculated conservative figures for the amount of time necessary for California's oil and gas operators to plug their portfolios of idle wells, if they were to follow the minimum plugging requirements outlined in AB 2729. [\[14\]](#) CalGEM's AB 2729 [2023 IWMP Inventory](#) reports 34,011 total idle wells in California, with 15,922 (47%) identified as LTIW.

Under AB 2729, California requires operators with more than 1,250 idle wells to plug at least 6% of the LTIW wells each year. Operators with 251 to 1,250 idle wells are required to plug at least 5% of their LTIWs each year. Operators with 250 or fewer idle wells are required to plug at least 4% of their LTIWs each year.

To most accurately calculate the time required to plug the backstock of idle wells in California based on the AB 2729 LTIW plugging requirements would require knowledge of the future flux of well statuses, from active to idle and from idle to long term idle. Therefore this analysis calculates the minimum time frame that would be required to plug just the existing portfolio of idle wells. This conservative approach overestimates the count of wells that operators are required to plug, and can therefore be considered a minimum estimate of the time required, if all operators followed the minimum plugging requirements in AB 2729.

This approach is based on the assumption that all idle wells are LTIWs, a valid assumption considering all currently idle wells will be LTIWs within a maximum eight-year timespan. Based on the current plugging and abandonment rates, it is safe to assume that the vast majority of currently idle wells will have transitioned into LTIWs by the time operators get around to plugging them.

- *For the operators with more than 1,250 idle wells, Aera Energy LLC has the highest count of idle wells with 6,712. Therefore if all operators plug their idle wells at the minimum required rate, it will take Aera the longest. With 6,712 wells it will take at least 106 years for the total idle well count to get below a count of 10, if 6% are plugged annually.*
- *For the operators with 251 to 1,250 idle wells, CalNRG Operating, LLC has the highest count of idle wells with 1,070. It will take at least 92 years for their idle well count to get below a count of 10 if 5% are plugged annually.*
- *For the operators with 250 or fewer idle wells, Signal Hill Petroleum, Inc. has the highest count of idle wells with 248. It will take at least 79 years for their idle well count to get below a count of 10 if 4% are plugged annually.*

If the LTIW plugging rates outlined in the proposed AB 1866 were to become law, the required well plugging percentages would increase to 10%, 15%, and 20%. Therefore the maximum time frame necessary for operators to plug their current portfolios of idle wells would be decreased by 68%.

Time frames under the proposed AB 1866 rules:

- *Aera Energy, LLC would be required to plug their existing portfolio of 6,712 idle wells in about 34 years.*

- *CalNRG Operating, LLC would be required to plug their existing portfolio of 1,070 idle wells in about 30 years.*
- *Signal Hill Petroleum, Inc. would be required to plug their existing portfolio of 248 idle wells in about 32 years.*

Considerations of Alternatives for Idle Wells

As new technologies emerge, it may be necessary to allow oil and gas operators to prioritize keeping certain idle wells unplugged. As written, AB 1866 instructs operators to prioritize well plugging based on several considerations, including threats to health due to leaks, and age of the well. This is a technologically valid approach, as older wells are the least useful for retrofitting, due to poor construction standards.

Other supposed opportunities for the re-use of exhausted oil and gas fields include carbon capture and storage, and hydrogen storage. **While these options have been lauded by the industry as reasons to maintain large stocks of idle wells, the exact opposite is the truth. The development of reservoirs for CCS, hydrogen storage, and methane storage will require nearly every single existing idle well to be plugged to prevent leaks from the underground storage formation to the surface.** All [unplugged wells in addition to older plugged wells pose a serious risk for leaks of injected gasses such as carbon dioxide, hydrogen, or natural gas.](#)

The vast majority of existing oil and gas wells will not qualify to be transitioned into injection wells, as the construction requirements for Class II and Class VI wells are drastically more stringent than the standards when the majority of California's wells were drilled. Prior to 1980 wells were not drilled to the standards necessary to handle the higher pressures, as outlined in Michanowicz et al. (2017). [15] In fact, the existing applications by California Resources Production Corporation LLC for their proposed Terravault facility only retain a total of just three Class II wells modified for Class VI use, and just 16 existing oil and gas wells converted to monitoring wells. [16] CalGEM records show that there are over 1,200 unplugged wells currently located in the area of the proposed site plan. An estimated 98% of wells in this area of the Elk Hills field will need to be plugged.

Conclusions

The influence of the California oil and gas industry has limited the ability of the state to properly regulate the decline of the oil and gas extraction and hold the industry accountable to their well plugging obligations. [17] The state's industry favorable self-regulatory environment has created the current circumstance of possible statewide insolvency. Decades of record profits have been extracted from the state without consideration of decommissioning costs,

leading to some of the most economically disastrous operator bankruptcies in the world such as Venoco and Rincon Island Partnerships along with the rest of the Greka group subsidiaries. [\[18\]](#)

The regulatory data clearly shows that the biggest risk driver that would allow orphan well counts to grow in California is continued growth of idle well portfolios resulting from slow rates of plugging. The currently proposed bill AB 1866 (Hart) curtails this risk. California is not the first state to address this issue, as numerous other states such as West Virginia and North Dakota require operators to plug their idle wells while they still have available cash flow from the remaining active wells in their portfolios.

References

- [1] [Chevron's \\$2.3 Billion Asset Adjustment Raises Questions Amidst Regulatory Changes in California – FracTracker Alliance](#)
- [2] [Bill Text: CAAB1866 | 2023-2024 Regular Session](#)
- [3] [CalGEM Orphan Well Screening Methodology](#)
- [4] [Bill Text: CAAB1167](#)
- [5] [Idle Well Program](#)
- [6] [Assessment of Oil and Gas Well Ownership Transfers in California – FracTracker Alliance](#)
- [7] [Bill Text: CAAB1167](#)
- [8] [“A Setup for Disaster”: California Legislation Requiring Companies to Pay for Oil and Gas Well Cleanup in Limbo](#)
- [9] [Idle Well Program Report 2021](#)
- [10] [Bill Text: CAAB2729](#)
- [11] [CalGEM Orphan Well Screening Methodology](#)
- [12] [Legislative Reports](#)
- [13] [Current Policy Problems — Make Polluters Pay CA](#)
- [14] [Bill Text: CAAB2729](#)

- [15] [A national assessment of underground natural gas storage: identifying wells with designs likely vulnerable to a single-point-of-failure – IOPscience](#)
- [16] [Draft Environmental Impact Report – CARBON TERRAVALT I \(KERN COUNTY\)](#)
- [17] [California Gov. Gavin Newsom orders firing of state's top oil regulator](#)
- [18] [Oil bankruptcies leave environmental cleanup bills to California taxpayers](#)