

THE RISK OF UNPLUGGED WELLS FOR CALIFORNIA'S TAXPAYERS

California Resources Corporation—A Case Study



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Summary

California Resources Corporation (or CRC) is California's largest oil and gas producer, and on July 22, 2020, the company filed for bankruptcy in federal court.¹ Among the company's outstanding liabilities are \$5.2 billion in unpaid loans,² nearly a billion dollars in well-closure costs and obligations, and pension and health care obligations to its workforce.

Beyond being California's largest oil producer, CRC is one of the largest holders of oil and gas wells throughout the state, with 18,000 wells,³ more than half of which are either idle (have not produced petroleum in two years) or failed to produce in 2020. As the owner of those wells, CRC has a legal obligation to the State of California to "plug and abandon" those wells after they cease production,⁴ a costly process estimated at around \$50,000 per well,⁵ or a total of over \$900 million.

If CRC fails to close its wells, by becoming terminally insolvent, for example, the obligation and ultimate cost of closure will fall to the state of California. By allowing CRC to sit on idle wells with only a pledge to fund its own cleanup, California has, in effect, extended an

enormous line of credit to CRC. In fact, the monetary value of CRC's obligation to California is the company's second-largest single-party liability. Today, CRC has proposed a bankruptcy reorganization plan that would allow the company to shed some of its debts, eliminate its equity (i.e., shareholders), and continue operating. And while it has not sought to discharge its obligations to the state, neither has it—or the state—proposed any form of guarantee to ensure CRC's wells actually get closed or its workforce is properly compensated.

CRC was formed in 2014 as a spinoff from Occidental Petroleum, a process that left CRC with a substantial debt load. Analysts have largely blamed the company's bankruptcy on that debt and today's low prices, but here we address the company's position going forward.

Even if the company is allowed to reduce its debt and wipe out its equity shareholders, will CRC be able to pay back its creditors, meet its pension and health care obligations to its workforce, and still fully fund its costly cleanup obligations to California?

The answer to this question is critical to California taxpayers and the bankruptcy process. If the answer is no, then Californians will ultimately be left with the cost of cleaning up CRC's wells. CRC has not provided bonding sufficient to cover the cost of cleaning up its wells, and CRC's bankruptcy plan does not include financing a separate fund earmarked for cleaning up its wells. Therefore, to have enough cash-in-hand to close its wells and meet its legal obligations, CRC needs to generate sufficient cash flow to actually close those wells—or be able to convince creditors to provide yet another loan to close its wells on the promise that future oil prices will generate positive cash flow.

We find that, based on current trading forwards for oil and gas prices to 2025, and long-term forecasts from the Energy Information Administration thereafter, CRC is unlikely to generate sufficient cash flow to meet its closure obligations in 2025, when the company has indicated that its first well-closure obligations come due, and any positive cash flow thereafter is based on unrealistically optimistic assumptions for an oil price rebound. Specifically, we find that CRC will have little or no positive cash flow (results of operations) from 2021 to at least 2025. When the company's closure obligations come due, CRC will have no free cash to close its long-idle wells. In fact, taking into account its annual closure obligation costs, CRC will have negative valuation unless the levelized cost of oil rises above \$75/barrel (bbl).⁶ In other words, based on current market conditions, it is unlikely that CRC will be able to both pay off its restructured debt obligations and close its currently idle wells by 2025. It is speculative that CRC will generate any positive cash flow thereafter, even outside of its closure obligations.

Today, there are 545 claimants for money owed by CRC, but California has not elected to participate in the bankruptcy.⁷ The bankruptcy proceeding makes no mention of the vast scope of CRC's closure obligations to the state, and the proposed restructuring plan makes



no mention of or allowance for those closure costs. California regulators should do the following to protect the public's interests:

- Actively participate in CRC's bankruptcy to ensure the reorganization plan expressly provides for the cost of well closures, such that the cost does not fall to California's taxpayers;
- Demand that CRC create a surety or trust fund, protected from bankruptcy, to ensure that appropriate funds are available for closure;
- Pursue remuneration from Occidental if CRC is financially unable to close its own wells;
- Accelerate well-plugging and abandonment requirements to preserve jobs, reduce environmental harm, improve communities, and protect California's taxpayers;
- Increase bonding requirements on oil and gas operators to insure the state against operator failure;
- Increase fees on the oil and gas industry to fund the closure of orphaned wells; and
- Require operators to demonstrate that long-term idle wells have been fully remediated prior to issuing new permits.

The state's window of opportunity is narrowing. The bankruptcy proceeding of CRC may be one of the few moments when California can assert its position and secure an assurance that CRC will meet obligations.

We assess that CRC's books will deteriorate even after its restructuring, leading to yet a more dire insolvency within just a few years.

California Resources Corporation: Short Life, Long List of Failures

In November 2014, oil giant Occidental Petroleum spun off its “underperforming”⁸ wells in California into a separate organization, the California Resources Corporation (CRC). The new company inherited ownership interest in nearly 15,300 wells⁹ and \$4.95 billion in new debt from a cash payout to Occidental.¹⁰

CRC is a class of company known as a “stripper,” a petroleum company that specializes in pulling the last drops of oil and gas from older wells. But that model failed to provide much value in the wake of the fracking boom, and in the intervening years analysts and credit-rating agencies expressed a growing concern about

the ability of the company to meet its debt obligations, much less its investors' expectations. In 2015 and 2016, credit-rating agencies downgraded the company to an increasingly speculative rating,¹¹ citing its high cost of production, thin margins, and inability to replace its production and pay back debt. Within a year of the company's creation, its stock price had crashed to less than 10 percent of its initial value. Investors were under no illusion that CRC could stage a comeback.

Just six years after its formation, in May 2020, under the cloud of extended low oil prices, rising debt, and no clear prospect for price recovery, CRC skipped interest payments on its debt. Shortly thereafter, CRC entered into a forbearance agreement with its creditors, signaling imminent bankruptcy.¹² On July 15, 2020, the company filed for bankruptcy, with an estimated outstanding \$6.3 billion in secured and unsecured¹³ debt.¹⁴

At the time of bankruptcy, CRC had 1,224 employees, of whom nearly three quarters were employed in field operations—but only 70 of whom were represented by labor unions.¹⁵ On August 21, 2020, CRC announced that it was permanently laying off 55 nonunion employees in Kern County.¹⁶ On September 16, 2020, CRC announced its intent to lay off 15 percent of the union workforce at its subsidiary Tidelands Oil Production Company in Los Angeles County.

Today, CRC has an ownership interest in 17,971 wells in California, the vast majority of which are low or no producers, and it's facing an increasingly urgent question: How is it going to have enough capital to close those wells and meet its worker obligations?



The Environmental and Economic Harm of Unplugged Wells

Unplugged idle wells can cause enormous environmental and economic harm. Operators tend to neglect idle wells; as the wells break down, they can start leaking—into the air, soil, and groundwater.

These leaks can lead to toxic contamination of soils and groundwater, and the release of methane, a potent greenhouse gas, into the atmosphere. In addition to large-scale climate impacts, leaking methane poses a direct hazard to nearby infrastructure and housing due to the risk of contamination and explosions. The hazards of living near unplugged wells can have deep negative repercussions on local communities.

Unplugged wells contribute meaningfully to climate change. Leaking wells emit methane, a greenhouse gas with 86 times the global warming potential of carbon dioxide over a 20-year period.¹⁷ A study in Pennsylvania estimated that leakage from an estimated half million abandoned oil and gas wells amounted to between 5 and 8 percent of that state’s annual human-caused methane emissions.¹⁸ In 2018, EPA estimated that 3.1 million abandoned oil and gas wells in the United States emitted the equivalent of nearly 24 million metric tons of carbon dioxide each year,¹⁹ about the same as six large (500 MW) coal plants running around the clock, or 5 million cars. As a rough conversion, California’s nearly 75,000 likely orphan wells, idle wells, and marginal wells²⁰ would emit over 560,000 metric tons of CO₂e per year, about the same as 120,000 cars.

The state—and its taxpayers—are the backstop to ensure that wells get closed when oil companies fail.

Unplugged wells contaminate soil and water. If not properly plugged and sealed, oil wells can leak a number of pollutants, most commonly brine, as well as heavy metals and radioactive substances.²¹ A growing body of public health research has documented the correlation between exposure to toxic pollution from oil wells and a range of health impacts, including respiratory diseases,

reproductive impacts,²² cancers, and premature death.²³ Several studies have documented broad-scale groundwater contamination from leaking wells and radioactive sites near drilling operations.²⁴ The US EPA actively warns that because of radioactive contamination and toxic materials the public should “never handle, dispose of or reuse abandoned equipment at [abandoned oil and gas wells,” and warns the public “not [to] go near” these sites.²⁵

Unplugged wells are a hazard to nearby infrastructure. In recent years, there have been a number of documented events in which abandoned or orphaned wells have leaked near houses, causing fatal explosions and surface contamination.^{26, 27} Pennsylvania, laden with 8,600 known orphan wells (and likely hundreds of thousands of unknown wells, according to the state) creates a hazard priority for plugging abandoned wells with no known operator, simply trying to stem the tide of known contamination.²⁸

Unplugged wells impact local communities and impair development. Researchers have found that unplugged wells deteriorate the value of land and infrastructure. In a recent study of Pennsylvania abandoned wells, researchers concluded that “over the period 1970 to 2017, the two acres surrounding the typical unplugged well received roughly half as much building as the same area surrounding plugged wells,” and that “the typical unplugged well leads nearby properties to have a market value 12 percent less than properties near plugged wells.”²⁹ In California, wells coincide with highly impacted communities; approximately 56 percent of idle wells in the state are in environmental justice communities.³⁰



California's \$6.3-Billion Unplugged Wells Crisis

Wells that have not been plugged and abandoned properly (or at all) represent a liability—a cost and a risk to which both petroleum companies and states have historically given little attention, and which they are loath to have fall into their laps.

Once a well is opened, the obligation to close the well falls to the current operator of that well. But what happens when that operator goes out of business or simply ceases to exist as a corporate entity? Wells that have no responsible owner or operator are referred to as “orphaned” wells, and the obligation to close those wells falls to the state, or federal government on federal lands. In other words, the state—and its taxpayers—are the backstop to ensure that wells get closed when oil companies fail.

For years, the oil companies assured states that the companies would be able to clean up their wells. But even in times of high oil prices and enormous profits, oil companies let less-productive wells sit idle and pushed back on regulations requiring the closure of nonproductive wells and requirements to post closure bonds.³¹ With lower oil prices, the risk has become much more evident: In many cases, it is likely that producers won't be able to cover their costs at the end of those wells'

lives, and states will be left holding the cost of closure and remediation.

California holds only \$107 million in available bonds for what amounts to more than \$9.1 billion in looming closure costs for all of California's unplugged wells.

In 2020, the California Council on Science and Technology (CCST), a state-chartered, nonprofit research organization, issued a report estimating that California likely had 5,500 orphaned wells on its hands already, which would require more than \$500 million in net costs to the state to close.³² The report further estimated another 69,400 “economically marginal and idle” wells³³ that were at future risk of being orphaned, and a closure liability of over \$5.2 billion associated

with those wells. Those failing wells represent two-thirds of all of the open wells in California. In total, according to the CCST report, California could already be carrying \$5.8 billion in well-closure obligations from operators that have already, or will shortly, cease to exist.

California's well crisis might be worse—and nearer—than assessed by CCST. Although not released until January 2020, the report was published internally in 2018, when recent oil price forwards hovered between \$50-\$60/bbl.³⁴ In early 2020, international oil markets collapsed, with no firm prospect for recovery in sight.³⁵ As a result, firms quickly started idling marginal wells, many of which will never resume production. As of January 2020, California reported 39,000 idle, unplugged wells³⁶ and another 53,400 “economically marginal” wells³⁷—raising the at-risk well count to 92,400 of the state's reported 114,500 total oil and gas wells, and the liability to the State of California to \$6.3 billion. Today, less than 20 percent of California's wells produce more than 5 barrels of oil equivalent per day.

Some states attempt to insulate themselves from the risk that well operators will become insolvent by requiring well operators to post bonds for the eventual closure of the wells. The bonds are meant to provide a backstop source of funds to the state if a well is orphaned. But in the vast majority of cases, bonding is insufficient to cover the actual costs of closure, and this is very much the case in California. In fact, CCST estimates that California holds only \$107 million in available bonds for what amounts to more than \$9.1 billion in looming closure costs for all of California's unplugged wells.³⁸ This includes only \$79 million in available bonds for the \$5.8 billion in expected costs to close California's 75,000 orphan, high risk, idle, and marginal wells.³⁹

California is clearly inadequately protected against the impending costs of closure for idle wells. But can we determine if the companies running these oil wells will be able to cover their own closure costs and remain solvent? In the next section, we examine the closure obligations facing California Resources Corporation, and that company's ability—or inability—to pay those obligations.

CRC's Massive \$900-Million Closure Liability

CRC lists ownership of 17,971 unplugged wells in California.⁴⁰ We estimate that closing the entirety of CRC's wells will cost more than \$900 million (2019\$).⁴¹

That cost, derived from the company's obligation under state law to close its wells, is effectively a debt owed to the state, because the state is ultimately responsible for ensuring the wells are closed. As a regulator that has issued permits that impose ongoing obligations on CRC, California has standing to participate in CRC's bankruptcy, including to ensure that the reorganized CRC will be able to meet its future obligations. But the state has made no effort to require CRC to account for its closure obligations, and CRC's proposal to resolve the bankruptcy proceeding makes no explicit mention of how it will satisfy its obligation to close its wells.

Even though CRC has made no plans to set aside funds to cover its well-closure obligations, the costs of closure do show up in CRC's books. CRC and other oil and gas companies refer to their closure costs as asset retirement obligations (ARO), and only report

those obligations under disclosure requirements from the Securities and Exchange Commission. Under their reporting guidelines, AROs, or the costs of well closure, are allowed to be discounted to the expected end of the wells' lives. The practice of discounting allows costs (or benefits) that will be incurred in the future to be recognized at the value that they have to a company today. For closure costs, which oil production companies hope will not be incurred for years, or even decades, a company can use discounting to argue that it need only put away a little money today to ensure that it has saved enough to cover its far-flung closure costs. In CRC's case, it reports an asset retirement obligation of just \$517 million,⁴² or about half of its overall expected cost to close.

CRC states that the vast majority of its closure liability is out “more than five years,”⁴³ and that “these

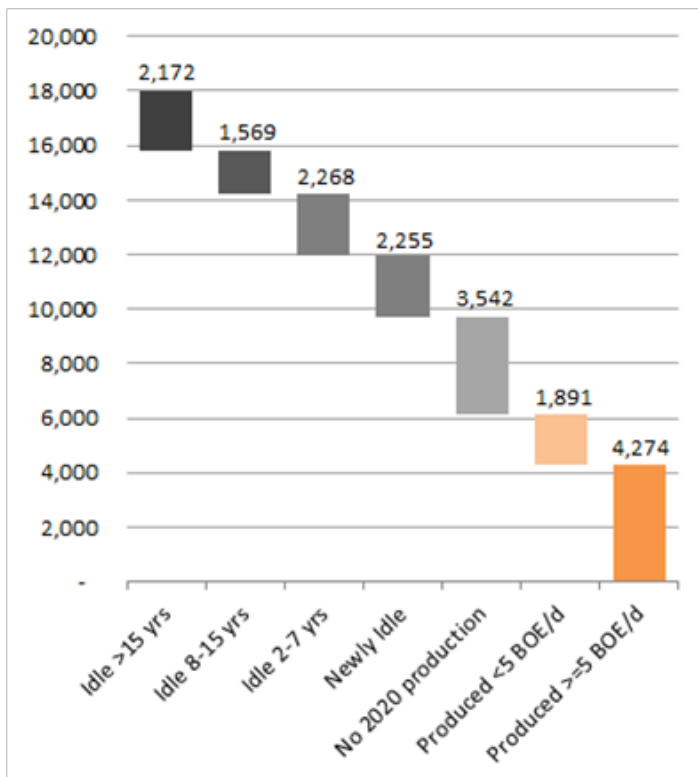
costs typically extend many years into the future.” So are these costs far out in the future, as cast by CRC, or are they more likely to hit CRC’s books soon? Unfortunately, CRC’s accounting is opaque, but we can reverse engineer some of the company’s accounting, and in doing so, we come to one of two conclusions: (a) the company faces a much higher aggregate closure cost than \$900 million, or (b) the company has mischaracterized just how quickly its obligations will become actual expenses. Either option is a poor outcome for CRC, and for the communities who live near its wells.

The vast majority of CRC’s fleet of 18,000 wells are unproductive or idle. In the first half of 2020, only one-third of CRC’s wells produced any oil or gas at all, and less than one-quarter produced more than five barrels of oil equivalent per day. In other words, more than three-quarters of CRC’s oil and gas wells have reached the end of their economically productive lives—or are well past their productive life, in some cases by decades.

CRC’s wells are mostly unproductive. More than half of the company’s wells are formally “idle,”⁴⁴ while another quarter either produced nothing in the first six months of 2020 or produced less than five barrels of oil equivalent per day.⁴⁵

In 2019, California strengthened its idle-well regulations by requiring more stringent testing for idle wells and the submission of management plans to eliminate long-term idle wells (wells idle more than eight years).⁴⁶ If an idle well fails to pass certain testing, the operator may be required to plug and abandon the well or schedule the well to be plugged and abandoned under an approved idle-well management plan. The idle-well regulations were meant to incentivize operators to close idle wells quickly.

Under California’s revised regulations, CRC should have an obligation to start closing many of its idle wells now. However, the company states that it has no asset retirement obligations in the next five years, implying that the first closure obligation (possibly as negotiated with the state) is not until 2025. To reach the company’s stated asset retirement obligation, we assess that the company may have a large-scale closure obligation of nearly \$400 million as soon as 2025.⁴⁷ Tracking the company’s most conservative decline rate⁴⁸ and anticipated rate of idling,⁴⁹ we estimate that in 2025 CRC will need to close more than 5,000 wells, and an average of 620 wells every year thereafter until 2045. We are left with the question of whether CRC will have sufficient liquidity (i.e., cash) to fund its closure obligations in the mid 2020s. To answer that question, we have to project the company’s bottom line: Will CRC be able to generate sufficient cash flow—or even the promise of sufficient cash flow—to pay for its own closure costs?



CRC Future Cash Flow Is Unlikely to Cover Its Well-Closure Costs

By 2025, CRC will have a legal obligation to close a substantial number of wells, incurring significant—and ongoing—plugging and abandonment costs.

We assess that it is very likely that CRC will not be able to generate sufficient revenue between now and 2025 to fund its impending closure obligations. Instead, CRC will be compelled to seek another series of loans to fund its closures, at which point lenders will be faced with the question of whether the company is likely to be able to satisfy those loans. We assess that it is speculative that CRC will have any positive cash flow after 2025 to satisfy lenders. In other words, taken with CRC's closure obligations, we believe that CRC's core business has a severely negative valuation.

While one might be tempted to leave that question to future lenders, the State of California—and today's lenders—need to be satisfied today that CRC will be able to remain solvent long enough to complete its current obligations. Looking forward, the facts are not in CRC's favor.

Leaving aside CRC's asset retirement obligations and worker obligations for the moment, from 2020 to 2025 CRC's expected cost of production, its overhead⁵⁰ are almost exactly the same as its expected annual revenues from its existing fleet of wells.⁵¹ In other words, we expect CRC to make no net revenue as a result of its operations. That means that CRC will only be able to pay the interest on its loans; it will not collect sufficient revenue to pay the principal on its debt,⁵² pay for its asset retirement obligations, or meet its obligations to its workers.

In 2025 or shortly thereafter, CRC has anywhere from \$300 to \$400 million in well-closure obligations due in California—and obligations that will eventually exceed \$900 million. Whether CRC is able to find a new lender to provide a new line of credit at that point will depend on four conditions:

1. Oil prices will need to bounce back to historic highs rather than continuing at today's lower projected prices;

2. CRC's baseline decline rates (i.e., the rate at which oil in a reservoir diminishes) will have to be much slower than reported;
3. The costs of well closure will have to stay at today's observed averages and not climb substantially;
4. California and the United States will have to ignore the cost of carbon emitted from burning petroleum for the next two decades.

It is speculative that all four of these conditions will continue to be true. The violation of any one of these conditions would result in no long-term value for CRC.

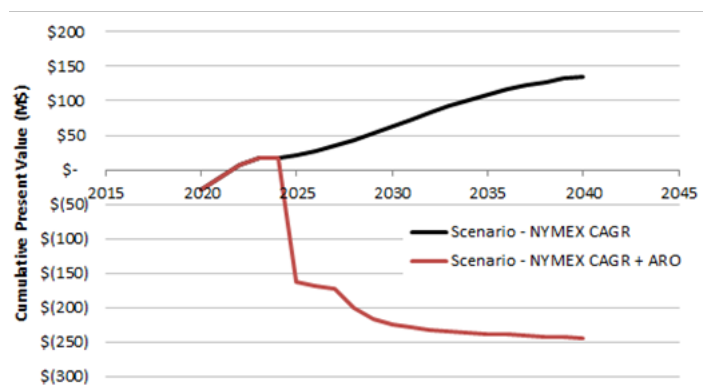
SLOW RECOVERY FOR OIL PRICES

In 2020, oil prices plummeted under the dual shocks of low pandemic-induced demand and the collapse of international oil cartels. But while prices only dipped into the negative for a short period, analysts are deeply split on the long-term trajectory for oil prices. Long-term forecasts vary widely based on projections of demand, the availability of low-cost supply, the clout of oil-producing countries, and carbon prices. Today, the NYMEX futures market has stabilized in the mid \$40/bbl range, well below the ~\$60/bbl of 2018/2019, and less than half the price level seen before the last crash in 2014.

We estimate that prices for oil would have to rise to above \$75/bbl⁵³ for CRC to both make interest payments on its debt and pay for its well-closure obligations. For our "slow recovery" scenario, we used the trajectory of NYMEX market forwards through 2025,⁵⁴ and simply held that trajectory through 2040.⁵⁵ At these lower prices, CRC makes only the thinnest of margins—before accounting for its well-closure obligations and payments of debt principal.

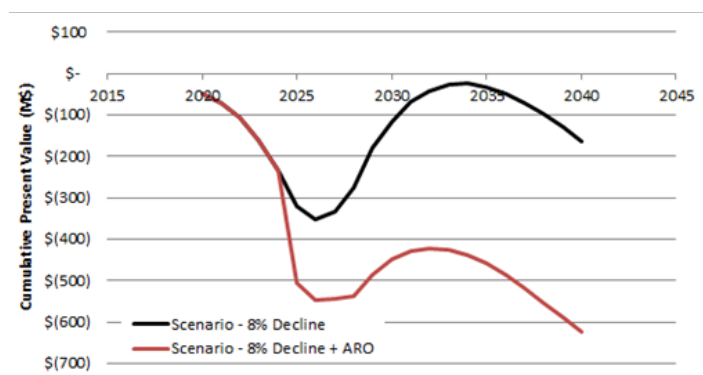
If we price out the cost of CRC's closure obligations year-by-year after 2025 and add the cost of those obligations into the company's cash flow, we see that the value of the company would fail to make positive margins and likely then fail both to make interest

payments on its debt and to pay off its principal obligations. The graphic below shows the cumulative present value of CRC (not including principal repayment) without and with payments for its well-closure costs.⁵⁶ The graph indicates that if oil prices stay at their current projected trajectory, the company would make very little net positive margin (black line). The company's asset retirement obligations result in the company losing value year-by-year, even if it defaults on its current loans (red line). Notably, these trajectories do not even consider the final repayment of the company's loans and lines of credit. In other words, we find no mechanism by which CRC returns to solvency.



STEEPER DECLINE RATES

One of the critical uncertainties in assessing the prospects of a petroleum producer is an assessment of its underlying decline rates. Our initial analysis assumes a modest 3.5 percent decline rate for most of CRC's oil wells, derived from its reported annual production, adjusted by acquisitions. However, in numerous



other presentations and investor materials, CRC discusses baseline decline rates exceeding 9 percent and reveals that in recent years it has used enhanced recovery methods, such as steamflooding, to bolster production. Such enhanced recovery methods provide faster access to petroleum, but at the cost of a far steeper decline later. If CRC has been using substantial enhanced recoveries, it is likely that the base decline rate is substantially steeper than portrayed by annual production.

At \$900 million, CRC's obligation to California is one of its largest liabilities, and yet California has chosen not to participate in the bankruptcy to ensure that these obligations are honored.

At 8 percent base decline rates,⁵⁷ the company never realizes a positive aggregate value, even before its asset retirement obligations are paid for. Stacking in the company's closure obligations to California results in substantial negative long-term valuation, even at the optimistic long-term oil prices of EIA's 2020 Annual Energy Outlook.⁵⁸

HIGHER CLOSURE COST OR CARBON PRICE IMPOSITION

Under a higher closure cost and nearer term obligation,⁵⁹ CRC fails to realize positive value until nearly 2030, and only does so if oil prices rise substantially and decline rates remain persistently low. By 2026, the company has realized an extra \$300 million in debt.

The imposition of carbon prices—whether on upstream producers or downstream consumers—would serve to raise the cost of production or reduce prices paid and cut deeply into CRC's thin forward margins.

CRC's Obligations to California Are Not Secure

We can draw a number of conclusions from our assessment of CRC's future closure obligations and finances:

CRC's asset retirement obligations are legally required obligations. In acquiring Occidental's oil and gas assets, California Resources Corporation took on both the rights and responsibilities of operating those wells. Key among those responsibilities is the obligation to timely close wells at the end of their operating life. Today, CRC has sought to cast the end of those wells operating lives as a far-in-the-future proposition. It is anything but. More than three-quarters of CRC's wells are past the end of their productive lives. Nearly 2,200 of the company's wells have already sat idle for 15 or more years. CRC has a legal—and ethical—responsibility to allocate the appropriate resources to the closure of those wells.

CRC's asset retirement obligations to California total almost \$1 billion. We estimate that, in aggregate, CRC's wells would cost in excess of \$900 million to close today; a cost that will only rise going forward. The obligation to close those wells is an administrative obligation, placing it above CRC's unsecured creditors in priority. At \$900 million, CRC's obligation to California is one of its largest liabilities, and yet California has chosen not to participate in the bankruptcy to ensure that these obligations are honored. Although CRC has not sought to discharge its well-cleanup obligations in the bankruptcy, it also has not set aside any funds to ensure that it will be able to satisfy these obligations when they come due.

In allowing deferred closures, California has extended a very low-cost line of credit to CRC. Typically, creditors who are unsure whether debtors will remain solvent demand greater certainty and greater risk premiums on their credit. California's relatively lax closure obligations—allowing for an extended idle well-management plan and allowing CRC to maintain over 2,000 idle wells more than 15 years old—have effectively extended a line of credit to CRC. The state has deferred CRC's obligations, resting on the unsubstantiated assurance that CRC will have sufficient

revenues to actually close its wells. Instead, California has allowed CRC to make revenues and push back its obligations to a future date—if ever. In doing so, the state dramatically has dramatically increased the possibility that taxpayers will end up paying for the closure of orphaned wells, rather than the corporations that reaped profit from the extraction of fossil fuels.

CRC is unlikely to generate sufficient funds to fund its closure obligations by 2025. We assess that, under current price trajectories, CRC is unlikely to generate positive cash flow between now and 2025. Given that the company has no free cash today under bankruptcy, and that creditors are keen to protect their own interests, it is unlikely that CRC will have any revenues set aside for closure obligations by 2025. CRC will therefore seek to incur additional debt to fund closure activities, yet it is unclear whether lenders will assess a positive value for CRC at that time. There is a high risk that CRC could forgo closure activities or find itself insolvent again when those obligations come due.

CRC's ability to generate positive cash flow after 2025 is speculative, at best. CRC's ability to generate positive cash flows after 2025 will depend on an unlikely confluence of rapidly increasing oil prices, very low decline rates for its existing wells, low realized closure costs, and the absence of any form of carbon regulation applied to the oil and gas sector in the US or California. The company is unlikely to be able to pay the interest on its debt, much less pay down its debt principal and meet its obligations to California. Not a great bet—either for investors or for California.

California may be looking at yet another set of orphaned wells passed to state taxpayers instead of to the producers who profited from the extraction of fuels for decades.

California will likely face orphan-well costs from CRC if it fails to secure its obligations. According to research sponsored by California, the state likely has more than 5,500 wells that are already or nearly orphaned, which will cost the state around \$500 million to close.⁶⁰ CRC alone poses a risk of more than \$900 million to the state. Given CRC's current financial state, likely lack of near-term net revenue, and very low probability of a longer-term recovery, California may be looking at yet another set of orphaned wells passed to state taxpayers instead of to the producers who profited from the extraction of fuels for decades.

CRC will leave its workers behind. CRC should be employing people today to take care of its asset retirement obligations and to meet its closure requirements. Under the bankruptcy, the company's executives will prosper, but the people who work in the fields will be laid off and denied their pensions, health care, and retirement benefits.

California has the opportunity to secure its obligations. It needs to take action quickly, however, to ensure that it is not the last entity locked out as other creditors claim CRC's meager assets.



Action Items for California

While the future for California Resources Corporation does not look promising, the State of California can still protect the interests of its taxpayers, its impacted communities, its workers, and its climate. California has a narrow window of opportunity to exercise its interests both here in CRC's bankruptcy, and going forward.

California should participate in CRC's bankruptcy to ensure the reorganization plan expressly provides for the cost of well closures. The state, specifically the California Geologic Energy Management (CalGEM) Division of the California Department of Conservation,

is entitled to participate in CRC's bankruptcy as a party to whom CRC owes an obligation. CalGEM should actively participate in the proceedings as a strong and vocal advocate on behalf of Californians. It must ensure that cleanup costs remain the responsibility of the

operator—not the public. CRC’s bankruptcy reorganization plan must specifically identify steps, both financial and operational, that will be taken by CRC to ensure that CRC’s obligation to the state is fully funded. Our assessment finds that CRC is likely to enter bankruptcy again in a few short years, at which point it would almost certainly seek to discharge its responsibilities. California must secure its interests today.

California should demand a bankruptcy-remote vehicle to reserve appropriate funds for well closure.

While CRC will retain the responsibility to close its wells, regardless of its financial condition, closure has a very real cost, and should CRC dissolve as part of a future subsequent bankruptcy, it would leave California holding nearly a billion dollars in closure costs. To prevent such an outcome, California should take action today to secure a bankruptcy-remote vehicle, such as a surety or a trust, to ensure that appropriate funds are available for closure, regardless of future oil prices, decline rates, or other uncertainties faced by CRC.

California should pursue remuneration from prior well operators if the current operator fails. When Occidental spun off CRC, it created a company with \$4.95 billion in debt and already holding the well-closure liability for more than 4,800 idle wells.⁶¹ Industry observers casually noted that Occidental was off loading its less productive wells in California—a boon to Occidental and a pathway to disaster for CRC. CRC’s debt-laden spinoff, and the transfer of well permits from Occidental to CRC, was clearly to result in the inevitable bankruptcy of CRC.⁶² California should not stop at CRC, but actively pursue remuneration from Occidental if (and when) CRC is no longer able to cover the costs of remediation.

California should sharply accelerate well plugging and abandonment requirements to preserve jobs, reduce environmental harm from unplugged wells, improve communities, and protect taxpayers. California has a highly experienced oil and gas workforce, and immense job opportunity—if it can be paid for. Rather than waiting until decades after oil wells have ceased being economically productive, California should implement a stringent and sharply accelerated well-closure requirement. Such a process will keep the experienced community employed, more

rapidly reduce methane emissions, reduce the negative impacts of having degrading and unused infrastructure in communities, and protect California’s taxpayers from companies that seek myopic profits and then become insolvent. California has identified nearly 75,000 likely orphan wells, idle wells, and marginal wells that it estimates would cost \$5.8 billion to safely plug and abandon.⁶³ If this were spent over 10 years, it would create an estimated over 9,000 jobs.⁶⁴

California must increase bond requirements on oil and gas operators to ensure a sound backstop.

Bonding allows the state to ensure that it has access to bankruptcy remote funds to close wells if a company goes out of business. With sufficient bonding in place, the state can be assured that either the company will complete well closure or the state can use the funds from the bond to pay for the work. However, to be an effective backstop, bonding must be set at a level sufficient to fully cover the costs of closure if a large company, like CRC, leaves a large swath of wells behind. Bonding requirements in California are remarkably insufficient to cover the costs of closure⁶⁵ and must be increased by more than 85 times (on average) to cover California’s expected costs of closure.

California should increase fees for the industry as a whole to fund the closure of orphaned wells. In the absence of robust bonds, state taxpayers may be left paying for the closure of oil and gas wells with no financially viable operator. In addition, the state today has over 5,500 likely orphaned or near-orphaned wells, with an estimated closure cost of nearly \$530 million.⁶⁶ The industry that has profited so much from the exploitation of fossil fuels in California should bear the cost of closing those idle wells, rather than the state’s taxpayers.

California should tie requirements for new permitting to a demonstration that no idle wells remain in a company’s portfolio. California should insulate itself from future closure costs by strongly curtailing any new permitting. Any new permits that are granted should be conditioned on sufficient bonding, sufficient fees to recoup the closure costs for orphaned wells, and an affirmative demonstration that the operator has no idle wells in its portfolio. In no case should new permits be issued to companies sitting on any long-term idle wells.

Endnotes

- 1 Bankruptcy proceeding of California Resources Corporation, in Texas Southern District Federal Court. Case 20-33568, filed July 15, 2020. Available online at <https://dm.epiq11.com/case/cfo/info>.
- 2 Bankruptcy proceeding of California Resources Corporation, in Texas Southern District Federal Court. Case 20-33568. Notice of Revised Disclosure Statement [Docket No. 283], filed August 10, 2020. <https://document.epiq11.com/document/getdocumentbycode/?docId=3724233&projectCode=CFO&source=dm>.
- 3 California Department of Conservation. Well Production and Injection Report by Month, 2020. ("CalDC Production Report 2020") Accessed September 1, 2020.
- 4 California Code of Regulations, Title 14, Div. 2, Chp 4.
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- 6 Nominal levelized price of oil, 2027-2040, using 10 percent discount rate. Valuation is cumulative present value to 2030.
- 7 As of September 25, 2020. In addition to the 545 monetary claimants, there are another 7,080 non-monetary claims, including contracts and purchase agreements. California Department of Conservation is listed, but with no stated claim. An attorney for the Department of Conservation entered a motion to be admitted to the case on August 3, 2020.
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- 13 Corporate debts are characterized by their priority in case of bankruptcy. "Secured" creditors have the first priority at being paid if their debtor becomes insolvent. Unsecured creditors have sequentially lower priorities and may receive little or nothing in the case of a bankruptcy. A secured creditor may demand that a company post collateral—i.e., in the case of a well operator, its actual equipment, wells, and leases—to secure the loan. Because secured creditors are lower risk (i.e., they'll receive payment in the case of bankruptcy), they may offer lower-cost loans.
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- 31 A closure bond ensures that the state has access to funds to close the wells if the owner becomes insolvent. There is a wealth of research showing that most states, and the federal government, have required massively inadequate bonds. The California Council on Science and Technology (CCST) estimates that the state has access to less than \$110 million in bonds for a closure obligation exceeding \$9.1 billion. Source: CCST, 2020.
- 32 CCST 2020, Table 8.
- 33 Defined as producing less than 5 barrels of oil (equivalent) per day.
- 34 NYMEX forwards for Brent Crude.
- 35 Forwards for Brent Crude do not reach \$50/bbl again until late in the decade, at which point volumes are too thin for firm projections.

- 36 Idle wells are those that have not produced in two years. This number does not include marginal wells as counted by CCST. Source: California Department of Conservation. 2020 Idle Well Management Plan inventory of Idle Wells. ("CalDC, 2020 IWMP Inventory") Updated July 3, 2020. Accessed September 20, 2020. Available online at https://www.conservation.ca.gov/calgem/idle_well/Documents/2020-IWMP-Inventory.xlsx.
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- 38 CCST, 2020
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- 41 Average closure costs by district from CCST 2020. Average closure cost per well is \$50,200. Total estimated closure cost is \$903 million.
- 42 CRC 2020 10-k, page 65. CRC portrays that \$489 million of \$517 million asset retirement obligations will not be incurred within the next five years.
- 43 CRC 2020 10-k, page 65
- 44 CalDC, 2020 IWMP Inventory
- 45 CalDC Production Report 2020
- 46 CA PRC §3008 (e)
- 47 Scenario assumes that California allows CRC to defer the closure of currently long-idled wells to 2025, and then does not require CRC to close idle wells until eight years after they've become idled, and 10 years after they've ceased production.
- 48 Decline rate: the rate at which oil and gas wells reduce production every year, derived from CRC presentations and 10-K filings. We estimate a base decline rate of 3.5 percent (estimated from form 10-K filings, total production less adjustments), although other presentations show base declines of 9-12 percent
- 49 Wells are assumed to be idled on a pro-rata basis as a function of overall decline rate. In reality, some wells will become economically nonviable far faster, and a few others may have a long tail of production.
- 50 Interest and debt after terms of proposed bankruptcy. Total cost of production plus debt includes production costs, general and administrative expenses, non-income taxes, and interest and debt expenses. Production costs derived from average per-barrel production costs 2017-2019, inflated at 2 percent. General and admin expenses inflated from average 2017-2019. Non-income taxes derived as a fraction of petroleum sales revenues, using 2017-2019 average fraction of revenues. Interest and debt expenses estimated from bankruptcy disclosure revised loan terms, filed July 31, 2020, inflated.
- 51 Revenues from sales of oil, NGLs, and gas derived from total annual production, depleted at CRC decline rates (as derived from total production by product, less adjustments for acquisitions). Futures prices for oil indexed to NYMEX Brent Crude from 2020-2025. Futures prices for gas indexed to NYMEX Henry Hub from 2020-2025. Futures prices for NGLs inflated from 2019 received prices. Note that gas and NGLs comprise less than 20 percent of CRC sales revenue.
- 52 Our calculations do not take into account depreciation expense—i.e., CRC's payment of loan principal. In order for CRC to be a going concern, it would need to account for both the interest payments of its loans and the expected payment of its principal.
- 53 Prices would have to rise above \$75/bbl on a nominal levelized basis from 2026-2040 for CRC to successfully meet its interest payments and close its oil wells.
- 54 Commodity futures, such as the NYMEX market, are considered reasonably accurate for a relatively short period of time. As long as there is sufficient trading volume, the market forwards tend to reflect the market's expectations of price formation, absent major catastrophic events (such as pandemics and battling oil-producing countries).
- 55 NYMEX Brent futures from 2020-2024 rise at about 4.7 percent cumulative annual growth rate (CAGR). Applying this rate forward, prices rise above \$70/bbl by 2032, and top \$100/bbl by 2040.
- 56 Using an assumed 10 percent discount rate
- 57 An 8 percent decline rate may still represent a conservative base decline rate. In a March 2016 presentation at the Scotia Howard Weil 2016 Energy Conference, CRC discussed base production declines in its Elk Hills property of 15 percent, and 9 percent in its Kern Front properties. In its 2017 Form 10-K filing, CRC discussed "year-over-year production decline" of 12 percent-13 percent, stating that "the overall production decline continued to reflect our decision to withhold development capital and selectively defer workover and downhole maintenance activity in the early part of the year."
- 58 Oil prices from 2029-2040 from Energy Information Administration (EIA) Annual Energy Outlook 2020 Brent forecast in nominal terms. The forecast projects a CAGR of 4.6 percent from 2020-2040, well over double EIA's inflation assumption.
- 59 Scenario assumes that average CRC closure cost is closer to \$55,000 per well and increases at 1 percent point higher than inflation. Scenario also assumes that obligations begin in 2022 and that CRC must close wells within five years of becoming idle.
- 60 CCST, 2020
- 61 CalDC, 2020 IWMP Inventory. All idle wells with "idle start dates" of December 2014 or prior.
- 62 In fact, CRC recognizes that its creation was unlikely to succeed from the start. CRC's bankruptcy disclosure states that "The spin-off coincided with a severe dislocation in commodity markets in late-2014 and a sharp decline in Brent crude oil prices, resulting in a diminished asset base compared to CRC's initial debt burden." CRC was created in April 2014 as a wholly owned subsidiary of Occidental. From July to December 2014, oil prices plunged by \$60/bbl, and yet in December 2014, Occidental still elected to spin off CRC, recognizing that the company was unlikely to have value. In the first year alone, CRC recognized an impairment of \$4.85 billion. Occidental clearly recognized that CRC was an opportunity to release bad assets.
- 63 CCST, 2020.
- 64 These 9,000 jobs would last the entire 10-year period. Based on findings from "Job Creation Estimates Through Proposed Economic Stimulus Measures," by the Political Economy Research Institute (PERI, 2020), showing that 15.9 jobs are created for every \$1 million spent. Available online at <https://www.sierraclub.org/sites/www.sierraclub.org/files/PERI-stimulus-jobs.pdf>.
- 65 CCST, 2020 finds that California has only \$107 million in secured bonding to cover the closure costs of more than 106,000 wells, or a little over \$1,000 per well on average. The same report estimates that the average onshore well in California costs \$68,000 to close.
- 66 CCST, 2020.

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