# **California's Oil Country Faces an 'Existential' Threat. Kern County Is Betting on the Carbon Removal Industry to Save It**

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**Body**

Omar Hayat sees the future in a patch of dirt near Bakersfield, California, where ***oil*** was discovered more than a century ago. That discovery paved the way for ***Kern*** County's lucrative petroleum industry. Now, Hayat hopes to use the same dirt patch to launch a new business-one that may help California reach its ambitious climate goals.

"We want to be accepted as a solution," said Hayat, who is executive vice president of operations at California Resources Corporation, one of the state's leading ***oil*** producers.

Hayat is leading the company's push to store climate-warming carbon more than a mile underground, in the cracks and crevices of ancient rock formations. The firm is one of several companies developing plans to capture carbon from ***oil*** and gas plants and the air, and store it deep beneath California's ***oil*** country at the foot of the San Joaquin Valley.

***Kern*** County is betting those projects will make it the center of California's nascent carbon removal and storage industry. The county is already the state's largest ***oil*** producer and a top producer of agricultural products, but climate change-and the state's effort to mitigate it-pose a threat to those economic mainstays. The county hopes the new carbon management industry will help make up for the hundreds of millions in tax revenue it anticipates losing by 2045, when California plans to phase out all ***oil*** drilling and eliminate most carbon emissions.

"Our economy is built on ***oil*** and agriculture. This is how we keep our libraries open. This is how we provide Meals on Wheels. This is how we provide our services to the million people here," says Lorelei Oviatt, the county's director of planning and natural resources.

In late December, ***Kern*** and the federal government took steps that could allow CRC to begin capturing and storing carbon next year. The county published its draft environmental review of the company's project, and the U.S. Environmental Protection Agency said it plans to approve permits to allow CRC to inject carbon under an ***oil*** field.

***Kern*** has found opportunity in renewable energy, becoming the state's biggest producer of solar and wind energy. But the county's push for carbon management amounts to a huge experiment-with its economy and community, as well as California's climate commitments, hanging in the balance.

In the 900-page environmental assessment, ***Kern*** officials determined that CRC's project is likely to have "significant and unavoidable" impacts on local air quality, even with measures taken to curb emissions. The report also notes the proximity of proposed pipelines to schools and neighborhoods. Those are among several issues likely to be contested when the public begins weighing in on the project this week.

Still, the county sees carbon management as critical to its future.

"It's existential," Oviatt said. "What is this place going to look like in 30 years? What's it going to look like in five?"

In addition to moving quickly towards clean sources of energy, countries will need to remove carbon from the air in order to avoid the worst effects of climate change  according to the IPCC, the United Nations panel that assesses the science of climate change.

Today, 41 commercial carbon capture facilities are operating worldwide. Together they have the capacity to capture much less than 1 percent of the emissions that countries produce every year-negating annual emissions equivalent to 49 million metric tons of carbon per year.

California, which has positioned itself as a global leader on climate action, wants to pull an unprecedented amount of carbon from the air-100 million metric tons-by 2045. That represents nearly a quarter of the emissions the state produces today.

"Those are enormous numbers, relative to where not just California is today, but where the world is today," said Michael Wara, director of the climate and energy policy program at Stanford University.

Still, the Biden Administration is pouring billions into the carbon capture and storage industry, and ***Kern*** is racing to get a piece of it. Much of that money is going to regions led by Republican lawmakers who support boosting domestic energy production. Until he resigned from Congress last month, Bakersfield Republican and former House Speaker Kevin McCarthy represented much of ***Kern*** County.

Last year, the U.S. Department of Energy announced it would offer $3.5 billion for companies to demonstrate direct air capture, a process that sucks carbon from the air so that it can be stowed underground. The department recently said it would give $1.2 billion in grants for "Direct Air Capture hubs" in Louisiana and Texas.

Carbon removal projects proposed in California, all located in the conservative-leaning Central Valley, earned more than $20 million from the pool of federal funding for feasibility and planning studies, including roughly $12 million to a group led in part by CRC, Hayat's company, and the city of Bakersfield. The amount is small compared to the billions to be disbursed elsewhere, but significant enough to continue fueling ambitions in ***Kern***.

Several other major ***oil*** and gas companies are also racing to launch their own carbon capture facilities in ***Kern***, including Chevron and Aera Energy. Though certain details of CRC's carbon removal proposal have not been made public, its ambitions center on a project called "Carbon TerraVault 1." The project would be located in the Elk Hills ***Oil*** Field, one of the most productive in the nation, near the site where ***oil*** was discovered in 1911. The company wants to inject millions of tons of liquefied carbon a mile underground, beginning with carbon dioxide from the oilfield.

If all of the projects proposed for the county come online, planning director Oviatt says ***Kern*** could be home to most of the storage required to achieve the state's carbon removal goals. Oviatt frames the growth of this industry as inevitable. Even if the projects currently proposed don't win regulatory approval, she's confident that more proposals will follow them, she said at a recent public forum.

The county estimates that the carbon removal industry could generate as much as $64 million per year in tax revenues and create thousands of jobs. ***Kern*** envisions much of that money coming from a proposed Carbon Management Business Park, which it sees as a way to bring in emerging climate-friendly industries-including future direct air capture projects.

If the ***oil*** industry leaves ***Kern***, more than 16,000 jobs could disappear and the area's already-high poverty and unemployment rates could climb. A county-commissioned study estimates the business park could support up to 22,000 permanent jobs, both in carbon removal and in adjacent industries.

"That's encouraging," Oviatt says. "We are looking for hope."

But realizing that vision is dependent on buy-in from the private sector. Oviatt says a handful of companies have expressed interest in the idea but so far none have submitted formal applications.

And community support for the county's vision is hardly unanimous. At an October county Board of Supervisors meeting, residents and environmental activists expressed concerns about the need for pipelines to carry carbon across the state, which could rupture or leak.

They also questioned whether the proposed TerraVault and business park would worsen air quality. The American Lung Association consistently ranks ***Kern*** County's air as among the most polluted in the country.

"It does not make sense to proceed with this park given the current health and air quality conditions in ***Kern*** County," said Emma De La Rosa, an advocate with the Leadership Counsel for Justice and Accountability.

Other community organizers like Ileana Navarro with the Central California Environmental Justice Network called for greater transparency and questioned the technology's track record.

"Projects worldwide have failed to live up to their promise on climate benefits, so why take the risk here in our backyards and in the backyards of already overburdened communities?," the Bakersfield resident asked.

The county's environmental review shows that pipelines carrying carbon dioxide and injection sites are slated to sit within a few miles of a handful of elementary schools and a couple of towns.

Oviatt says that any future project would be located far away from neighborhoods to reduce the health risks to residents. But she was frank about the county's prospects if a thriving carbon removal industry fails to take off in the region.

"I think we're all concerned about our health, but we're also concerned: Will ***Kern*** County survive these policies of the state of California?" Oviatt told the meeting. "I wanted to make sure the community understands that we are at a very, very difficult crossroads."

Carbon can't be injected and permanently stowed underground just anywhere, but the storage potential in the Central Valley is "a gift from God," George Peridas, the energy program director at Lawrence Livermore National Laboratory, said at an April symposium on carbon management. The San Joaquin Valley is one of about three dozen areas nationwide with the potential to store the climate pollutant, according to assessments by the U.S. Geological Survey. That's because depleted ***oil*** and gas fields here can, in theory, make ideal reservoirs for captured carbon.

For decades, petroleum companies operating in the region have made billions pumping fossil fuels out of the ground. Now, these same corporations hope to also make money by pumping liquefied carbon back underground.

"It's just like reconfiguring a Lego set," Hayat, the ***oil*** executive, says. "Instead of using that CO2, for example, for increasing ***oil*** and gas production, we're just putting it away for storage."

But critics say it's not so simple.

Storing carbon permanently and safely remains a complex technological challenge full of potential pitfalls. Extracting ***oil*** is different than ensuring carbon stays buried for thousands of years without leaking, according to Daniel Ress, a staff attorney at the Center on Race, Poverty and the Environment. California already has thousands of uncapped ***oil*** wells, many of which are leaking greenhouse gasses and other pollutants into the air. Ress is concerned that carbon stored underground could escape.

"I'm skeptical that this can be done well in this area where there's so much ***oil*** and gas exploration," Ress said.

Until now, ***oil*** companies have almost exclusively injected carbon to extract more ***oil*** from the earth.  The CEO of Occidental Petroleum - CRC's former parent company - said last year that carbon removal could give the petroleum industry "a license to continue to operate for the next 60, 70, 80 years". California law prohibits companies from using captured carbon to enhance drilling in the state. Still some environmentalists like Ress worry that injecting carbon could be used to extend the life of fossil fuels.

Several major obstacles remain on the path to building and operating carbon capture and storage plants. California has just one commercial carbon removal project in operation. The state has also banned new carbon pipelines until federal regulations are put in place, which could challenge CRC's ambitious plans. Without pipelines to move the carbon from industrial centers to the vault, the company's potential customer base is limited.

But the county and the EPA's actions last month boosted CRC's hope for its TerraVault project. Company president and CEO Francisco Leon called the moves a "significant milestone" in attaining California's "ambitious climate goals."

***Kern*** is the first county in the state to assess the environmental risks of a carbon storage project, working on the draft for about a year. Still, CRC's project is facing a potentially lengthy approval process. The planning commission is expected to vote on the project in March, with a vote from county supervisors likely this summer.

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