

Carbon capture and enhanced oil recovery

NRG FACT SHEET
CARBON CAPTURE

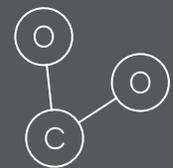
Domestic oil production plays an important role in our country's energy security and economy, but mature oil fields experience declining production. Carbon dioxide enhanced oil recovery (CO₂-EOR) is a proven method for boosting oil production and extending the productive life of suitable fields. The Petra Nova project captures and transports CO₂ from NRG's WA Parish Generating Station to the West Ranch oil field in Jackson County, Texas. The result? Increased domestic oil production and fewer CO₂ emissions released into the atmosphere.

About the project

Petra Nova begins with carbon capture at NRG's WA Parish plant southwest of Houston. There, a carbon capture process known as the KM CDR Process[®] separates CO₂ from flue gas. An 80-mile pipeline safely transports the captured CO₂ through Fort Bend, Wharton and Jackson counties to the West Ranch oil field.

The 12-inch pipe was installed according to U.S. Department of Transportation (DOT) standards. Each end of the pipeline has a meter station, and eight mainline valves are sited between the stations according to DOT regulations to help ensure safe operations and provide segmentation of the pipeline.

Hilcorp Energy Company operates the 11,500-acre West Ranch oil field, which has produced approximately 390 million barrels of oil since its discovery in 1938. The target zone for CO₂-EOR is roughly 4,000 acres, and the wells used for the process are more than a mile deep. The Petra Nova project is expected to increase oil production at West Ranch from around 300 barrels a day to a peak of around 15,000 barrels a day while also sequestering CO₂ underground.

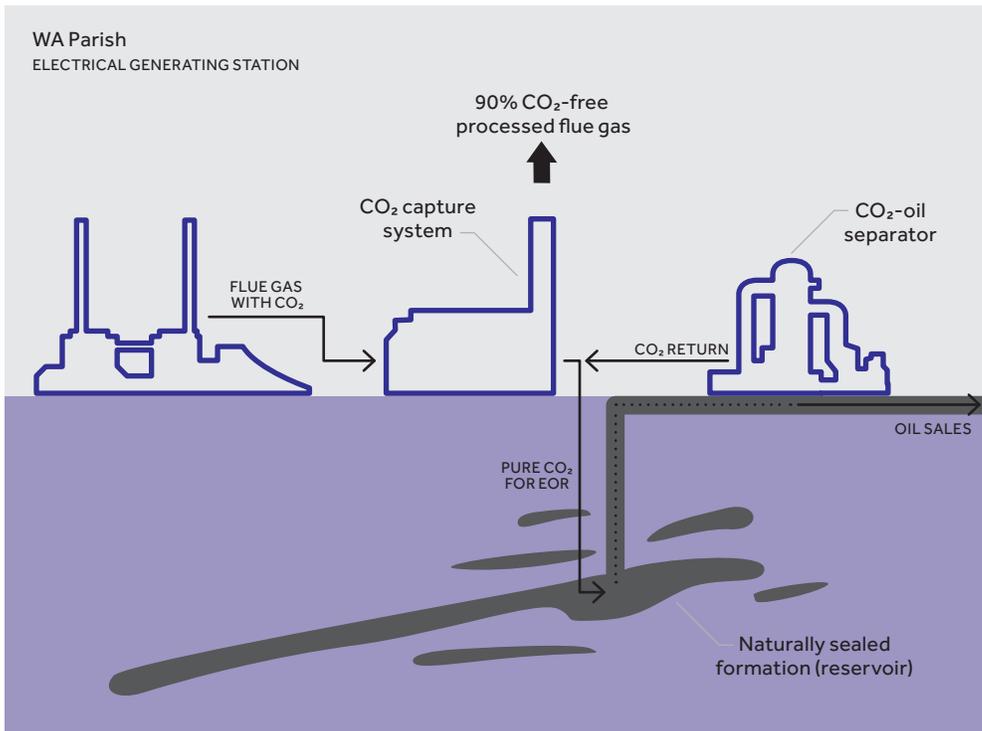


Petra Nova project expected
to boost West Ranch production

50 times

over current levels





How CO₂-EOR works

CO₂ injected into oil reservoirs can produce oil unrecovered by primary and secondary production techniques. The CO₂ acts as a solvent that loosens oil stuck on rock surfaces and enables the oil to flow freely to production wells. Once it's on the surface, we separate the oil-CO₂ mixture, recompress the CO₂ and reinject it to release more oil. When production completes, much of the CO₂ remains sequestered in deep rock formations.

Environmental factors

The CO₂-EOR process has been a safe, commercially proven method of oil production in Texas for more than 40 years under a well-established regulatory framework. It revitalizes mature oil fields while also reducing the amount of CO₂ released into the atmosphere.

Modernizing mature oil fields to accept CO₂ injection requires up-to-date technology that addresses environmental concerns and other common site issues that may otherwise be ignored. CO₂-EOR operations therefore result in a better-protected surrounding area than if the oil field were to remain underutilized.

The process doesn't involve hydraulic fracturing and is conducted in oil fields already producing oil. Additionally, CO₂ captured from the production well gets recycled, making CO₂ emissions negligible.

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