Enhanced oil recovery in Michigan has a dual benefit for the region

**CORE ENERGY’S ENHANCED OIL RECOVERY PROJECTS IN MICHIGAN SAFELY STORE CARBON DIOXIDE UNDERGROUND WHILE INCREASING PRODUCTION FROM OLD OIL FIELDS.**

What should power utilities do with the carbon dioxide emitted from their plants? The answer could be to inject it underground into a mature oil field, where it can be stored safely at the same time it pushes more oil to the surface, thereby boosting production. At least, that is the view of Michigan-based Core Energy. The company specializes in carbon sequestration as well as the process described above, called CO₂ enhanced oil recovery (CO₂ EOR).

There are currently more than 80 CO₂ EOR projects in the United States. In fact, Texas produces most of its oil through EOR. In the Midwest, there is a project under way in central Kansas, but Core Energy, based in Traverse City, is the only company doing EOR in Michigan.

![Image](image-url)

EOR allows the recovery of 10 to 15 percent more of the oil at a mature oil field than was previously attainable through traditional production methods. The oil is forced to the surface when CO₂ is injected into the field, acting as a substitute for the declining natural pressure in the oil reservoir.

Core Energy has already produced its 1 millionth barrel of oil from CO₂ EOR. “Our predecessor had built out the pipeline and the compressor and flooded two of the fields with CO₂, and proved that the technology worked,” says Bob Mannes, the company’s president. “Since Core Energy acquired the project in 2003, we’ve added three more fields that are also being flooded with CO₂ and we’re working on additional ones.”

Core Energy estimates that enhanced oil recovery could produce up to 500 million more barrels of oil in Michigan alone and 6.3 billion barrels throughout the Midwest. The fact that the process involves storing CO₂ underground is beneficial for the environment, as it decreases CO₂ emissions into the atmosphere. The company argues that if all oil production in the U.S. used the EOR method, 6 million metric tons less CO₂ would be released into the atmosphere every day.

Boosting the production of Michigan’s existing oil fields will also help the state, which imports much of its oil, to become more energy-independent. The revenue from recovered oil also helps to offset the cost of capturing, transporting and pushing the CO₂ underground. “EOR needs to go into the planning process for new coal-fired power plants, and certainly for clean-coal technology plants,” says Mannes. “You really need to site them near old oil fields so that you can capture the CO₂ and do advanced oil recovery.”

**A NATIONWIDE EFFORT**

Core Energy is also participating in a test project near Gaylord in northern Michigan for the Midwest Regional Carbon Sequestration Partnership (MRCSP). The MRCSP is one of seven partnerships set up by the U.S. Department of Energy to assess how much CO₂ can be stored underground throughout the country – in depleted oil and gas fields, but also in deep saline aquifers and in coal seams that can no longer be mined.

In this project, Core Energy is pumping CO₂ into a saline aquifer near the city of Gaylord. Michigan’s saline aquifers, caverns thousands of feet below the ground, are ideal for carbon storage. Core Energy estimates that between 1 trillion and 3.7 trillion tons of CO₂ could be stored in these massive underground formations, the equivalent of 330 years of the nation’s CO₂ production.

“We did a 10,000-ton injection test of CO₂ early last year, the largest injection test in the country to date,” says Mannes. “The government was so pleased with the results that we’re injecting an additional 50,000 tons, which will help us with further studies of what happens with the CO₂ as it goes into the reservoir.”

The project is intended to show that carbon sequestration works. “It’s a very exciting project,” says Dave Barnes, professor of geosciences at Western Michigan University, which has worked with Core Energy for a number of years and is acting as a geological and technical consultant to the MRCSP in Michigan. He adds that carbon sequestration is likely to be carried out on a much larger scale if a federal carbon cap-and-trade system is introduced. “There has to be a financial incentive for power companies to add anywhere between 50 percent and 100 percent to the cost of their electricity in order to capture and store CO₂.”

Still, with a national cap-and-trade system forming at the federal level and with Michigan already strict about issuing permits to new power plants, Core Energy is already talking to local developers about how Core could capture carbon from their plants and sequester it underground for them. Mannes says that could be a reality sooner than many people think. “Many people believe that the technology for sequestration is 20 years away, but the oil and gas industry has been drilling holes in the ground and evaluating rock for decades.” Core Energy is proving today that carbon sequestration is possible.