

CES Research Note

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DOE Reports Predict “Green Oil” Benefits for State

By Mike D. McDaniel, Ph.D., CES Professional-in-Residence

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A recent report by the Department of Energy’s (DOE) National Energy Technology Laboratory (NETL 2008) touts the potential of carbon dioxide-enhanced oil recovery (CO₂-EOR) for storing significant volumes of carbon dioxide emissions while increasing domestic oil production. The report lists four notable benefits that would accrue from integrating CO₂ storage and enhanced oil recovery:

- *A “value-added” market for the sale of captured CO₂*
The size of the CO₂ emissions market is on the order of 7,500 million metric tons between now and 2030. Sales of captured CO₂ emissions from new coal-fueled power plants would help defray some of the costs of installing and operating carbon capture and storage (CCS) technology. CO₂ sales would support “early market entry” of up to 49 (one GW [gigawatt] size) installations of CCS technology in the coal-fueled power sector;
- *Clearer path to CO₂ storage*
EOR helps bypass two of today’s most serious barriers to using geological storage of CO₂ – establishing mineral (pore space) rights and assigning long-term liability for the injected CO₂;

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- *Production of “green oil”*

The oil produced with the injection of captured CO₂ emissions is 70% “carbon free,” after accounting for the difference between the carbon content in the incremental oil produced by EOR and the volume of CO₂ stored in the reservoir. With the “next generation” CO₂ storage technology and a value for storing CO₂, the oil produced by EOR could be 100+% “carbon free” – a product known in the industry as “green oil”;

- *Increased domestic oil production*

The 39 to 48 billion barrels of domestic oil economically recoverable from storing CO₂ with EOR would help displace imports, supporting a path toward energy independence. It could also help build pipeline infrastructure subsequently usable for storing CO₂ in saline formations.

According to reports prepared for the Department of Energy by Advanced Resources International (ARI), there are 9.4 billion barrels of stranded oil in 128 onshore Louisiana fields and 15.7 billion barrels in Louisiana offshore waters (state and federal) amenable to CO₂-EOR (ARI 2005 and 2006). Of these resources, it was estimated that around 7.7 billion barrels were recoverable using current state-of-the-art CO₂-EOR technology.

Using their offshore Louisiana data, ARI (2005) estimated the economic benefits of producing incremental oil from CO₂-EOR.:

“Assuming that 3.6 billion barrels are developed over a 40-year time frame, by 2025 this would amount to:

- Incremental crude oil production of 200,000 to 250,000 barrels per day;
- More than 8,000 jobs retained by the Louisiana oil and gas industry;

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- Increased economic activity in Louisiana amounting to more than \$500 million per year;
- Increased state and federal revenues of more than \$250 million per year.”

It is important to note that ARI (2005) based estimates of economic benefits on \$25-per-barrel oil and delivered CO₂ cost at 5 percent of the oil price. It would be expected that both recovery of stranded oil and economic benefits would be substantially greater at today's oil prices (e.g. around \$120/barrel) and with a value added market for CO₂ capture and storage credits.

References

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