

Novel Carbon Capture Project Hits Regulatory Snags; EPA Input Suggested



A groundbreaking **carbon capture** and sequestration (CCS) power plant project in southern California has hit substantial snags over state regulatory authority, **greenhouse gas (GHG)** emissions mitigation and petroleum supply policies. This has prompted state energy officials to recommend U.S. EPA and other agencies be summoned to help hammer out a plan to regulate the novel systems -- a process that could serve as a model for other projects that seek to permanently sequester carbon through **enhanced oil recovery (EOR)**.

The problems affecting the California project reflect, in part, holes in federal and state regulations governing carbon dioxide (**CO₂**) sequestration projects, and may heighten pressure on regulators to address these loopholes with new rules, policies or legislation, according to sources.

At issue is the Hydrogen Energy California (HECA) project near Bakersfield proposed by Hydrogen Energy International, LLC, which is a joint venture of BP Alternative Energy and Rio Tinto mining company. The proposal consists of a 250-megawatt integrated gasification combined cycle (IGCC) power plant that will take blends of coal and petroleum coke, combined with non-potable water, and convert them into hydrogen and **CO₂**.

The **CO₂** will be separated from the hydrogen using the "methanol-based Rectisol process," according to the Department of Energy (DOE). The hydrogen gas will be used to fuel the power plant, and the **CO₂** will be transported by pipeline to nearby oil reservoirs where it will be injected for storage and used for EOR. The project aims to sequester 90% of the **CO₂** created, equaling more than 2 million tons per year. Occidental Petroleum, which controls the nearby oil reservoirs, will purchase the **CO₂** for permanent sequestration.

DOE last July announced that it will provide up to \$308 million from its Clean Coal Power Initiative grants to complete the project if it meets certain conditions along the way. DOE sees the technology as important because if successfully implemented in California, "it is expected to become the model for new power generating facilities that can be adopted throughout the nation and the world as old power plants are retired or retrofitted, and/or new power facilities still reliant on fossil fuel feedstocks are built," a source involved in the project said last July.

Project backers have also called the venture one of only several in the world and a breakthrough that provides the state with clean hydrogen power while maximizing **CO₂** reductions. BP announced three years ago that it wants to build at least six more similar plants in the U.S. and around the world in the coming decades.

However, state agencies are struggling over how to go about regulating the project. According to a Jan. 5 memo from the project manager for the California Energy Commission (CEC) to two commissioners heading a committee helping to oversee the project, the California Department of Conservation's division of oil, gas and geothermal resources (DOGGR) is questioning how the project can be legally approved.

"DOGGR staff indicated that they do not currently believe they have statutory authority to permit oil field activities that have the goal of permanently sequestering carbon, and that such activities could conflict with their duty to ensure the continued availability of petroleum resources," the memo states. A copy of the memo is available at InsideEPA.com.

It was not immediately clear how the project could "conflict with" the state's duty to ensure the continued availability of petroleum resources. A source with Hydrogen Energy maintained that HECA "is definitely an EOR project, which will both extend the life of [the oil field] and will increase the

production and recoverable reserves of in-state petroleum resources," adding that "I can't speak for DOGGR and their concerns."

Nonetheless, CEC staff is "concerned that without DOGGR's involvement in permitting [Occidental's] sequestration of HECA's **carbon emissions**, there will be no mechanism to ensure the permanent sequestration of carbon produced by HECA, thus raising serious questions whether the project could comply with [regulations] or meet California Environmental Quality Act (CEQA) significance thresholds concerning **GHG** emissions," the CEC memo states.

If the project backers cannot make headway on this issue in a reasonable amount of time, CEC staff "suggests that a next step forward may be to have the committee hold a workshop or conference on this issue with the parties and DOGGR, the Air Resources Board, EPA and any other agencies that may have expertise/regulatory authority in the area of **carbon sequestration**."

The regulatory complications will result in the project being delayed, the memo adds.

It remains unclear whether the project would be subject to a new Class 6 underground injection control (UIC) permit that EPA has proposed under its Safe Drinking Water Act (SDWA) program, or merely an existing Class 2 permit for EOR.

Hydrogen Energy representatives last year said they would prefer the Class 2 permit, and also voiced concerns to California energy regulators that the state must take more aggressive action in clarifying and simplifying its own regulations to allow projects like HECA to advance.

But environmentalists, including representatives of the Natural Resources Defense Council (NRDC), would likely not support merely a Class 2 EOR permit for the project, a source with the group said last year. Because there will be potentially long-term sequestration of **CO2** in the oil field, regulators must ensure the injected **CO2** is properly monitored and its presence verified under new requirements, the group asserts. NRDC also believes EPA must go beyond just its SDWA regulations for **CO2** sequestration and develop air emission regulations to ensure projects have their **CO2** releases into the atmosphere properly monitored and mitigated, the source added.

Further, though the project is expected to sequester approximately 90% of its **CO2** emissions, the process of injecting the **CO2** is still expected to result in air emissions subject to local and state mitigation rules and guidelines. These may include **GHG** mitigation rules under CEQA adopted by the San Joaquin Valley air district.

The Hydrogen Energy source said the company intends to meet all state and local emission mitigation requirements, as well as an existing state law that requires new projects to meet an emissions performance standard of 1,100 pounds of **CO2** per megawatt hour on an annual basis.

Regarding the potential that EPA and other agencies may be summoned to help hammer out a regulatory plan for the project, the Hydrogen Energy source said: "We welcome a dialogue to resolve the current impasse for moving forward on regulatory review and approval of the HECA project."