

Large-scale project would also help supply world's helium

Sequestration plant study goes public

By JEFF GEARINO - Southwest Wyoming bureau | Posted: Tuesday, January 26, 2010 12:00 am |

GREEN RIVER -- Federal officials on Monday released their draft environmental study for a pioneering carbon sequestration project proposed for western Wyoming that could boost the state's burgeoning underground CO₂ storage industry.

Cimarex Energy Co. of Denver is proposing to construct the large-scale carbon sequestration project as part of its Rand Butte Project along the Wyoming Range in southwest Wyoming.

Company officials believe the \$100 million effort would be the largest sequestration project in the world and when completed, the plant could also account for about 30 percent of the world's helium production.

The Bureau of Land Management released a federal environmental study for public review that looks exclusively at the federal components of the plant project.

Those components include the drilling and completing of the gas source wells, and the construction of pipelines, electric transmission lines and monitoring stations.

The agency scheduled an open house Feb. 11 in Marbleton to discuss the document.

Cimarex project manager Scott Stinson said in an email Monday company officials had not yet reviewed the draft environmental assessment.

He expected the document to include a "very thorough review of our very small impacts" from the proposed project.

The company is proposing to build the gas processing and carbon sequestration facility within an 872-acre site that includes state, private and federal lands.

The plant would be built on a 34-acre tract of state school trust lands that sit atop the sagebrush-capped Riley Ridge in Sublette County. The site lies approximately 1.5 miles east of the Bridger-Teton National Forest boundary.

Cimarex officials contend the project is particularly appealing at that site, in part because the plant would have almost no carbon footprint and would release nearly zero carbon dioxide emissions.

The facility would recover helium and methane from three horizontal gas supply wells drilled to depths of about 20,000 feet within the Madison formation, according to plans.

New technologies

The Madison formation is a large, proven resource for natural gas and helium.

Development of the reservoir has been hampered, however, by the presence of high concentrations of CO₂ gas and toxic hydrogen sulfide, known as H₂S, which make it difficult and costly to separate, treat and dispose of safely.

The project aims to test new technologies for capturing and then reinjecting all the by-product gases -- primarily CO₂ and H₂S -- back into their source-producing formation.

The BLM's assessment said the project will test a new cryogenic gas processing technology to separate economical gases from CO₂ and H₂S.

The project will also test a practice that immediately reinjects the unwanted gases back into the formation without further processing.

In 2008, the U.S. Department of Energy awarded nearly \$67 million for a test project that aimed to store more than 2 million tons of carbon dioxide underground in western Wyoming.

The Big Sky Regional Carbon Sequestration Partnership is being led by Montana State University and is made up of federal agencies, universities, national laboratories and industry interests.

The eight-year project involves drilling a CO₂ injection well into the Nugget Sandstone formation about 11,000 feet underground near Big Piney.

Cimarex will provide liquified CO₂ for the Big Sky project from the proposed Rand Butte plant, according to plans.

The Cimarex plant will also include the carbon sequestration technology testing, but the two projects are different.

Wildlife stipulations

Scientists contend levels of CO₂ -- a greenhouse gas -- have dramatically increased in the atmosphere over the past few decades, contributing to global warming.

Carbon capture and sequestration systems aim to reduce the amount of CO₂ emitted by coal-fueled power stations to almost zero. The process extracts the carbon dioxide and stores it underground in depleted oil and gas reservoirs, or saline aquifers.

But so far, underground carbon sequestration has not been tested on a large scale in the U.S. Wyoming was the first state, however, to enact comprehensive carbon sequestration legislation that crafts a legal framework for storing carbon underground.

In March, Gov. Dave Freudenthal signed into law two bills governing the ownership and regulation of carbon sequestered and stored underground.

In June, Freudenthal and members of the Wyoming State Lands Board toured Cimarex's proposed location atop Riley Ridge after Wyoming Game and Fish Department biologists expressed concerns about impacts to a small elk herd that winters in the area.

In August, the state Board of Land Commissioners granted the company a Special Use Lease for development of the new methane and helium recovery facility.

The board's lease was subject to a long list of conditions and stipulations, which were negotiated between the company and Game and Fish.

The restrictions were designed to protect the Riley Ridge elk herd, which numbers around 200. The herd uses the site as part of its winter range. The stipulations prohibit site preparation and construction in the animals' critical winter range from Nov. 15 to April 30.

The company also agreed to pay \$1.5 million into a mitigation fund. The fund would be tapped for habitat enhancement projects and radio-collar research efforts if the plant displaces the elk herd.

Riley Ridge

The company has estimated a total natural gas potential recovery of approximately 650 billion cubic feet over the life of the project, which is estimated at 40 years.

Cimarex is seeking federal permission to drill three gas wells for the production of a raw gas stream -- estimated at 200 million cubic feet per day -- from the Riley Ridge Unit.

A CO₂ and H₂S reinjection well would also be drilled.

No liquid petroleum products or sulfur products would be produced.

In addition to the gas processing facility, a helium liquefaction plant would be constructed on other private and state lands located about three miles south of Big Piney to pull marketable helium from the gas stream, according to company plans.

Mobile first discovered gas in the Riley Ridge area after drilling exploratory wells in the deep Madison formation in 1961.

But the produced gas contained a low heating value and high concentrations of carbon dioxide and hydrogen sulfide, which hindered development.

Five Madison wells were drilled in the early 1980s at Riley Ridge with an eye toward building a plant to process the gas, but development was halted to allow for a federal environmental impact study of that project and three others proposed at the time.

By the time the document was completed, however, only one of the four approved plants was built, the Exxon Shute Creek Plant, which was completed in 1986.

Cimarex acquired the lease interests in the Riley Ridge Unit in 2005 and assumed the role of operator of the unit in 2007.

The environmental assessment estimated it would take approximately 22 months of construction to complete the project. As many as 385 construction workers would be required from the beginning of construction to the plant startup.

Cimarex officials estimated 20 to 30 full-time jobs would be required to operate the facility.

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