



## UCR project could aid Salton Sea as it helps cut greenhouse gases

Written by K Kaufmann

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**RIVERSIDE** — The University of California, Riverside on Tuesday unveiled a new test plant for turning organic materials — from agricultural waste to sewage or algae — into synthetic natural gas, a project that could help California cut its greenhouse gas emissions and possibly help fund restoration efforts at the Salton Sea.

The steam gasification reactor at UCR's College of Engineering-Center for Environmental Research & Technology is a 22-foot-tall assemblage of aluminum-wrapped pipes that mixes hot sand with a combination of wood chips and Riverside County sewage in a high-pressure system. Methane can be siphoned off for use as fuel, with minimal greenhouse gas emissions produced in the process, school officials said.

The only one of its kind in the state, the reactor's steam-based process is also more efficient than other methods of converting biomass to fuel, according to a study by the Department of Energy.

"Biomass is a huge part of resources in California. Frankly, if we don't deal with the issue, it may be an environmental challenge," said Robert Weisenmiller, chairman of the California Energy Commission — one of about 50 state, local and school officials who turned out for a ribbon-

"Agriculture is one of our basic industries; we have a lot of agricultural waste. A lot of forests are being impacted by climate change. If we can find a way to take dead trees and turn them into energy, it's a win-win," he said, standing in the warehouse-like research lab where the new test plant is located, about three miles from UCR's main campus.

While greenhouse gas emissions from biomass and landfills constitute a relatively small part of the state's total of 448.1 million tons, they are on the rise. In California's most recent

greenhouse gas inventory, released in August, emissions from livestock grew from 17.2 million tons in 2001 to 19.6 million tons in 2011.

Emissions from landfills and commercial-scale composting also grew, from 6.3 million tons in 2001 to 7 million tons in 2011.

Officials at UCR estimate that if steam gasification plants could turn all the biomass from the state's waste water treatment plants into natural gas, emissions could be cut by 10 million tons a year.

"We have mischaracterized biosolids as waste rather than a resource," added Phil Rosentrater, deputy director of Riverside County's Economic Development Agency. "It's time our policies in California capture this resource as well as green waste that clogs landfills. If we have a financially viable way to transform it into fuel, we have one of the means to restore the Salton Sea."

County and local officials have been pushing green energy development around the shrinking saltwater lake as a source of funds to prevent dust and air pollution as the lake bed is exposed.

The test plant at UCR has been in development for 10 years, school officials said, at a cost of about \$1 million, with some funding from the Energy Commission.

The test facility, which can process about 10 pounds of biomass waste per hour, will be followed by an even cleaner-running prototype that could, in turn, be followed in five or more years by a full-scale commercial facility capable of processing 500 tons of biowaste per day.

One ton of biowaste could produce about one barrel, or 42 gallons, of synthetic natural gas.

Both Rosentrater and Joseph Norbeck, one of the founders of the center and now an emeritus professor at UCR, see the Coachella Valley, with its tons of agricultural waste, as an ideal place for a future steam gasification reactor. Algae grown at the Salton Sea, mixed with agricultural waste, could also be used to produce renewable natural gas efficiently and affordably, Norbeck said.

The cleaner-burning fuel produced at such a plant could replace diesel, cutting emissions from trucks on Interstate 10 and at the ports of Los Angeles and Long Beach, where much of the air pollution blowing into the valley originates, Weisenmiller said.

He also sees an international market for the new plants. Pointing to a recent trip to China with Gov. Jerry Brown, Weisenmiller said the California delegation got a close look at the country's smog-choked cities and learned that some of that pollution is making its way to Southern California.

"This is one way we are all interconnected," he said. "We have to find ways to deal with these issues on a global basis."

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