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SLUDGE POWER

Local company aims to capitalize on using sewage to generate electricity

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That stuff you flush down the toilet may someday provide power to your home. The state's largest sewage sludge composter, located near Lost Hills, plans to build a renewable energy plant that burns treated human waste and other organic material to make electricity.

PHOTOS:



Photo by John Harte

Pat McCarthy at the Liberty Recycling Inc. facility in Lost Hills.



Photo by John Harte

Operations manager Gary Bruggeman and company president Pat McCarthy of Liberty Recycling Inc. pose in Lost Hills.

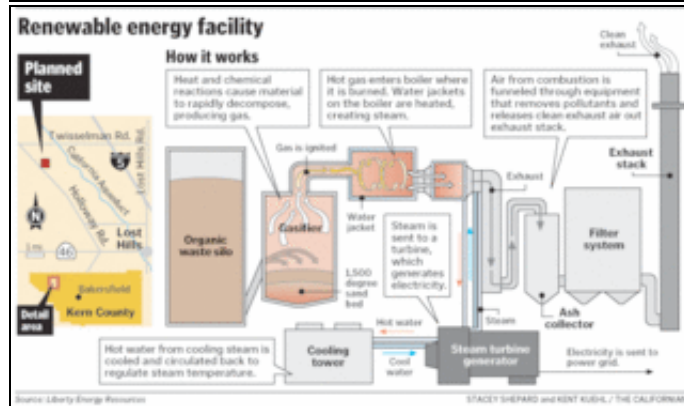
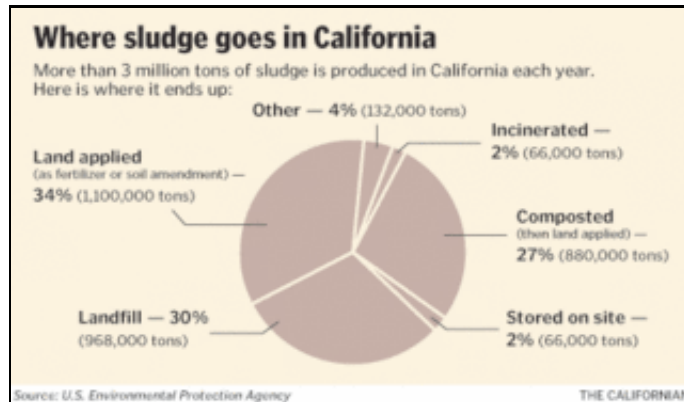
Owners of Liberty Composting, formerly San Joaquin Composting, already have a contract to sell 20 megawatts of electricity from the planned \$64 million facility to Pacific Gas and Electric. Construction of the plant, called Liberty V, is slated to start in three years.

The move is part of the company's desire to find a better use for sludge in the face of stricter air pollution regulations and public concern about sludge disposal, said Patrick McCarthy, president of McCarthy Family Farms, which owns Liberty Composting.

"Five years ago, we started talking and said there's got to be a better alternative to composting," McCarthy said. "Our idea is to take these problematic organic waste streams and use them for their highest and best use in the most environmentally friendly manner, and in doing so, generate renewable energy."

Liberty Composting receives up to 780,000 tons of organic waste annually. The majority is sewage sludge from 48 communities from Los Angeles to Santa Cruz. California produces about 3 million tons of sludge a year. About one-third is directly applied to the land, another third

GRAPHICS:



goes into landfills and the rest is composted.

About 90 percent of the finished compost from Liberty Composting is used at McCarthy Family Farms' Liberty Ranch in Kings County.

The Liberty V plant will use a process called gasification, whereby sludge and other organic waste is heated at temperatures of more than 1,500 degrees in a low-oxygen environment.

The heat drives gases off the waste and into a chamber where injected oxygen causes the gases to ignite. The combustion heats water and the resulting steam spins a turbine, creating electricity.

Some butane is required for initial start, McCarthy said, but afterward the facility can sustain operation without an additional fuel source.

'More responsible approach'

The project will require a full environmental review but the company is touting it as a sound solution to several environmental concerns.

Air pollution will be drastically reduced because the power plant will have the most up-to-date pollution controls and airtight storage silos, McCarthy said. Farmland would not be used as the final resting place for sludge. And the facility would generate renewable energy.

Because of that, the project has received a warm welcome so far from air regulators, sludge critics and public utilities.

"They're moving to a more responsible approach," said Maureen Reilly, a Canada-based sludge watchdog who's been involved in Kern County sludge issues. "They shopped the marketplace and looked at what more can you do with sludge. I think that makes sense."

The switch from composting to a gasification plant has the potential to remove more than 80 percent of the gases and dust produced by the company's current composting practices, said Lucinda Roth, senior air quality specialist with the San Joaquin Valley Air Pollution Control District.

"Without seeing the engineering plans, it's hard to say but most likely they will get more than 80 percent," Roth said.

McCarthy said plans reviewed by air regulators show a potential air pollution reduction as high as 95 percent. In addition, he said, pollution will go down from a reduction in trucks hauling finished

compost off site. Trucks will still be needed to transport the ash left over from the burning process to factories that make Portland cement. The number of trucks will go down, though, because one truckload of ash is equivalent to about 10 trucks of compost, McCarthy said.

Some composting continues

A limited amount of composting will likely continue after the power plant is built, McCarthy said, but the amount of sludge and other waste coming into the facility will not exceed the current amount.

McCarthy Family Farms, a four-generation, family-owned farming and agriculture land development operation, got into the composting business more than a decade ago when it stopped spreading sludge directly onto its farmland out of the belief that composting was a more environmentally friendly approach.

Five years ago, the company found itself again re-evaluating its practice.

"We set out saying, what can we do to handle this material so it would be more acceptable and people could benefit from its use," McCarthy said.

After several trips to Europe to see how sludge was being handled there, the company settled on building a gasification plant.

Several gasification facilities have been proposed in California and surrounding states but none has been built yet, according to the U.S. Environmental Protection Agency.

"With more of an emphasis on renewable energy ... there's going to be much more interest in doing this," said Ben Machol, senior energy adviser with EPA.

Market for similar plants

A recent California state mandate that requires public utilities to obtain 20 percent of their power from renewable sources by 2010 has spurred market growth for new forms of renewable energy, McCarthy said.

In addition to the Lost Hills plant, Liberty plans to build similar power plants in Banning and Niland in Southern California and in Ontario, Canada.

"We're very excited about the potential long-term environmental benefits," said Jim Earhart, director of Banning's municipally owned electric utility. The utility has contracted to receive 15 megawatts from a Liberty plant to be built there.

During winter months and at nighttime, the facility is expected to provide 100 percent of the power to the city of 30,000 residents.

While the project has been praised as a better alternative to sludge handling, questions remain about the practice of having other cities' sewage trucked into Kern County.

"Bringing such a project to Kern County doesn't make environmental sense," said state Sen. Dean Florez, D-Shafter. "To me, it sounds like a great project for Los Angeles County."

McCarthy said he understands people don't like that Kern County is the final stop for other cities' waste.

"At the same time, if we can turn that material into something useful, like fuel, I'd feel a little bit better about it," he said. "I think this is an important opportunity for (communities) that feel like they've been dumped on to turn this around into a positive thing."

Liberty receives up to 150,000 tons of sludge produced annually in the San Joaquin Valley, McCarthy said. For Liberty V to be economically viable, waste from outside the area is necessary.

New use

Name: Liberty V

Owner: Liberty Energy, a subsidiary of McCarthy Family Farms, which also owns Liberty Composting in Lost Hills, Liberty Ranch in Kings County, and Liberty Logistics, a Bakersfield-based sludge trucking company.

Location: Eight miles northwest of Lost Hills

Process: Burns organic waste in a controlled environment to create electricity

Capacity: 760,000 tons per year of organic waste (primarily sewage sludge but also grass clippings, processed food waste, orchard prunings and animal waste)

Production: 20 megawatts of electricity to be sold to Pacific Gas and Electric

Cost: \$64 million

Timeline: Construction anticipated in 2011

BY THE NUMBERS

3.1 million: Tons of sewage sludge produced in California annually

1.1 million: Tons of sludge used as fertilizer (no composting)

880,000 tons: Tons of sludge composted

Source: Environmental Protection Agency

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