More

Louisiana solid waste to expand biogas-to-fuel operation capacity

By Katie Fletcher | January 29, 2015

Louisiana's St. Landry Parish Solid Waste District anticipates completion of expansion to its landfill-gas-to-fuel operation in October of this year. The decision to add capacity coincides with a fuel purchase contract that the district received from a waste hauler, who has agreed to purchase and consume most of the renewable natural gas (RNG) produced.

In connection with this contract, the plans are to install an alternate fueling site in Opelousas to make RNG available at a more convenient location, not only for the general public, but to public agencies, who have begun to use RNG as a fuel source for their fleets. "Without a means to provide access to that fuel in a more convenient location, it's difficult to attract users or consumers to a remote location where the fuel is generated," said Katry Martin, executive director of the solid waste district.

Back in 2012, St. Landry Parish implemented a BioCNG system at its landfill that can produce around 240 gallons of gasoline equivalent (GGE) of compressed natural gas (CNG) per day. The fuel is produced from 50 standard cubic feet per minute of biogas.

This is a view of the St. Landry Parish Solid Waste project's gas collection system to the BioCNG fueling station, which currently provides 150,000 DGE per year.
Angela Cutrera, St. Landry Parish Solid Waste.

This fuel is used to run St. Landry Parish sheriff's department cars, light-duty trucks and vans and the solid waste district's utility trucks. "The sheriff's department continues to use CNG, and it's dispensed here at the landfill, and they would likely increase their consumption or expand their fleet if it were made available at a more convenient location closer to their base operations, and that's the purpose of making their fuel available at an alternate location," Martin said.

A second CNG fueling station will be implemented with the expansion, along with an additional biogas conditioning system, and a transport unit, or tube trailer, to carry the natural gas in a series of mid-pressure vessels mounted on a tractor trailer fifteen miles to Opelousas. This expansion is made possible by the district's board voting to spend $2.8 million on the project.

The additional fueling station will essentially triple the project's capacity. Martin said that makes the capacity up in the range of 700 to 750 GGE per day.

Besides providing a more convenient location for potential CNG consumers, the decision to undertake expansion was made to develop an economy of scale. "We collect more landfill gas than we can use," Martin said. "We had the capacity to supply the feedstock, but we didn't have the use for it until we negotiated the fuel purchase contract, which gives us the ability to make use of the additional feedstock."

He adds that the solid waste district did not have the conditioning capacity to supply the amount of fuel that will be consumed, i.e., the expansion, but the greater the fuel consumption the lower per unit cost to generate it, which Martin said, "makes it, we believe, economical to supply it."

The solid waste district has a contract to provide 150,000 diesel gallon equivalents (DGE) to the user each year, which will be dispensed at the landfill. "After the expansion we'll have the capacity to deliver 200,000 more or less DGE per year," Martin said.

According to Martin, the cost to produce it would range somewhere between 75 and 90 cents per DGE. "That's the cost to produce it, that doesn't add to the cost of capital, and depending on how long you finance it or intend to retire that capital will determine the unit cost per capital," Martin said. "We think for another 75 cents we could retire that capital in a reasonable period of time."

Martin adds that the market price may range from $1.85 to $2.25 per DGE, and so if diesel retails for $3.50 or $3.75, the CNG could provide the consumer savings in diesel gallons. However, the end user will have to make the investment in modifications or the technology to use natural gas, but Martin said consumers are likely to retire that cost in four or five years.

An additional component that adds to the economics of the project is the ability to generate renewable identification numbers (RINs), which the project has been doing since it began dispensing fuel in 2012. "We have a consumption rate today of about 15,000 gallons per year, but we expect to expand our consumption ten-fold," Martin said. "We're only using about 20 percent of the fuel we can condition at this stage, anticipating at some point we would grow the fleet, or increase the demand for the fuel, which would give us the opportunity to recover the costs more quickly and to generate a revenue stream for the district to ultimately offset other waste costs."

Related Articles


Handwriting on the Wall


NHWEC releases video on modern wood heating


EPA: Agricultural Science Committee nomination deadline extended


Researchers produce two biofuels from a single algae


Researchers in Spain develop prototype biogas-fueled fuel cell


Researchers identify materials to improve biofuel processing