

# Biosolids boost

County and waste hauler join forces to turn sludge into alternative-energy source.

**B**iosolids provide the organic waste necessary to maintain methane production for landfill gas-to-energy (LFGTE) systems without significantly increasing landfill volumes, but most public operations lack the resources required to get a gas-to-energy facility up and running.

New York's Monroe County Department of Environmental Services circumvented that obstacle by working with its solid waste collection and disposal contractor, Waste Management Inc., to exploit the renewable energy inherent in its wastewater treatment plant and landfill.

The department had been incinerating the sludge generated by its 100-mgd Frank E. VanLare Wastewater Treatment Facility. Faced with the possibility of having to invest millions in a retrofit to meet air quality requirements, managers considered their options, including agricultural land application, for disposing of biosolids. Ultimately, they deemed landfill energy generation the best solution because it would control odor while reducing greenhouse gas emissions.

“This project allows us to generate alternative energy locally and optimize the amount of energy produced.”

Thus, nearly a decade after opening its Mill Seat Landfill, the department signed a 49-year contract in which Waste Management would build and operate a gas-to-energy system at the landfill and share revenues with the county. The department paid for and installed high-output centrifuges and a storage load-out facility at the wastewater treatment plant to transport biosolids to the landfill, and

Waste Management bought and installed eight engines at the landfill that generate 6.4 MW of electricity using the methane generated by decomposing solid waste.

“This project is a significant component of our efforts to make Monroe County a more sustainable community,” says Department of Environmental Services Director Michael Garland. “It's also allowed us to generate alternative energy locally and optimize the amount of energy produced by this innovative technology.”

Though Waste Management employees manage the gas-to-energy facility, no public jobs were eliminated because of the deal. Instead, department employees continue to haul both solid waste and biosolids to the facility and work with the company to coordinate delivery, scheduling, and weight logistics.

(continued)

## Loading & transportation of biosolids



Biosolids recovered from the county's wastewater treatment plant are air-sealed and trucked 18 miles to its landfill. Photo: Monroe County

The first renewable energy project financed by the New York Power Authority (NYPA), the \$11.5 million project, financed over 10 years, was half the investment the department would have had to make to meet emissions standards for the old incinerator.

## Untapped potential

Hundreds of landfills nationwide could be generating valuable energy.

**M**ethane is about 21 times more potent than carbon dioxide. It's a principle component of natural gas and a relatively clean fuel.

A readily available source of methane is the anaerobic decomposition of organic waste in landfills. Most operators burn or flare off the gas in compliance with Clean Air Act regulations. But it also can be piped to gas engines to generate electricity or produce an alternative fuel source.

According to the EPA's Landfill Methane Outreach Program, 445 landfill gas-to-energy projects nationwide generate 11 billion kWh of electricity/year and deliver 236 million cubic feet/day of methane for direct-use applications. The agency estimates more than 535 landfills suitable to host such plants could generate a total of 1,200 MW. Establishing projects at all eligible landfills would more than double energy production from the current 1,180 MW to more than 2,500 MW.

Debt service and operating expenses consume 60% of the \$5 million in annual electricity sales the facility generates, and the department and Waste Management split the rest 42%/58%, respectively.

Monroe County shares its portion of those revenues with governments within its borders. For example, the town of Riga receives approximately \$2.87/ton once Waste Management verifies how much solid waste the town has sent to the landfill. Waste Management then repays the county. Since the facility began taking waste from communities outside the county, Riga's proceeds increased from \$800,000 in 2002 to \$1.9 million in 2007.

The county and Waste Management are considering yet another way of making money from the gas-to-energy facility. The engines that power the operation generate heat that can be recovered and converted to electricity through closed-system heat integration. Managers are exploring the option for proposed industrial and commercial developments north of the landfill. **PW**

— Collins is an industrial waste engineer for the Monroe County Department of Environmental Services in New York.

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