

An article I wrote for a BMW Manufacturing Co. newsletter.

Landfill waste offers source of renewable energy

by Hans VanderKnyff

BMW Manufacturing Corp. has begun construction on a multi-million dollar project designed to recycle the methane gas being naturally generated within the Palmetto Landfill. Upon completion of the project—scheduled for the end of this year—the gas will be used to produce electricity and to heat water for the BMW plant. The company is partnering with Ameresco Energy Services and Waste Management Inc.

The recycling of landfill gas offers three main benefits: improved air quality, the conservation of a fossil fuel (natural gas), and reduced fuel costs.

“BMW wants to do whatever it can to make Upstate South Carolina a better place to live,” said Bobby Hitt, BMW’s Manager for Media and Public Affairs. “This project allows BMW to take a wasted energy source and use it to generate electricity, which benefits the environment and area residents through lower emissions.”

Inside a landfill, organic wastes—food scraps and grass clippings, for example—decompose over time and, in the process, produce methane and carbon dioxide. Landfills, in fact, are the largest human-made source of methane in this country—a reality that presents both a problem and an opportunity.

A major component of the natural gas we use in our homes, methane is a highly explosive gas. Because of its volatility, operators must carefully collect the gas through a series of wells and pipes installed throughout the landfill. The captured gas must then be safely burned or “flared” into the air. Flaring converts methane into carbon dioxide and water vapor. But carbon dioxide, like methane, is a greenhouse gas that contributes to local smog.

The very same characteristic that makes methane something to be handled so carefully, however, makes it a good source of energy—a renewable source that will last as long as landfill waste continues to decompose. Flaring off this gas—not putting it to any practical use, in other words—clearly represents an enormous waste. That’s where BMW’s project will help.

The landfill gas-to-energy (LFGTE) project will capture methane at the Palmetto Landfill, process it, convey it to the BMW plant through a 9.5-mile pipeline, and use it as fuel in the plant’s four gas turbines. These turbines, which have been operating on natural gas until now, create electrical power needed in the plant, and they heat water for use in production and in heated work areas. The turbines will need to be modified to receive the landfill gas.

Although methane has only about half the heat content (Btu) value of natural gas, substituting it for natural gas makes a lot of sense, both environmentally and economically. Upon completion, the project will recover the energy equivalent of heating 10,000 homes per year. And the

accompanying reduction in carbon dioxide will be equivalent to the removal of 61,000 cars from the nation's highways each year.

Waste Management Inc., the owner and operator of the Palmetto Landfill, has been developing LFGTE projects for more than 15 years and currently supplies landfill gas to 69 gas-to-energy projects in 21 states. Ameresco Energy Services is designing and building the pipeline; Ameresco will also own the pipeline and the gas-processing and gas-compression facilities, and it will manage the overall operations of the project once it's completed.

The Palmetto Landfill is estimated to produce enough methane for the four turbines until about 2030. Putting an otherwise wasted resource to good use, conserving a fossil fuel, protecting air quality, and saving on fuel costs-the LFGTE project offers clear benefits to both BMW and the community.