

Johnston Rhode Island Combined Cycle Electric Generating Plant

Utilizing Waste Landfill Gas for Power Generation in a Combustion Turbine Combined Cycle Facility

Project Description

This project will utilize the substantial quantities of waste gas from the Central Landfill in Johnston, Rhode Island, for power generation. Rhode Island LFG Genco, LLC will construct and operate a combined cycle electric generating plant that will produce 33.4 megawatts of power. It will be the second-largest landfill-gas-to-electricity facility in the United States.

The combined cycle electric generating plant will consist of four combustion turbine generator sets, each of which will be equipped with turbine inlet chilling, heat recovery steam generators, and post-combustion emissions control systems. The steam produced will be fed to a single steam turbine generator set. Electricity produced will be delivered to the local transmission system.



Installing equipment in the Johnston, Rhode Island facility's switchyards.

Photo courtesy of Broadrock Renewables, LLC

Recipient Organization	Rhode Island LFG Genco, LLC
Location	Johnston, Rhode Island
Award Date	November 2009
Expected Operational Date	January 2013
Funding	\$15 million in U.S. Department of Energy funding from the American Recovery and Reinvestment Act of 2009; \$85 million in private-sector cost share
Equipment	Four Solar Taurus 60 combustion turbine generator sets with heat recovery steam generators and one steam turbine generator set

Benefits for Our Industry and Our Nation

This project will create immediate manufacturing and construction jobs, as well as permanent jobs associated with the operation and maintenance of the plant and equipment. The project will have an electrical efficiency of 45.6%—perhaps the most efficient landfill gas combustion application in the United States. The facility will save an estimated 2.1 trillion British thermal units (Btu) annually from the landfill gas that would otherwise be flared.

By destroying methane emitted directly from the landfill, this project will reduce greenhouse gas emissions by 1.27 million tons carbon dioxide equivalent annually. By displacing fossil fuel-fired electricity generation, this project will avoid over 158,000 tons of carbon dioxide emissions per year. The project will also set a new standard for low emissions from landfill gas-fueled electricity generation by combining state-of-the-art gas clean up systems with post-combustion emissions control systems.

Project Partners

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