

Capturing, Purifying, and Liquefying Landfill Gas for Transportation Fuel

May 2012

Fact Sheet

The Issue

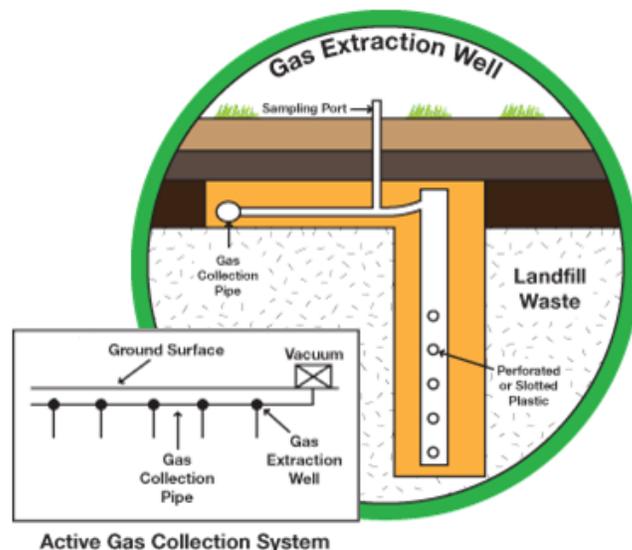
California must foster the development of practical renewable alternative fuel vehicle technology to reduce greenhouse gas emissions that drive global climate change. Natural gas has proven to be a viable alternative fuel, and purified landfill gas could provide a renewable domestic source of it. Landfills naturally generate methane, the primary component of natural gas, so it should be possible to refine gas from landfills and use it in natural gas applications such as fueling motor vehicles.

Project Description

This research will evaluate and analyze methods to overcome the technological challenges of landfill gas purification and demonstrate liquefaction technology for the conversion of renewable landfill biogas to liquefied natural gas for use as transportation fuel. The aim is to develop and introduce economically viable and environmentally friendly on-site landfill gas recovery, purification, and liquefaction of biogas. The resulting liquefied natural gas will consist of cryogenically liquefied, pipeline quality natural gas that will be used primarily to fuel the fleet vehicles of Waste Management, Inc., proprietor of the Altamont Landfill in California.

Anticipated Benefits for California

The primary goal of the program is to construct a liquefied natural gas production facility that can process about 2,600 cubic feet per minute of collected landfill gas and produce 13,000 gallons



Schematic of landfill gas extraction
Image credit: Westport, Inc.

per day of liquefied natural gas, enough fuel to displace 2.8 million gallons of diesel fuel per year. This will save 19.6 million cubic feet of natural gas per year. It will also limit greenhouse gas production, lower nitrous oxides and particulate emissions, and reduce the state's reliance on imported oil. This project will also serve as a model for similar facilities in California to use native biogas resources and displace nonrenewable fossil fuels. Additional methane recovery from the landfill coproduces all power requirements for the system (gas and refrigeration compressors, controls, transfer pumps, auxiliaries, and so forth) through onsite electricity generation.

Project Specifics

Contract Number: 500-09-004

Contractor: Gas Technology Institute

Contract Amount: \$992,903

City, State: Des Plaines, IL

Application: Nationwide

Contract Term: November 2009 to
December 2012

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