

## Demonstration of Hydroponic Tomato Production with Landfill-Gas CHP

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### Background

Modern Landfill, Inc. operates a New York State Department of Environmental Conservation Part 360 permitted non-hazardous solid waste landfill in Model City, New York. Model City is located within the Town of Lewiston and Niagara County. Beginning in 1991, Modern collected the landfill gas and burned it in an enclosed flare located at the facility. For several years, Modern continued to collect and burn the gas. It even expanded the gas collection system as the landfill grew in size as a way of managing odor and greenhouse gas emissions. In the late 1990's, Modern actively sought an alternative to simply flaring the landfill gas. Modern settled on the concept of generating electricity by combusting the landfill gas in internal combustion engines. However, Modern decided that it would seek a developer rather than attempt to operate its own electrical generation facility. In discussions with various developers, Modern settled on Innovative Energy Systems (IES). IES built and is now operating Model City Energy, a 5.6-megawatt station on land leased from Modern Landfill. Modern Landfill has also leased land to H2Gro, a hydroponic tomato producer. H2Gro is planning an expansion to approximately 7 acres. This project permits the use of waste-heat recovered from Model City's IC engines to heat the greenhouses.

### Objective/Scope

The objective is to demonstrate the use of heat recovered from landfill-gas powered IC engine generators to provide space heating for a hydroponic production system. The seven (7) existing 800 kW IC engine generator sets will be retrofitted with heat recovery equipment. Piping, controls and heat exchangers will be installed to supply the recovered heat, in the form of hot water, to the greenhouses for use in space conditioning.

### Benefits

Modern Landfill benefits from the productive use of the waste heat to which it has retained ownership. H2Gro benefits from the supply of inexpensive heat. New York State benefits from the development of an expanded business (hydroponic tomato production) and from the demonstration of appropriate use of landfill gas as an energy source.

<b>Funding</b>	<b>Encumb to Date</b>	<b>Pending</b>	<b>Total Anticipated</b>
H2Gro, LLC	\$439,057.00	\$0.00	\$439,057.00
NYSERDA	\$292,705.00	\$0.00	\$292,705.00
<b>TOTALS</b>	<b>\$731,762.00</b>	<b>\$0.00</b>	<b>\$731,762.00</b>

<b>Manager</b>	Kear, Edward
<b>Contracts</b>	STD-8571
<b>Contractors</b>	Modern Landfill Inc.
<b>Technologies</b>	Agriculture, Cogeneration
<b>Cities</b>	Model City
<b>Counties</b>	