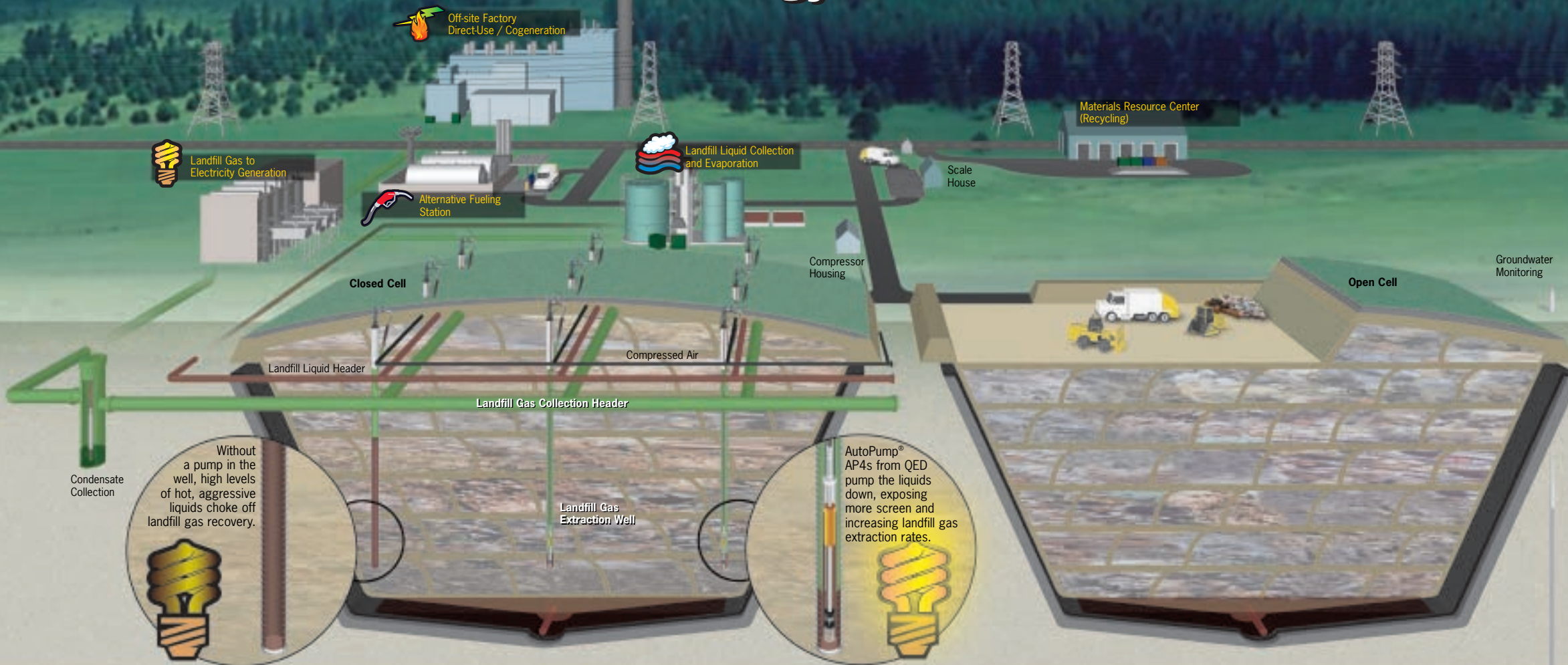


# Landfills: An Alternative Energy Source



## Producing Energy and Minimizing Environmental Impact

### Converting Trash-to-Energy

Landfill gas (LFG) is created as biological processes decompose the solid waste in a landfill. In its raw form, this gas consists of about 50 percent methane ("natural gas"), about 50 percent carbon dioxide and a small amount of non-methane organic compounds. Landfill gas, if uncontrolled, can contribute to smog, global climate change and odors, but it can also be captured, converted, and used as an energy source.

Landfill gas is extracted from landfills using a series of gas collection wells and a vacuum system. This system directs the collected gas to a central point where it can be processed and treated depending upon the ultimate use for the gas. There are over 400 operational LFG energy projects in the United States and a growing number around the world. There are several ways to convert LFG to energy:



### Electricity Generation

The generation of electricity from LFG makes up about two-thirds of the currently operational projects. The vast majority of these projects use micro-turbines or industrial engines to drive generators.



### Direct-Use

The direct use of LFG can be in a boiler, dryer, kiln, greenhouse, or other thermal applications in nearby businesses. It can also be used directly to evaporate landfill liquids.



### Cogeneration

Cogeneration projects, known as combined heat and power, use LFG to generate both electricity and thermal energy, usually in the form of steam or hot water.



### Alternative Fuels

Landfill gas has been successfully delivered to the natural gas pipeline system as well as converted to vehicle fuel in the form of compressed natural gas and liquefied natural gas.

## Maximizing Gas Production by Managing Liquid Levels

Landfill gas collection can be significantly impaired by excessive liquid levels in the collection wells and piping. High moisture levels in the landfill can increase the generation rate of biologically produced landfill gas, but excessive liquid accumulation at critical points can block or restrict the flow of the gas produced. In the collection well, high liquid levels can impede the flow of gas through the fill itself and also block off the openings in the collection well screen. In the gas collection piping, liquids can condense from the humid gas, accumulate at low points, and thereby block the flow of gas. For all of these reasons, it is important to install pumps to keep the liquid levels under control.

### Role of Pumps

QED Environmental Systems landfill pumps are specially designed to safely and reliably manage liquid levels. That's why they're the proven No. 1 choice at landfills worldwide.

**AutoPump**® brand pumps are rugged and all air-powered, making them ideal for use in potentially explosive methane environments. Their internal float mechanism senses the presence of any liquid and ejects it, then shuts itself off without requiring any external controls.

**Iron Horse**™ Extended-Duty Piston Pumps are built for specialty pumping needs, such as handling extremely thick, viscous fluids and greater depths.

For more information about landfill liquid control visit: [www.qedenv.com/landfills](http://www.qedenv.com/landfills) for an interactive pump selection guide, animations, case studies and more. Or call (800) 624-2026.

