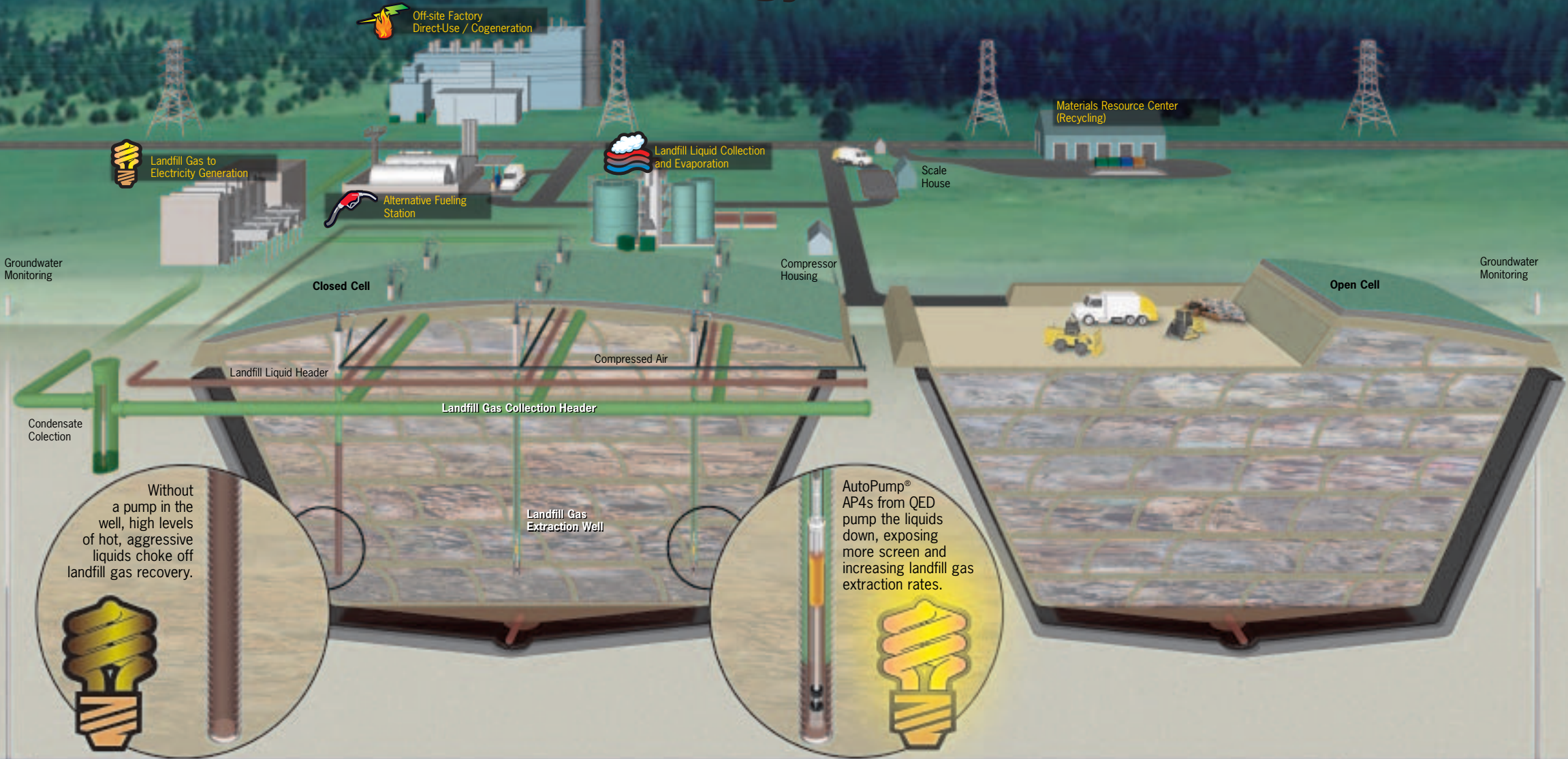


Landfills: An Alternative Energy Source



Landfills: Friends of the Environment

Today's landfills are safe, making them good neighbors, a friend to the environment, and a new source of bio-fuel energy.

Landfill location is crucial to the success of a landfill. Potential sites for new landfills exclude those near geological faults, flood plains, wetlands, or airports (landfills attract birds that might interfere with aircraft).

Great care is taken during **landfill construction** with the use of synthetic liners and alternating layers of clay and sand to make certain waste and its by-products are contained within the landfill.

Landfill liquid drainage systems are installed with the appropriate piping and pumps to minimize liquid levels over the liner and transport landfill liquids for treatment and re-use.

Daily landfill operations include random inspections of inbound trash haulers to exclude hazardous waste from the landfill. Every day the newly added waste is covered to control odors, blowing litter, and wildlife scavengers. Public access is controlled to protect human health and the environment, and local groundwater is carefully monitored to verify that containment is being maintained.

Closure programs are in place to ensure that the landfill will be properly maintained for a minimum of 30 years after waste collection has stopped, during which biological processes break down and stabilize organic materials. Landfill gases and liquids must continue to be controlled and the groundwater monitored well after the landfill is closed to guarantee that no contaminants seep into the environment.

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 more than 500 landfills that are good candidates for Landfill Gas to Energy projects. 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.

Role of Pumps

QED Environmental Systems landfill pumps keep liquid levels low in gas extraction wells to maximize the collection of landfill gases:

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 for an interactive pump selection guide, animations, case studies and more. Or call (800) 624-2026.