

Innovative Energy Management

Proves that it Pays to Be Green



22 MW biogas powered self-generation facility at the Joint Water Pollution Control Plant.

The Sanitation Districts of Los Angeles County have been innovators in energy management since the first renewable generation project was brought online in 1939. Today, the Sanitation Districts' Energy Management Program saves \$17 million annually in power costs. This Program includes three key aspects:

DEVELOP RENEWABLE BIOGAS RESOURCES

The Joint Water Pollution Control Plant saves \$12 million annually in avoided power bills from the biogas-powered Total Energy Facility, making it one of the few wastewater treatment plants in the world that is completely energy self-sufficient. The ability to isolate from the grid also improves plant reliability as it minimizes the impacts of blackouts and fluctuations on the grid.

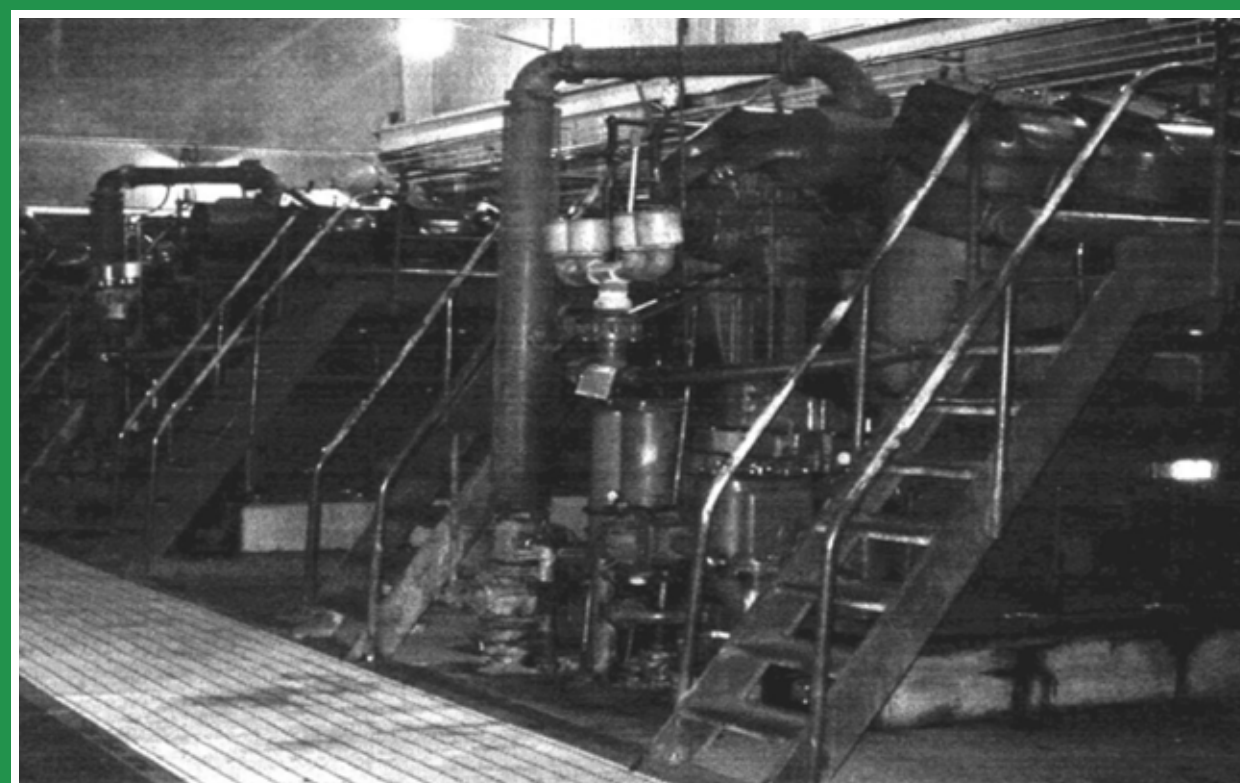
MINIMIZE ENERGY USAGE

Energy efficiency measures save \$3 million annually through energy efficient design of treatment facilities and optimization of operational processes. New facilities are designed to ensure that the most cost effective and energy efficient treatment processes are utilized.

MINIMIZE ENERGY COST

Annual savings of \$2 million have been realized by purchasing electricity through a competitive process, obtaining energy efficiency rebate incentives from the local electric utility, optimizing utility electricity rates, and participating in demand response programs.

The Energy Management Program is an environmentally sound and cost-effective approach to the operation and management of the Sanitation Districts' wastewater treatment facilities. These multi-faceted energy management efforts have increased the reliability of the Sanitation Districts' treatment systems and made positive impacts on the environment, all while saving the agency many millions in ratepayer funds. This truly demonstrates that it pays to be green.



RENEWABLE SELF-GENERATED ELECTRICITY

The Joint Water Pollution Control Plant began operation in 1928. Upgrades in 1938 utilized the digester gas to fuel internal combustion engines that powered electrical generators and pumps (shown here). The engines furnished all of the power requirements for the treatment plant at that time. The existing Total Energy Facility (shown at top) is a 22 MW combined cycle power plant that still provides enough power to operate the entire treatment plant, which has a current average daily flow of 280 mgd. Digester gas is used to power three combustion turbines. Exhaust heat is utilized to make steam for heating the digesters and powering a steam turbine generator.



Energy Efficiency – Lighting Retrofits

The Sanitation Districts pursue every opportunity to improve the energy efficiency of its facilities, such as the installation of energy efficient lighting at the Joint Water Pollution Control Plant (shown here). New lighting provides improved visibility and safety while saving 1 million kilowatt hours per year. The project received a \$50,000 energy efficiency rebate incentive from the local utility and paid for itself in just 18 months.



Energy Efficiency - Process Improvements

Energy efficiency improvements were completed in 2010 at the Whittier Narrows Water Reclamation Plant. These improvements included the replacement of 1962 era process air compressors with high efficiency single-stage compressors (shown here), replacement of air lift return activated sludge pumps with VFD controlled centrifugal pumps, and lowering of secondary aeration diffusers for improved oxygen transfer. Plant power consumption was reduced by 22 percent, a savings of \$300,000 per year.



Demand Response

The Sanitation Districts participate in a demand response program at the San Jose Creek Water Reclamation Plant whereby electricity usage is temporarily reduced during peak periods of utility power demand to provide grid relief and help prevent blackouts. When called upon, the plant bypasses approximately 20 percent of its influent flow into the sewer for treatment at a downstream facility. This enables the plant to shut down one of these 950 hp air compressors and reduce plant demand by 500 kW, equivalent to the energy requirements of approximately 700 homes. The Sanitation Districts receive financial compensation and help protect the environment by avoiding the need to build new power plants and transmission lines.