METRO info
from the City of San Diego's Metropolitan Wastewater Department

Our mission is to provide the public with a safe and efficient regional sewer system that protects our ocean water quality, supplements our limited water supply, and meets federal standards, at the lowest possible cost.

This infomation is provided by the City of San Diego Metropolitan Wastewater Department (MWWD).

For more information, write MWWD Public Information at 9192 Topaz Way, San Diego, California 92123, or call (858) 292-6484.

This material is available in alternative formats upon request.

Printed on recycled paper

Metropolitan Wastewater Department Energy Efficiency Program

The volume of wastewater conveyed and treated in the Metropolitan Wastewater Department's system on a daily basis requires a great deal of electrical and thermal power. Electricity is needed to run lights, computers, mechanical valves and machinery. Thermal energy, usually generated by electrical power or by burning natural gas, provides heat necessary for both buildings and the wastewater treatment process.

Point Loma Wastewater Treatment Plant

Eight digesters at the Point Loma Wastewater Treatment Plant use heat and bacteria to break down the organic solids removed from wastewater, much as our stomachs digest food. One of the by-products of this biological process is methane gas. Methane, a colorless, odorless flammable hydrocarbon gas, is found almost anywhere organic solids decompose – in mines, marshes, landfills and digester tanks.

This methane gas is collected from the Point Loma digesters and is piped to the on-site Gas Utilization Facility (GUF). The methane fuels two generators that can each produce up to 2235 kilowatts of energy per hour, a total of almost 4.5 megawatts.

Using the methane produced on site, the Point Loma Wastewater Treatment Plant has become energy self-sufficient. In fact, the plant saved the City more than $3 million in energy costs to run the facility and was able to sell an additional $1.4 million in excess power to the electric grid. Additional savings came from using the same methane to run boilers at the plant. Because the heat produced by the engines is used to heat the digesters, the GUF is termed a "co-generation system." Utilizing one source of fuel (methane), it produces two forms of energy: electricity and heat.

Other On-site Power Generation Systems

Even before the dramatic increase in electrical rates in 2000, Metro Wastewater had made a commitment to reduce power consumption, conserve natural resources and pass along savings to ratepayers. An example of this commitment is the on-site generation of green power at our Metro Biosolids Center (MBC) and the North City Water Reclamation Plant (NCWRP).

Methane is produced in the digesters at the Metro Biosolids Center, which is adjacent to the Miramar Landfill. When the facility was being built in the mid-1990s, a private company was contracted to build a cogeneration facility at the MBC and a landfill gas collection system. Methane produced by the MBC digesters and from the landfill is converted to electricity which is used to run the facility. It is also used to fuel the facility's boilers. Thermal energy produced by the generators is used for heating, and through a process called absorption chilling is also used to air-condition the MBC. (MBC was named the Winner of San Diego's Taxpayers' Association Fiscal Watchdog Award in 1998 for its innovative privatization of the cogeneration system).

The success of cogeneration at MBC led to a similar facility at the North City Water Reclamation Plant which uses methane piped from the Miramar Landfill.

On average, the MBC can produce 6,400 kilowatts through cogeneration and uses about 50 percent of that for its operations. On average, the NCWRP produces approximately 3,800 kilowatts and uses more than 75 percent of that for its operations. Excess power produced is sold by the private company for use by San Diego area electric customers.

Emergency Power Generation

The Metropolitan Wastewater Department uses a remote control system that can turn on backup generators at eight of its pump stations, the Department's Central Operations & Management Center (COMC) in Kearny Mesa and the Point Loma Wastewater Treatment Plant during Stage III Power Alerts. As a result, more than two megawatts of power can be made available for use by the local electric grid during periods of critical power shortages.

When power reserves during a Stage III Alert begin to move toward the need for rolling blackouts, a radio signal will be sent by San Diego Gas & Electric to COMC. A computerized control system will then automatically start up backup generators that will power the eight pump stations and COMC, effectively taking a total of one megawatt of power used off the grid. The backup generator at Point Loma will produce an additional 1.2 megawatts of electricity for sale to the grid.

The COMC Control of Emergency Generators ("CCEG") Project was made possible in part by a $486,000 grant from the California Energy Commission in January of this year.

Hydroelectric Power

The Point Loma Wastewater Treatment Plant is located on a bluff above the Pacific Ocean. Treated wastewater ("effluent") is discharged into the ocean through a 4.5 mile ocean outfall after a 90-foot drop from the plant to the outfall. A 1,350 kilowatt hydroelectric plant captures the energy of the effluent as it flows down the outfall connection. The power plant, partially funded by a grant from the California Energy Commission, produces up to 1.35 megawatts for sale to the electric grid, enough power to supply energy to 10,000 homes.

MWWD'S Commitment

The Energy Efficiency Program of the Metropolitan Wastewater Department is representative of the Department's ongoing commitment to protect the environment, preserve our natural resources, reduce power consumption, use renewable energy sources, seek cheaper sources of power and serve the needs of all our customers. The energy savings made by the Metropolitan Wastewater Department directly benefit the residents of San Diego by helping to maintain lower sewer rates, while providing more electric energy to residents during times of power shortages.

Energy Facts

1 kilowatt = 1,000 watts

1 megawatt = 1 million watts or 1,000 kilowatts

Kilowatt-hour = unit of energy equivalent to the power of 1 kilowatt working for an hour

MWWD Electricity Production Capacity: 445,200 kilowatt-hours per day

Point Loma Wastewater Treatment Plant

- Gas Utilization Facility ..... 4,500 kilowatts (4.5 megawatts)
- Hydroelectric Project ..... 1,350 kilowatts (1.35 megawatts)
- Emergency Generator ..... 1,500 kilowatts (1.5 megawatts)†

Cogeneration

- Metro Biosolids Center ..... 6,400 kilowatts (6.4 megawatts)
- North City Water Reclamation Plant ... 3,800 kilowatts (3.8 megawatts)

† during a Stage III emergency