

BLUE LAKE WASTEWATER TREATMENT PLANT FACTS



Introduction

Blue Lake is the third largest among seven wastewater treatment plants in the Twin Cities owned and operated by the Metropolitan Council, which manages the regional system.

Located in Shakopee, Blue Lake is the fourth largest wastewater treatment plant in Minnesota. It treats an average of 29 million gallons of wastewater per day (mgd) from 285,000 residents in 27 communities. The plant provides mechanical, biological and chemical treatment to the wastewater before discharging it into the Minnesota River.

An on-site solids treatment facility opened in 2000 as a joint venture between the Council and the New England Fertilizer Company (NEFCO). Biosolids produced at Blue Lake are dewatered, dried, pelletized and then used as organic agricultural fertilizer.

Energy conservation across the system

Metropolitan Council Environmental Services (MCES), the Council division that manages the wastewater system, launched an energy-savings campaign in 2006 to minimize the economic and environmental impact of its current and future energy demand.

The work focused first on process efficiency, lighting redesign and other facility improvements, and it worked. In 2009 and 2010, MCES received the Efficiency Partner Award from Xcel Energy. In 2011 MCES received the Gold Award from Xcel for the most electrical energy saved in an 18-month period.

Progress on energy conservation projects continues and yields additional savings that increase each year. By the end of 2010, annual purchased-energy consumption was reduced by 17% from the 2006 base year, saving rate payers \$2.5 million each year in energy-related costs.

With many of the easier projects implemented, MCES is adding to its primary conservation focus on maintenance and operations projects to provide conservation and renewable energy from capital projects.

Building on its success, MCES set new energy conservation goals in 2011. MCES now is targeting a reduction of 25% by 2015 and a very aggressive reduction of 50% by 2020 compared to 2006 levels.

Solids processing at Blue Lake

In the mid-2000s, plans were made to add a new solids processing facility at Blue Lake that could produce energy to replace purchased natural gas used to operate the solids facility. Construction of the new system began in 2009 and was completed in 2012. Methane biogas recovered from the digester facility is now used to replace 9 million BTU/hour of fossil fuel (natural gas) that powers the solids facility.

Environmental improvements and financial savings from the project at Blue Lake include:

- The conversion from natural gas to biogas for fueling the dryer will save an estimated \$500,000 per year. MCES's private partner, NEFCO agreed to substantial contract changes and is responsible of the use of the biogas.
- When the dryer is offline, the biogas fuels hot water boilers that heat a digester control building, providing an estimated \$50,000 in savings.

- During sludge drying operations, hot water used to scrub odors from dryer exhaust is used to preheat the sludge, leading to more savings.
- The new facility reduces the mass (amount) of solids during treatment, which increases the capacity and lifespan of the solids facility.
- The project received \$2 million in grant funds (as well as discounted loan interest for the remainder of the capital cost) through the Minnesota Public Facilities Authority from the American Reinvestment and Recovery Act.

Other recent improvements made at Blue Lake yield additional savings. These include new premium efficiency pump motors and motor drives. Air diffusers were replaced and additional valves now provide better control over dissolved oxygen and improved oxygen transfer.

Future plans will continue excellent permit compliance

Despite major construction for expansion, Blue Lake continued its excellent permit compliance record. For its performance through December 2011, the plant earned a prestigious Platinum Award from the National Association of Clean Water Agencies for six consecutive years of perfect compliance with its discharge permits.

The Council is currently studying options for a proposed on-site solar facility that would eliminate the need for some energy from fossil fuels to meet Blue Lake's electricity needs. If built, the proposed facility could generate up to 1.25 megawatts per year from a renewable energy source.

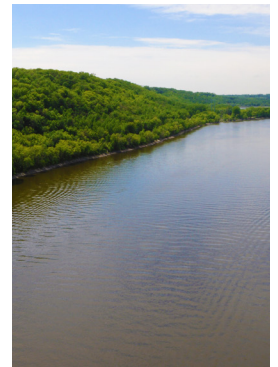
Energy-saving collaborations

MCES is collaborating with many other partners to pursue future energy savings, including the International Climate Registry, the State of Minnesota, Metro Counties Energy Policy Coalition, the University of Minnesota and Xcel Energy.

Read more about MCES Energy Conservation and Renewable Energy at www.metrocouncil.org

The Council's wastewater collection and treatment system has an outstanding record of compliance with its federal clean water discharge permits.

At the same time, the Council charges its customers among the lowest rates in the nation for similar-sized systems.



Population served	285,000 people in 27 communities
Service Area	Lake Minnetonka area, Shakopee, Prior Lake and Chaska
Biosolids pellet production	About 30 dry tons per day (dtpd) before digester startup About 17 dtpd after digester startup

FACTS – ANAEROBIC DIGESTION PROCESS

Process tanks	3 tanks with fixed steel covers
Storage tank	1 tank with membrane cover for gas storage
Tank Size	90-feet diameter, 35-feet deep cast in place concrete
Volume	1.4 million gallons
Process	2 stage mesophilic digestion, 98 F, 26 days retention
Gas production	About 26,000 scf/hour 57-61% methane 12 million BTU

FACTS – CONSTRUCTION

Construction Period	Sept. 2009 – April 2012 (32 months)
Project Cost	\$27.8 million
Financing	Minnesota State Revolving Loan, \$25.8 million American Recovery “Green” Infrastructure, \$2 million

