



City of O'Fallon

Trackers of Water and Energy Usage



Overview

One of the most effective ways for cities to reduce their costs and improve environmental performance is to improve energy efficiency. In U.S. cities, an estimated 30 to 40 percent of municipal energy use and associated operating budgets are spent treating water and wastewater. Rising energy costs add to the other challenges that water utilities are facing such as the need to expand services, meet more stringent regulations, and replace aging infrastructure. Because most of the energy used to pump and treat water in the Midwest comes from coal-fired power plants, significant quantities of air pollutants are also emitted as a result. Energy conservation can be a mechanism to improve both air and water quality as well as save money.

In May 2009, the U.S. Environmental Protection Agency (EPA) invited 12 Missouri communities to participate in an Energy Management Initiative for Water and Wastewater Utilities, a pilot program led by the Missouri Water Utilities Partnership (MOWUP). Partners included the Missouri Department of Natural Resources, the Missouri University of Science & Technology, Siemens Industry, Inc. (Siemens) and EPA Region 7. Seven communities chose to participate in the pilot program which included developing an Energy Management Plan (EMP), implementing an energy efficiency project, maintaining data and sharing results. The City of O'Fallon was among the participating communities.

About the City of O'Fallon

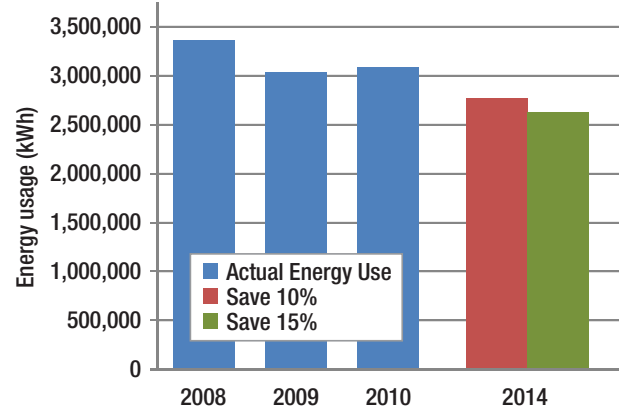
O'Fallon was established in 1856 as a railroad town. The City of O'Fallon was incorporated in 1912 with 600 residents and has since grown to just under 80,000 residents (2007 data). It is located outside St. Louis in St. Charles County,

Missouri. The city's Wastewater Treatment Plant (WWTP) was originally constructed in 1984 and utilizes an activated bio-filtering process for treatment. The WWTP is equipped with a four-unit primary and a four-unit secondary clarifier(s), three high-capacity variable speed submersible bio-tower lift pumps, three bio-filter towers, four aeration basins, an effluent pumping station, a sludge digester, and an ultraviolet effluent disinfection process. The city's drinking water plant uses a reverse osmosis membrane process to treat six million gallons of water per day.

Although the city's water and wastewater plants have been well maintained, the MOWUP Initiative provided a great opportunity for the city to assess current assets, plan for capital and process improvements, and develop an EMP through participation in a series of workshops offered by the MOWUP partners.

Energy Management Plan Development

During Phase 1 of the Initiative, the MOWUP Partners conducted an initial energy assessment and assisted the city to document energy use. In Phase 2, Rick Stephan, Rick Swengrosh, Al Kilpatrick, and Dan Scherer attended a series of four MOWUP workshops offered over an eight-month period. The workshops guided them through the process of developing an EMP including: an update to their energy use documentation, evaluating projects for potential energy savings, and establishing benchmarks using EPA's free online ENERGY STAR® Portfolio Manager tool which allowed them to track and compare their energy



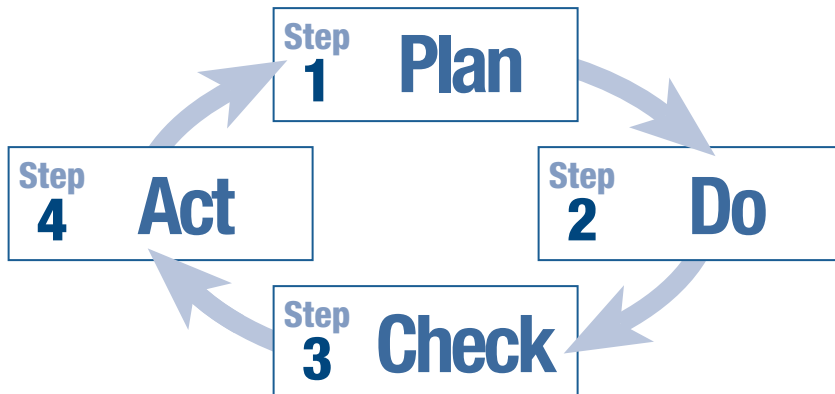
Projected annual energy savings

use and costs to other WWTPs across the nation.

As part of the MOWUP Initiative, each city was asked to identify and implement a project or projects with an overall goal of reducing energy use by 15%. The City of O'Fallon chose to replace blowers with energy-efficient turbo blowers and replace aeration equipment with panel diffusers in the WWTP. These projects were selected based on feedback received from the supervisors and the operators. After three years, the blower project is expected to save the city \$53,000 per year. By participating in the MOWUP Initiative, the City of O'Fallon learned about grant opportunities and subsequently applied for and received a grant of \$367,000 from the Missouri Department of Natural Resources to fund several projects. The city contributed \$83,000 in matching funds to reach a total project cost of \$450,000. This total project was bid for construction in April 2011, the blowers and diffusers were ordered, and installation is expected to be completed by January 2012.

Building on Momentum

The City of O'Fallon also evaluated its drinking water system during the MOWUP workshops. Historically, the city had been replacing water meters at the rate of 120 per year, which meant that it would take 126 years to replace all of their meters. Following the workshops, O'Fallon decided to upgrade all of their water meters at once so they could better track water use and verify that water users were billed appropriately. The city issued a "Request for Proposals" and chose an Energy Services Company to manage the project. Through this \$6 million dollar contract, the



Energy Management Process

City of O'Fallon will replace all water meters with automatic meter-reading devices and install relay towers and computer equipment. All of this equipment is projected to increase the efficiency of the meters from 92.8% to 98.5% accuracy. A project payback period of nine years is estimated, based on resulting operational savings, energy savings, and increased revenue. One of the biggest challenges was convincing the City Council of the benefits of such a project; the EMP, coupled with good analyses of options, contributed to the favorable ruling. The water meter project began in November 2010 and was scheduled for completion in June 2011.

Lessons Learned

Participating in the MOWUP initiative led the City of O'Fallon's Water and Sewer Department to establish an Energy Policy/

Resolution which states that the "Department resolves to purchase and use energy in the most efficient, cost-effective, and environmentally friendly manner possible." Their goals now include energy efficiency considerations for all upcoming projects involving failed equipment or equipment identified as operating inefficiently. Also, prior to participating in MOWUP, there was no formal mechanism for the department to track its energy use. Now the department tracks monthly energy expenditures and assesses reasons for any high costs observed. Currently, the department is on a path to reduce 10% of its energy use by 2014.

Next Steps

Beginning in May 2011, the City of O'Fallon implemented a leak detection program for the entire water system. The goal of the program is to reduce unaccounted water loss by 5% and correspondingly reduce the

amount of water produced, resulting in cost savings from reduced electricity and chemical consumption.

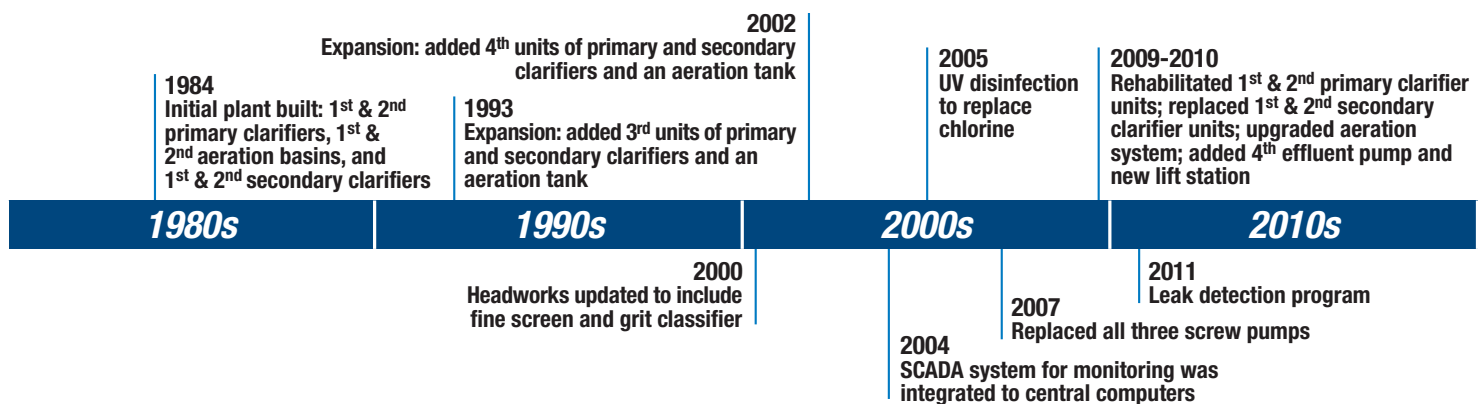
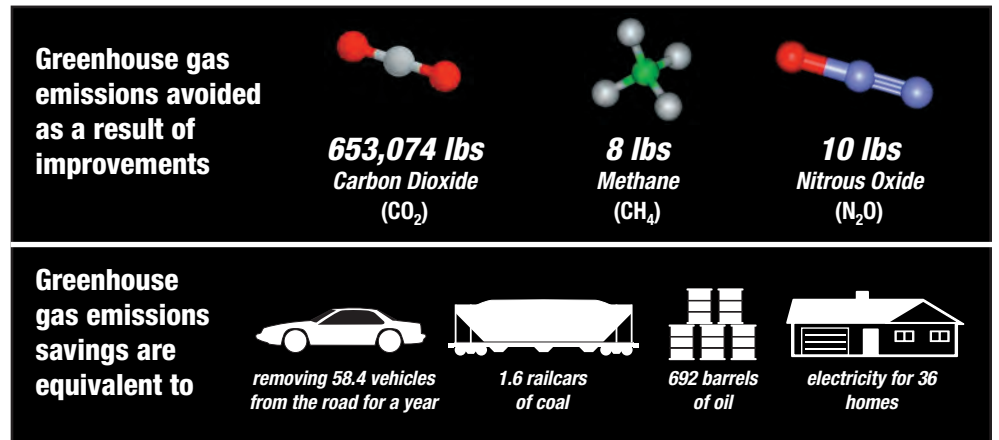
"Tracking energy use with Portfolio Manager has really been helpful. One big lesson we learned was the magnitude of available options to saving energy. It is way more than just light bulbs."

**Dan Scherer,
Director of Water & Sewer Operations**



New water meter

Annual greenhouse gas reductions resulting from the upgrades undertaken by the City of O'Fallon. They were calculated using EPA's eGRID web converter (<http://cfpub.epa.gov/egridweb/ghg.cfm>).



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