Energy Management Initiative for Water and Wastewater Utilities– Summer 2012

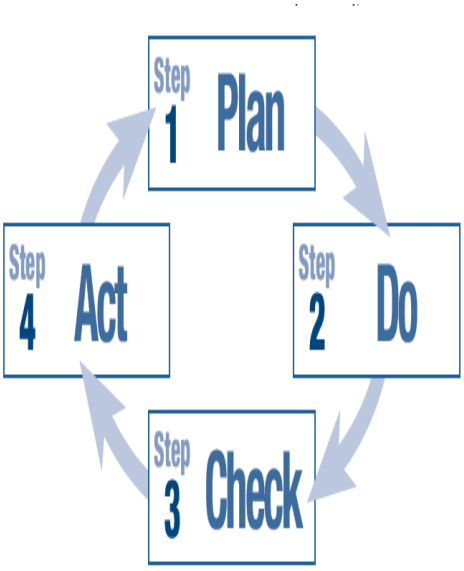
City of Wellington

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. These include 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 2011, the U.S. Environmental Protection Agency (EPA) invited 10 Kansas communities to participate in an Energy Management Initiative for Water and Wastewater Utilities, a pilot program led by the Kansas Water and Energy Efficiency Partners (KANWE) which included the EPA Region 7 Office, Kansas Department of Health and Environment, the Wichita State University Environmental Finance Center, Kansas State University, Kansas Municipal Utilities, and Schneider Electric. Five communities chose to participate in the pilot program which included developing an Energy Management Plan, implementing an energy efficiency project, maintaining data and sharing results.

About Wellington's Water Treatment Utilities

Wellington is home to roughly 8,000 people and is located in central Sumner County.
The Wellington Water Plant was built in 1996 and it produces roughly 1.3 million gallons of water per day (MGD). Water from the Wellington Lake, multiple wells, and the Chickaskia River is treated to provide water to the City, 3 Rural Water Districts and the City of Mayfield. There are approximately 31 miles of water distribution lines, 350 fire hydrants, and roughly 3,000 meters throughout the system.



Developing an Energy Management Plan

The KANWE partnership provided an energy assessment and a series of 4 workshops for community representatives during which each developed an Energy Management Plan for their respective communities. The training followed a plan/do/check/act sequence, as outlined in EPA's *Ensuring a Sustainable Future: An Energy Management Guidebook for Wastewater and Water Utilities.* During the workshops, participants set an energy goal and baseline, drafted an energy policy, formed an energy team, explored opportunities for saving energy, prioritized projects, developed near and long term plans, and developed a set of measures of success along with a schedule for implementation.

Wellington's energy policy calls for the city to reduce energy use in water utilities by 10% (compared to their 2011 usage) in water utilities by implementing a set of projects and practices. The policy further sets out the following standards for day-to-day operations at their water treatment facilities:

- The City will maintain accurate records of energy consumption, associated costs, perform quarterly reviews, and make that information available for general public inspection and comment.
- Turning off computers and peripheral equipment during times of non-use.
- All unnecessary lighting in unoccupied areas will be turned off.

Project Selection

As part of Wellington's Energy Management Plan, the city also chose to implement three projects; one major and two minor. These projects were selected based on their regulatory impact, severity of the impact, environmental impact, long-term impact, cost and constructability, management support, and infrastructure impacts.

1. Install Variable Frequency Drives (VFDs)
The city plans to install a total of 4 VFDs on the effluent pumps. The total cost of the project is $47,000. The VFDs will not only reduce the energy use by the pumps but also allow the pumps to handle peak flows more gradually, thus reducing main breaks. Pump energy reductions are estimated at $3,070 annually. The cost savings from main breaks is an additional $2500 annually. At current estimates, the project has a payback period of 8.43 years; however, both estimates are conservative and actual savings will likely be higher resulting in a shorter pay back period.

2. Replace Lighting Fixtures
The city is in the process of replacing T12 lighting fixtures with T8 bulbs through attrition. By changing 10, T12 fluorescents with T8 fluorescents, the city will save $500 annually in lighting.

3. Install Motion Sensors
The city installed motion sensors into rooms that have sporadic movement throughout the day. This allows for areas of minimal use to be appropriately lighted.

"Energy efficiency is important not only for business, but also everyday life. Just making the smallest change, can save you money."
Mike Clift, Wellington Water Plant Supervisor

Financing

The City of Wellington will pay for all of the projects out of their annual budget. The costs of the projects will be recovered through the energy efficiency savings over time.

Next Steps

At the beginning of their participation in the KANWE program, the City of Wellington set a goal to improve their energy efficiency by 10% based on 2011 energy usage as a baseline and then identified projects to meet that goal; but the energy management plan includes additional steps. To maintain energy and water conservation standards, several activities will be put in place to ensure the success of the new energy policy. Progress will be monitored on a continuing basis by keeping energy consumption records to track consumption. Training will be provided to employees to ensure they have the necessary skills and knowledge to effectively apply the technology used to achieve energy savings. The proper maintenance processes will be implemented and scheduled to ensure that systems operate as efficiently as possible.

In the future, the city of Wellington plans to apply the Energy Management System approach to other departments and programs.

Wellington Water Treatment Facility

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