

Water supply systems are critical to the health, safety and economic viability of every community. Consequently, operators are forced to spend the majority of their time focused on ensuring that an adequate amount of high quality drinking water and fire flow is always available. This makes the efficiency of the treatment and delivery system a low priority.

However, energy costs for water utilities are significant, ranging from 20 percent to 60 percent of operating budget. A typical water utility requires about 1.5 kilowatt hours (kWh) to produce 1,000 gallons of treated water. Pumping accounts for 85 percent to 90 percent of energy costs. The following items are common ways to save energy and money on a water supply system.

1) SIZE PUMPS TO MEET (NOT EXCEED) THEIR APPLICATION AND LOADING. OPTIMIZE THE PUMPING SYSTEM FOR EFFICIENT FLOW RATE.

Pumping systems are often sized to meet peak load conditions (fire flow) that rarely, if ever, occur. The same



An energy assessment is taken at the Fond du Lac, Wisconsin, Water Treatment Facility.

pumps must then operate at a considerably lower capacity condition for normal flow to meet average daily consumption. This mode of operation results in losses in motor/drive efficiency. Therefore, address peak flow requirements and average day requirements through the proper combination and control of pumps, so your system can meet varied demands.

2) USE VARIABLE SPEED DRIVES.

For facilities that experience large variations in demand, variable speed drives may be a feasible alternative to replacing oversized equipment. Variable speed drives allow equipment loading to vary to better match current demand on the system, thereby saving energy.

Incentives are available for these best practices. Contact Focus on Energy for more information 800.762.7077

3) MONITOR THE WATER TABLE IN EACH WELL TO DETERMINE WHICH

WELL WILL MOST EFFICIENTLY SUPPLY WATER TO THE COMMUNITY.

The energy consumption of each supply well should be monitored, along with the volume of water it supplies. This simple information can be used to determine which wells provide water most efficiently, allowing operators to minimize the energy used.

4) WHEN POSSIBLE, SCHEDULE FILTER BACKWASH CYCLES TO OCCUR DURING OFF-PEAK PERIODS.

Time filter backwash cycles to occur during off-peak periods to avoid the cost of on-peak demand charges. This can dramatically lower the peak demand of a facility. Backwash cycles should be automated to ensure that adequate filtration can be provided continuously and filter regeneration only occurs during off-peak periods.

5) PROVIDE SUFFICIENT STORAGE FOR TREATED WATER TO MINIMIZE ON-PEAK PROCESSING (FLOW EQUALIZATION).

By using all available storage, a water system can increase production during off-peak (lower cost) periods, minimize high cost peak treatment and, in some cases, allow for the use of smaller equipment. If the process cannot be

downsized, the stored water can still be delivered during on-peak periods, thereby lowering the system's peak demand and preventing unnecessary demand charges. Energy savings will vary greatly depending on facility size, type of treatment and other plant parameters.

6) CREATE AN EDUCATION PROGRAM TO INCREASE STAFF AWARENESS OF ENERGY CONSUMPTION.

Keeping staff informed about energy efficiency issues and related technologies will help achieve and maintain optimum system performance. Many free or low cost training opportunities are available through various programs such as the U.S. Department of Energy (DOE), the U.S. Environmental Protection Agency (EPA) and Wisconsin's Focus on Energy.

7) ADOPT AN EMERGENCY MOTOR REPLACEMENT PLAN.

Adopting an emergency motor replacement plan before equipment failure will save time, energy and money by determining whether a motor should be repaired or replaced with a premium efficiency motor. A standard motor easily consumes 50 to 60 times its initial purchase price in electricity during a ten year operating period. Thus, high efficiency motors often pay back within two to three years. Be proactive and develop a motor status inventory of your existing motors, so you are ready for the next emergency replacement.

NEXT STEPS:

To see which Best Practice opportunities will work for your facility, contact an equipment or service supplier to perform an evaluation for your facility.

To obtain names of suppliers or find out more about Focus on Energy incentives and technical assistance, call:

1-800-762-7077
Ask for the Industrial Program.
Focusonenergy.com



Water quality testing. Photo courtesy of U.S. Department of Energy.

VENDOR INFORMATION