



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

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OFFICE OF
WATER

MEMORANDUM

SUBJECT: The Nexus between Water and Energy: Promoting Energy Efficiency for the Water Sector

FROM: Benjamin H. Grumbles
Assistant Administrator

A handwritten signature in black ink, appearing to read "B. H. Grumbles", written over the printed name.

TO: EPA Regional Administrators

Reducing climate impacts, saving money, and saving water – these are the goals of recent efforts to identify projects and programs that exploit the nexus between energy use and water infrastructure. As you well know, providing drinking water and wastewater service to citizens across the nation requires energy – and a lot of it! Some studies have estimated that approximately 56 billion kilowatt hours are used for supply and treatment at drinking water supplies and POTWs¹, the equivalent of approximately 44.8 million tons of greenhouse gas to the atmosphere.

This level of energy use impacts climate change and also costs money. The ENERGY STAR program estimates that about \$4 billion is spent annually for energy costs to run drinking water and wastewater utilities. If the sector could reduce energy use by just 10% through cost-effective investments in energy efficiency, collectively it would save about \$400 million annually.

Agency efforts on water and energy include our broad outreach to promote water efficiency through the WaterSense program, as well as a suite of activities and tools that focus on energy use at utilities. The WaterSense program is helping to identify water efficient products and practices that will help reduce energy needs to treat and deliver drinking water and wastewater. The program has been expanding rapidly and I hope that the Regions can play an expanding role in making WaterSense a household word. If one out of every 100 American homes were retrofitted with water-efficient fixtures, a savings of about 100 million kWh of electricity per year and the avoidance of 80,000 tons of greenhouse gas to the atmosphere² would result.

¹ EPRI, 2002. Water & Sustainability (Volume 4): U.S. Water Consumption for Water Supply & Treatment—The Next Half Century, Electric Power Research Institute, Palo Alto, California, March 2002, Report#: 1006787.

² EPA calculation. Data sources: Aquacraft Inc, Electric Power Research Institute, and ENERGY STAR.

In our work with the water utility industry, we can encourage them to identify approaches to integrate energy efficient practices into their daily management and long-term planning. Practices could include, but are not limited to, promoting benchmarking by utilities so that they better understand how their actions yield results; promoting use of energy efficient products/practices; and evaluating the life cycle energy costs associated with proposed projects so that alternatives can be appropriately considered. Some examples of our efforts by the Office of Water (OW) and our partners include the following:

- An environmental management system (EMS) involves a proven Plan-Do-Check-Act methodology that allows a utility to analyze and reduce the environmental impact of its activities and operate more efficiently. OW has successfully promoted the adoption of EMSs for several years. We are now working with Region 1 on a project to use the Plan-Do-Check-Act approach to reduce energy use at water and wastewater facilities. We have developed a step-by-step workbook entitled "Ensuring a Sustainable Future: An Energy Management Guidebook for Wastewater and Water Utilities" to help utilities and are holding two workshops in New England, the first of which was on December 11, 2007. A second workshop will be held in March 2008. Several other regions have expressed interest in co-sponsoring similar workshops in 2008. The Water Environment Federation has also expressed interest in sponsoring workshops through their member associations. More information will be posted on http://www.epa.gov/waterinfrastructure/bettermanagement_energy.html, <http://www.peercenter.net>, and <http://www.energystar.gov>.
- The ENERGY STAR program recently added drinking water and wastewater treatment facilities to the suite of facilities addressed under its Portfolio Manager - an interactive energy management tool that can be used to track and assess energy and water consumption. The tool can help a utility to set investment priorities, verify efficiency improvements, and calculate its carbon footprint. The Office of Air and Radiation (OAR) will also be releasing best practices guides that will provide examples of how energy-efficient technologies and practices can reduce energy use and save money. See http://www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfoliomanager.
- Increasingly wastewater utilities are realizing that as well as being consumers of energy, they can be generators. Combined heat and power (CHP) is a reliable, cost-effective option for wastewater treatment facilities that have, or are planning to install, anaerobic digesters. Biogas flow from these digesters can be used in a CHP system as "free" fuel to generate reliable electricity and power. OAR and OW worked to develop a guide to highlight the opportunities and benefits of CHP. See <http://www.epa.gov/chp/markets/wastewater.html>.
- The Municipal Technologies program in the Office of Wastewater Management has developed a number of fact sheets that describe various alternative energy sources that utilities may want to consider for their operations, including solar cells, fuel cells and wind turbines. In the future, the program will be developing energy conservation case studies to highlight the benefits of taking action. See <http://www.epa.gov/owm/mtb/mtbfact.htm>.

- The Clean Water and Drinking Water State Revolving Funds (SRFs) serve as important sources of financing for drinking water and wastewater infrastructure. The program is currently developing information to highlight how the SRFs can be used to advance energy efficiency.

We are also engaged in projects and research efforts with partners, including the Water Environment Research Foundation and Center for Environmental Energy Engineering. We want to increase the interaction with regional, state, utility, and stakeholder partners to improve our understanding of potential energy efficiencies and cost savings.

I look forward to engaging with you and your Water Division Directors on this issue and would be interested in hearing your ideas about how we can we advance this effort. We have developed a one-stop page to highlight our work in this area at http://www.epa.gov/waterinfrastructure/bettermanagement_energy.html. If you have any questions, please contact me or have your staff call Andy Crossland at (202) 564-0574.