American Water Works Association
Research Foundation

Proposed Water and Wastewater Treatment Plant
Energy Efficiency Achievement Program

Description of Issue: One industry key to economic development is the availability of municipal water and wastewater services. Clean drinking water and adequate wastewater treatment capacity are essential to a region's economic growth, and by extension any electric load growth. Electricity is the second largest operating cost for most water and wastewater systems and the water and wastewater industry faces unprecedented demands from new environmental regulations. This industry consumes an estimated 5% of California's energy use. The EPRI Municipal Water and Wastewater Program has shown that many plants can achieve 10-30% reduction in energy use by instituting energy efficiency programs.

Benefits for Water and Wastewater Community: A typical water or wastewater treatment plant may be able to reduce their energy cost by up to 30% or more by instituting energy efficiency programs. EPRI has found that energy efficiency savings in the water and wastewater industry are mainly achieved by analyzing and improving operational and process systems and less on conventional approaches such as motor efficiency improvements. A state-wide energy efficiency achievement program could target this specific industry to provide a "seal of approval" for those treatment facilities that have been studied and shown to achieve an energy optimum performance.

Objective: The project objective would be to establish a state-wide Energy Efficiency Achievement Program for the water and wastewater industry. This program would set energy reduction goals and be managed by an unbiased third party group to review and place a "seal of approval" for energy efficiency operations.

Recommended Funding: Total project cost is $250,000 per year.

Past and Ongoing Research: Past activities by AwwaRF, WERF, AWWA, and WEF (benchmarking studies and databases) have not focused on energy management. This approach would focus on recognition of energy efficiencies. Past EPRI activities have looked at assessment but not recognition. This concept is illustrated by the "Energy Star" Program.

Background:
EPRI has conducted energy process audits at water and wastewater facilities for over 10 years. Many of theses audits have concluded that energy efficiency opportunities could be achieved by making process modifications. In many

cases, the plant personnel were reluctant to make these changes since they were taking a risk with the change and they did not fully understand the long term benefits in energy reduction. There was no recognition for plant personnel and any perceived risk far outweighed the potential benefit. By establishing a state-wide achievement program, treatment plant personnel will more eagerly embrace energy efficiency efforts and will be recognized on a level playing field with their peers.

Research Approach:
The project scope would include the following:

1) Establish an energy efficiency team to identify, obtain, and prepare proper benchmarked treatment unit process and energy information suitable for use in this program. This team would develop criteria and methods for treatment plant certification.
2) Develop marketing information to encourage water and wastewater plants in the state to participate in this program and to recognize those plants that have been certified as energy compliant.
3) Conduct plant reviews for those plants participating in the program.
4) Prepare an annual report to the state detailing results from the program.