

2.21 Conservation Programs for Industrial, Commercial, and Institutional Accounts

A. Applicability

This BMP is intended for all Municipal Water User Groups (“utility”) which serve industrial, commercial, and institutional (“ICI”) customers. Conservation programs for ICI accounts are essential for increasing water efficiency among ICI users. For many utilities, consumption in the ICI sector is a significant proportion of total consumption, and average water use by ICI customers is higher than average water use by residential customers. In these circumstances significant overall reductions in water demand can be more rapidly achieved by developing a Conservation Program for ICI Accounts. Additional information regarding specific processes is found in the industrial section of the BMP guide.

B. Description

Under this BMP, the utility identifies ICI customers and sorts them according to water usage. The utility should focus its ICI Conservation Program toward the higher use customers and those sectors with the highest conservation potential. In addition to domestic water use by employees and customers, many industry-specific processes are captured in this BMP. Differences in this industry-specific category of water use result in unique opportunities for significant water savings within each utility service area. Similarities in overall water use by ICI customers create the opportunities for an ICI Water Conservation Program which is the subject of this BMP.

Utilities wishing to pursue efficiency among their ICI customers should consider programs which offer incentives for specific activities such as: retrofits of inefficient water cooled equipment with air cooled equipment (*See, Cooling Systems BMP*), cooling tower upgrades (*See, Cooling Tower’s BMP*), installation and operation of internal recycling equipment, or conversion to reclaimed water from the local water treatment plant in processes where nonpotable water can be used (*See, Industrial Alternative Sources and Reuse of Process Water BMP*). In addition to process changes and cooling tower upgrades, incentives can be offered for condensate collection and reuse, using water quality ponds for permanent storage for irrigation or use of process water for irrigation. Efficient landscape water use should be evaluated and implemented by using appropriate elements of the Landscape Irrigation Conservation and Incentives BMP and the Rainwater Harvesting and Condensate Reuse BMP. For clothes washers in common area laundry rooms in apartment communities and for self-service laundromats, a clothes washer incentive program could be offered.

The incentive programs should start with direct communications through newsletters or direct mail to introduce the program and give examples of successful efficiency efforts (*See Industrial BMP for Management and Employee Programs*).

While a significant portion of conservation savings for industrial customers comes from modifications to water using equipment and processes, additional savings for the commercial and institutional customers comes from water used for domestic purposes. Programs and incentives

for plumbing fixture retrofits and reduction in water wasting practices should be considered. Several municipal BMPs such as Prohibition of Wasting Water; Showerhead, Aerator, and Toilet Flapper Retrofit; and Residential Toilet Replacement Programs provide good guidance for the development of programs for ICI customers in these areas.

A water use survey program (*See*, Industrial Water Audit for guidance) is another program that can educate ICI customers about potential water savings. To accurately track water usage by ICI accounts, the utility should develop and market an ICI water-use survey. Water-use surveys should include a site visit; an evaluation of all water-using equipment and processes; a report identifying recommended conservation measures and their expected payback; and available agency incentives. The utility should conduct periodic follow-up visits to evaluate the status of recommended water-saving improvements.

In lieu of customer incentives programs and water-use surveys, the utility may choose to implement other efforts to reduce water usage in the ICI sector. All ICI customers should be encouraged to become familiar with BMPs that may be appropriate to their facilities including those related to fixture retrofits, landscape management, submetering, employee education, and reuse. The utility can also set goals for the ICI sector in relation to the utility's own gallons per capita per day ("GPCD") targets and goals from its overall conservation plan.

C. Implementation

Implementation should consist of at least the following actions:

- 1) Identify ICI Accounts
Identify and rank commercial, industrial, and institutional accounts (or customers if the agency chooses to aggregate accounts) according to water use and highest conservation potential. For purposes of this BMP, ICI accounts are defined as follows:
 - a. Commercial Accounts: any water user that provides or distributes a product or service, such as hotels, restaurants, office buildings, commercial businesses or other places of commerce. These do not include multi-family residences, agricultural users, or customers that fall within the industrial or institutional classifications.
 - b. Industrial Accounts: any water users that are primarily manufacturers or processors of materials as defined by the Standard Industrial Classifications (SIC) Code numbers 2000 through 3999 or the North American Industry Classification System.
 - c. Institutional Accounts: any water-using establishment dedicated to public service. This includes schools, courts, churches, hospitals, and government facilities. All facilities serving these functions are to be considered institutions regardless of ownership.

After ranking ICI accounts by water use, identify priority customers for incentives based upon cost-effectiveness or ease of program implementation.

- 2) 5-Year ICI Ultra Low Flush Toilet (“ULFT”) Program
Implementation should consist of at least the following actions:
- a. A retrofit program to replace 50 percent of existing high-water-using toilets with ultra-low-flush (1.6 gallons or less) toilets in commercial, industrial, and institutional facilities within 5 years.
 - b. Other programs that may be at least as effective as facilitating toilet replacements over a 10-year implementation period sufficient to produce cumulative water savings to 5 percent of total water savings potential per year for ULFT retrofits by the ICI sector.

- 3) ICI Customer Incentives Program and Water-Use Surveys
Implement an ICI and Customer Incentives Program. Develop a customer targeting and marketing strategy to provide customer incentives to ICI accounts such that each ICI sector’s average annual water demand, after considering growth in demand that may occur from new ICI customers, is reduced 10 percent within 10 years of the date implementation is to commence. Directly contact (via letter, telephone, or personal visit) and offer water use surveys and customer incentives to at least 10 percent of each ICI sector on a recurring basis.

Financial incentives can be offered on a dollar amount per piece of equipment retrofitted such as toilets, clothes washers or cooling tower conductivity meters. Another option for determining the amount of potential incentives is offering an open-ended incentive per gallon per day saved so that facility managers propose the projects. This approach places utility staff in the role of evaluating such proposals.

For utilities which choose to offer water-use surveys, the surveys include a site visit, an evaluation of all water-using apparatus and processes, a customer report identifying recommended efficiency measures with their expected payback period, and available agency incentives. The Industrial Water Audit BMP can provide good guidance for development of the survey.

Within one year of a completed survey, there should be follow-up via phone or site visits with customers regarding facility water use and water-saving improvements. The utility should track customer contacts, accounts (or customers) receiving surveys, follow-ups, and measures implemented. Develop a customer targeting and marketing strategy to provide water-use surveys to ICI accounts such that 10 percent of each ICI sector’s accounts are surveyed within 10 years of the date implementation is to commence. Directly contact (via letter, telephone, or personal visit) and offer water use surveys and customer incentives to at least 10 percent of each ICI sector on a repeating basis.

- 4) ICI Conservation Performance Targets
Utilities may choose an alternative approach based upon local customer base and specific circumstances. To be effective as a BMP, they should implement programs designed to achieve annual water-use savings by ICI accounts of an

amount equal to or exceeding 10 percent of the baseline use of ICI accounts in the utility's service area over a ten-year period, accounting for growth. The target amount of annual water-use reduction in ICI accounts is a static value calculated from the baseline amount of annual use. Baseline use is defined as the average annual use by ICI accounts in the five years prior to implementing the BMP.

D. Schedule

- 1) Within the first twelve (12) months of implementing this BMP, identify industrial, commercial, and institutional accounts and sort them by water use;
- 2) Replace at least 10 percent of existing high-water-using toilets with ultra-low-flush (1.6 gallons or less) toilets each year for 5 years;
- 3) By the end of year 5 contact and offer water-use surveys and customer incentives to 100 percent of ICI accounts;
- 4) By the end of year 10 complete water-use surveys for 10 percent of ICI accounts; and
- 5) If utilizing other programs in lieu of the water-use survey and customer incentives program: by the end of year 10, reduce ICI water usage by 10 percent of baseline ICI usage.

E. Scope

To accomplish this BMP, the utility should adopt ICI conservation policies, programs or ordinances consistent with the provisions for this BMP specified in Section C.

F. Documentation

To track this BMP, the utility should provide the following documentation:

- 1) The number of customers and amount of water used within the commercial, industrial, and institutional customer classes;
- 2) Number of toilets replaced each year;
- 3) A description of the plan to market water-use surveys to ICI accounts;
- 4) The number of ICI customers offered water-use surveys during the reporting period and the number of water-use surveys completed during the reporting period;
- 5) The number of follow-ups completed during the reporting period;
- 6) The type and number of water-saving recommendations implemented; and
- 7) If utilizing other programs in lieu of the water-use survey and customer incentives program, a description of the programs and estimated water-use reductions achieved through these programs. The utility should document how savings were realized and the method and calculations for estimating savings.

G. Determination of Water Savings

Calculate water savings as follows:

Using historical records and manufacturer data as appropriate, calculate water savings due to implemented operating procedures, equipment changes or alternative water sources.

Specific water savings calculations for cooling tower efficiency improvements can be found in the Cooling Tower BMP for industrial users.

For Water Surveys

Water Savings = Number of Surveys x Estimated Savings x Water Used

Where: Estimated Savings = 20 percent or percentage determined through survey results

Water Used = Average (5 year) annual water use by ICI customers
receiving the survey

Source: A&N Technical Services, Inc. (1999)

H. Cost-Effectiveness Considerations

1) Toilet Rebates

If the rebate cost for the toilet is set too low, only those customers planning to retrofit will do so. If the rebate is set too high, the utility will be overpaying for customers to retrofit. Most utilities have found a rebate to work effectively if set between \$75 and \$130 for the toilet and flush valve.

Some utilities find it is more cost effective to provide toilets free of charge to their customers. Flush valve bowls and the flush valves can be purchased in bulk for approximately \$50 to 60 and \$35 to 40 respectively. Administration of the program can be conducted by utility staff or contracted out. There will be labor costs for application processing and inspections to verify installation. Labor costs range from \$10 to \$20 per toilet. Marketing and outreach costs range from \$5 to \$10 per toilet. Administrative and overhead costs range from 10 to 20 percent of labor costs. To calculate the total cost per unit, total all costs and divide by the number of units being retrofitted.

2) General ICI Rebate

The rebate can be based on a set amount such as \$1 per gallon per day reduction up to a certain percentage of the actual customer costs of implementing the project. Often the cap for the rebate is 50 percent of the actual costs of the project.

I. References for Additional Information

- 1) *A Water Conservation Guide for Commercial, Institutional and Industrial Water Users*, New Mexico Office of the State Engineer, July 1999.
<http://www.seo.state.nm.us/water-info/conservation/pdf-manuals/cii-users-guide.pdf>
- 2) *Commercial and Institutional End Uses of Water*, AWWA Research Foundation, Summer 2000.
- 3) *Commercial Conservation Rebates & Audits*, San Antonio Water System.
<http://www.saws.org/conservation/commercial/>
- 4) *Commercial/Industrial Rebate Program*, Metropolitan Water District of Southern California. <http://www.mwd.dst.ca.us/mwdh2o/pages/conserv/program02.html>
- 5) *Handbook of Water Use and Conservation*, Amy Vickers, Waterplow Press, May 2001.
- 6) *Waste Not, Want Not: The Potential for Urban Water Conservation in California*, Pacific Institute, November 2003.
http://www.pacinst.org/reports/urban_usage/waste_not_want_not_full_report.pdf
- 7) *Water Efficiency Guide for Business Managers and Facility Engineers*, State of California Department of Water Resources, October 1994.