Restaurants

Books

***Handbook of Water Use and Conservation* by Amy Vickers, 2001.**

4.4 Commercial Kitchens and Restaurants. Pages 267-277.

Topics include:

- How to audit kitchens and restaurants
- Food and drink preparation tips
- Commercial dishwashers – use 2.5 to 8 gpm
- Garbage disposals and scrapping troughs – use 3 to 8 gpm
- Icemakers – use 20 to 90 gallons to produce 100 pounds of ice
- Ice cream and frozen yogurt machines – use 2 to 3 gpm

***Commercial and Institutional End Uses of Water* by AWWA Research Foundation, 2000.**

This study presents findings of field studies of commercial and institutional (CI) customers in five urban areas. The book provides a set of efficiency benchmarks for five CI categories.

Web Resources

***Evaluating the Water Savings Potential of Commercial "Connectionless" Food Steamers* by Fisher, Nickel, Inc., June 2005**

This study confirmed that boiler-based steamers consume significantly more water than compartment steamers that incorporate connectionless or boilerless technology. Applying the nominal savings of 40 gal/hour per compartment, the water-saving potential of a two-compartment steamer operating 12 hours per day would be equivalent to an acre-foot of water use per year. For a single compartment steamer that is operated 6 hours per day, the water savings potential would be on the order of .25 acre-feet per year.

www.cuwcc.org/uploads/product/ Steamer-Field-Study-Final-Report.pdf

***Water Efficiency: Water Management Options: Kitchen and Food Preparation* by North Carolina Department of Environment and Natural Resources, April 1998**

This is a six-page fact sheet with water use information about dishwashers, faucets, ice machines and garbage disposals.

http://www.p2pays.org/ref/04/03103.pdf

***Water Efficiency Guide for Business Managers and Facility Engineers*, CA Dept. of Water Resources, 1994. Pages 67-69**

Restaurant efficiency methods.

http://www.owue.water.ca.gov/docs/water_efficiency_guide.pdf

***A Water Conservation Guide for Commercial, Institutional and Industrial Users*, New Mexico Office of the State Engineer, 1999. Pages 38-40.**

This book includes information about dishwashers, garbage disposers, ice machines, and frozen yogurt and ice cream machines.

http://www.owue.water.ca.gov/docs/water_efficiency_guide.pdf

WaterWise Restaurant Program

The City of Austin offers a water audit of current appliance and practices for restaurants. It includes retrofitting spray valves and faucet aerators. Rebates are available to upgrade certain kitchen equipment. When completed upgrades and repairs are made, the restaurants are listed on the City's website.

http://www.ci.austin.tx.us/watercon/restaurants.htm

***CEE Commercial Kitchens Project*, launched Dec. 2005**

The objective of this project is to increase market share of water-efficient products. Specifications have been set for the water savings potential for ice machines and pre-rinse spray valves. More products will be added as specifications become available.

The goals of the initiative are as follows:

- Research opportunities for additional energy and water savings opportunities in commercial kitchens and develop water/energy equipment specifications.
- Initiate and/or strengthen relationships with manufacturers, trade associations, and key end-user associations.
- Increase specification use in programs through promotion and exploration of program approaches.

http://www.cee1.org/com/com-kit/com-kit-init-des.pdf

PG&E Food Service Technology Center

The PG&E Food Service Technology Center is the industry leader in commercial kitchen energy efficiency and appliance performance testing. It has developed over 30 Standard Test Methods for evaluating commercial kitchen appliance performance, including steam tables, dishwashers and spray valves.

www.fishnick.com

Best Management Practices

Dishwashers

- Wash full loads in rack-type machines.
- Presoak and wash items in basins of water rather than under running water.
- When possible, scrape or brush dishes and pots rather than using running water or pre-rinse sprayers.
- Replace pre-rinse sprayers with water-saving 1.6-gpm sprayers.
- Install pressure reducing valves on dishwasher water supply lines when the supply pressure exceeds the pressure recommended by the manufacturer.
- Operate scraping troughs only during dishwashing operations.
- Replace older dishwashers with new water and energy efficient models.
- Turn dishwashers off when not in use.

Food & Drink Preparation

- Install kitchen faucet aerators that use 2.5 gpm. Where higher flows are needed, install a fingertip control valve for aerated or full-flow operation.
- Reduce or eliminate using water to thaw food. If food must be thawed using water, reduce flows to the minimum needed.
- Turn off continuous flows used to clean drain trays installed at coffee/milk/soda/beverage islands.
- Install hands-free or foot activated valves on faucets.

Food Disposers

- Replace disposers with garbage strainers which use less water.
- Use the minimum acceptable flow of water through the disposer.
- Install electronic sensors to detect food in the disposer's grinding chamber.
- Install solenoid valves to stop water flow when the disposer is off.
- Reduce the amount of time the disposer operates, as well as the amount of water used, for models with preset controls.

Icemakers

- Replace old icemakers with air-cooled, water efficient models. However, consider energy use too.
- Use ice flake machines rather than ice cube machines. Producing ice flakes uses less water.

- Use softened water in ice cube machines to minimize bleed-off.
- Collect spent cooling water from water-cooled ice machines and use it for nonpotable purposes, such as mopping floors.

Building Maintenance

- Repair leaks and malfunctioning equipment promptly.
- Install low-flow toilets and faucet aerators in restrooms.
- Replace fixtures with water-conserving models when they wear out.

More BMP Lists

CA Dept. of Water Resources: http://www.owue.water.ca.gov/docs/Restaurants.pdf
Denver Water: www.denverwater.org
NC Dept. of Environment & Natural Resources:
http://www.p2pays.org/ref/23/22003.pdf
Salt Lake City Dept. of Public Works:
http://www.slcgov.com/utilities/conservation/pdf/restaurant.pdf

Benchmarks

From *Commercial End Uses of Water*.

Efficiency benchmarks for restaurants – p. 138

(excludes water use for cooling or irrigation)

- 130-331 gallons per square foot of building area in a year
- 6-9 gallons per meal served
- 20-31 gallons per seat per day
- 86-122 gallons per employee per day