

Agenda Item 5g

COMMERCIAL FOOD SERVICE EQUIPMENT MANDATORY MEASURES

- **Statement of specific purpose, problem, rationale and benefits:**

Food service facilities use approximately 15% of commercial and institutional building water.¹ The drain water tempering and disposer equipment listed below often consume process water (i.e. water not used for cooking) on a continuous basis. Research has shown there are multiple products on the market that are designed to reduce the amount of process water used in commercial food service facilities. While CALGreen does not currently contain code requirements for this equipment, existing model codes can be adopted to realize these potential water savings.

Drain Water Tempering Devices

Drain water tempering devices, also known as quenching or cold water condensate systems, are devices that regulate the temperature of hot drain water by mixing hot water inputs with cold water to insure that water discharged from the device does not exceed the maximum allowable temperature. Kitchen equipment such as dish machines, steam tables, combination ovens, convection ovens, and steamers usually have to be installed in conjunction with tempering devices to ensure discharge water does not exceed 140°F, as required by Section 810 of the California Plumbing Code. The base case drain tempering device does not have sophisticated controls; the a manually-operated cold water line will oftentimes dump cold water into the drain even when kitchen equipment is not operating and there is no hot water to temper.²

Drain tempering systems with controls use valves and sensors to allow the flow of cold water into the drain line only when the temperature of the effluent is 140°F or hotter. Tempering systems can be either mechanically or electronically actuated. Mechanically actuated tempering systems modulate the amount of cold water added and use less water than an electronically actuated solenoid valve, which is either fully open or closed.³ We propose to require that tempering devices operate only during flow of hot water. For instance, a 1 gallon per minute tempering system will save over 500 gallons per day if 9 hours of operation are avoided.

We also propose to require that tempering systems are mechanically actuated or otherwise capable of adjusting the discharge of cold water to match the quantity needed to temper hot water discharges to 140°F. For instance, tempering 160°F hot water to 140°F based on a sensor will require half the cold water discharge compared to a system set for 180°F, regardless of the actual hot water temperature.⁴

Equipment that meets the proposed code requirements is readily available and we expect that water savings will quickly pay back any potential incremental costs.

Disposers

Some disposers can consume between 2 and 15 gallons per minute (gpm), with newer systems using up to 13 gpm. We propose limiting water use in the following ways:

- Installing a flow control valve to restrict the flow rate of water into the disposer when the disposer is operating.

¹ US EPA. (2012, November). "Saving Water in Restaurants.

² Tallos, N. (2014, November 25). Vice President of Engineering for ThermOmegaTech, Inc. (R. O'Brien, Interviewer).

³ Tallos, N. (2012, July 1). "The Importance of Drain-Water Tempering." <http://hpac.com/archive/importance-drain-water-tempering>

⁴ 180°F hot water will require temperature reduction of 40°F to achieve 140°F, while 160°F hot water will require a temperature reduction of 20°F.

- Limiting water flow when the disposer is not in use (i.e. no activity or no load condition) by:
 - Modulating the flow rate of water into the disposer based on the load of the system (i.e. whether it has food waste in it or not); or
 - Using time clock controllers that turn the disposer off after a designated period of time to minimize how long the unit is on.

Compliant products are available and typical savings appear large enough to rapidly pay back costs for water-saving features.

For additional information, please see the attachment “Commercial Food Service Equipment Mandatory Measures: Additional History and Rationale.”

- **Proposed code language for the 2015 Triennial Code Adoption Cycle**

LEGEND FOR EXPRESS TERMS

1. New California amendments: All such language appears *underlined and in italics*.
2. Repealed text: All such language appears in ~~strikeout~~.

NONRESIDENTIAL MANDATORY MEASURES

SECTION 5.303 INDOOR WATER USE

5.303.7 Appliances and fixtures for commercial application.

5.303.7.1 Food Waste Disposers. *Disposers shall use either a load sensor to modulate the use of water to no more than 1 gpm when the disposer is not in use (not actively grinding food waste) or shall automatically shut off after 10 minutes of inactivity. Disposers shall use no more than 8 gpm of water under full-load conditions.*

5.303.7.2. Drain Water Discharge Tempering. *Tempering devices shall be designed to operate only during hot water discharge. Tempering devices shall be mechanically-actuated or otherwise capable of adjusting the discharge of cold water to match the quantity needed to temper hot water discharges to 140°F (as required by the California Plumbing Code).*

Attachment: Commercial Kitchens Mandatory Measures Additional History and Rationale