UC SANTA CRUZ Sustainability Conference 2005

Energy and Water Efficiency in Your Green Dining Facility

Presented by: Richard Young

Food Service Technology Center

PG&E 100 LOOKING FORWARD TO THE NEXT 100 YEARS

FISHER NICKEL Inc.

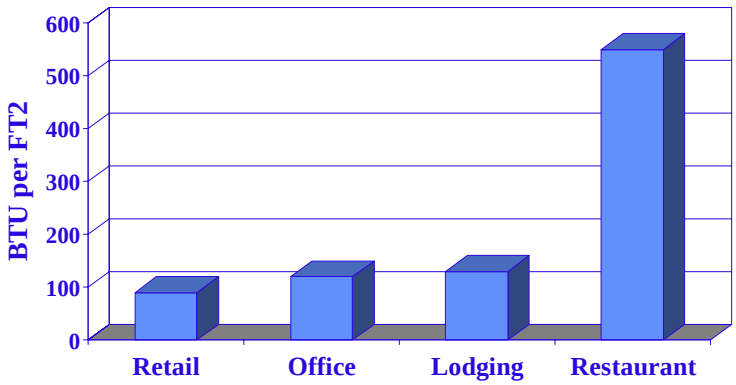
The Food Service Technology Center (FSTC) program is funded by California utility customers and administered by the Pacific Gas and Electric Company under the auspices of the California Public Utilities Commission.

Promoting:

Energy Efficiency in Commercial Food Service

PG&E Pacific Gas and Electric Company®

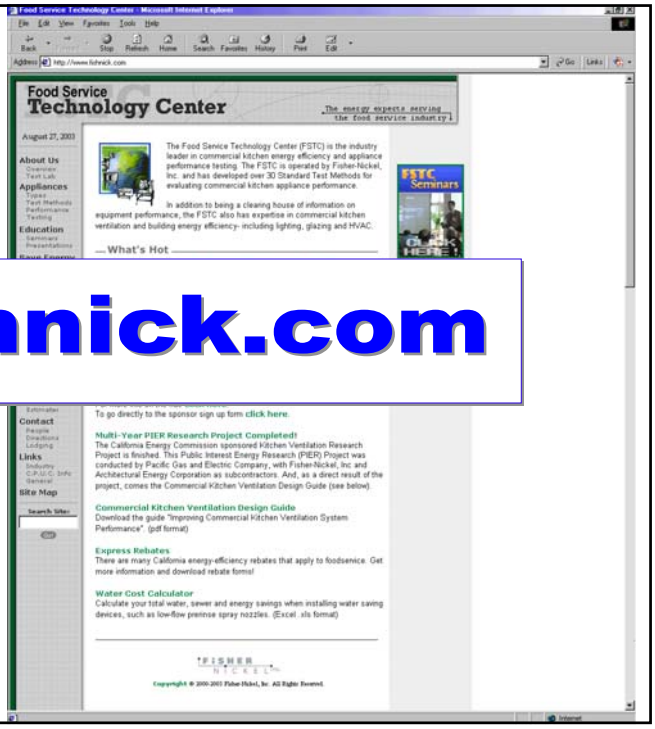
Foodservice is energy intensive ...



…and Water Intensive!

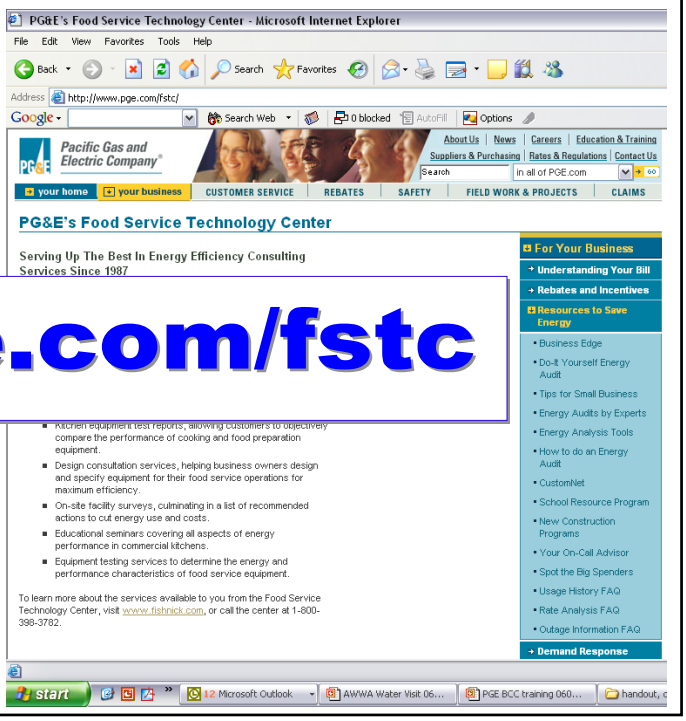
On-line Toolbox…

Check our Web Site



fishnick.com

Check our Web Site



pge.com/fstc

A quick intro to the
Food Service Technology Center

How We Learn
How We Can Help You!

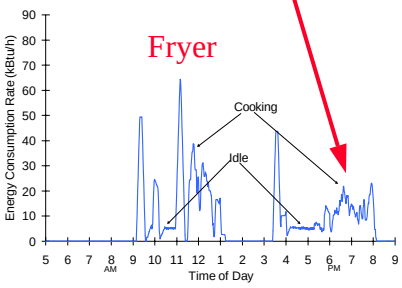
What is the FSTC ?
Where do we get our info?

Production Test Kitchen

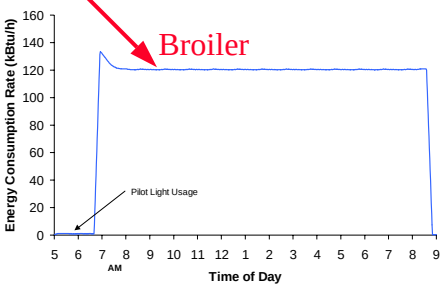
– study real world energy use

Appliance Energy Profiles

Fryer



Broiler



Appliance Testing Laboratory

– create standard test methods
and “miles-per-gallon” numbers for appliances

The controlled environment “levels the playing field.”

All appliances are not created equal!

Field Research

Site Visits and Analysis

"Where the rubber meets the road!"

Design Consultations

Seminars and Publications

Working with the Government, Utilities, and Other Industry Groups

Some Examples…

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL® Company

Southern California Gas Company
A Sempra Energy utility™

PG&E Pacific Gas and Electric Company®

SDGE
A Sempra Energy® utility

Water Utilities

California Urban Water Conservation Council

EBMUD

SFPUC
Water
Hetch Hetchy Water & Power
Clean Water

CONTRA COSTA WATER DISTRICT

The Metropolitan Water District of Southern California

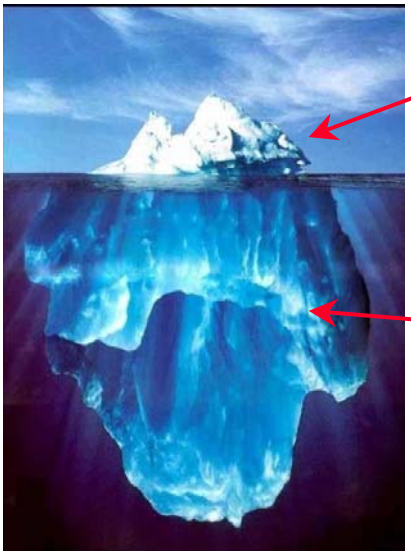
Refrigeration Fryers Holding Cabinets Steamers

Specify ENERGY STAR Appliances

www.energystar.gov

Refrigeration Fryers Holding Cabinets Steamers

Life Cycle Cost – The Big Picture



Acquisition Costs

Sustaining Costs

can be

2 to 20 times greater

Food Service Technology Center

Promoting Energy Efficiency in Commercial Food Service

June 09, 2005

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Life-cycle and Energy Cost Calculators

High-efficiency equipment will continue to save energy dollars years after the initial purchase. These calculators allow you to compare the total cost of operating different appliances over their useful service lives.

Calculators for additonal appliance categories continue to be developed, so check back often!

Fryers
Electric Fryer Life-Cycle Energy Cost Calculator
Gas Fryer Life-Cycle Energy Cost Calculator

Griddles
Electric Griddle Life-Cycle Energy Cost Calculator
Gas Griddle Life-Cycle Energy Cost Calculator

Ovens
Electric Convection Oven Life-Cycle Energy Cost Calculator
Gas Convection Oven Life-Cycle Energy Cost Calculator
Gas Rack Oven Life-Cycle Energy Cost Calculator

Steamers
Electric Steam Cooker Life-Cycle Energy Cost Calculator
Gas Steam Cooker Life-Cycle Energy Cost Calculator

Underfired Char-Broilers
Gas Underfired Char-Broiler Life-Cycle Energy Cost Calculator

Refrigeration
Reach-In Refrigerator/Freezer Life-Cycle Energy Cost Calculator

Holding Cabinets
Hot-Food Holding Cabinet Life-Cycle Energy Cost Calculator

ENERGY STAR

Insulated Energy Star Hot Food Holding Cabinets

Holding Cabinet Cost Calculator

ASTM Data

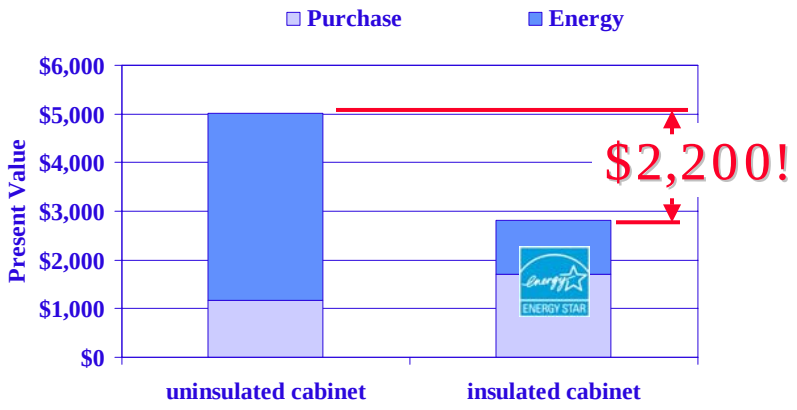
User Data

User Inputs			
Holding Cabinet Performance *(Based on ASTM Standard Test Method F 2140-01)*			
Cabinet Volume	20.0	Cu Ft	[Default] [Help]
Idle Energy Rate	400	Watts	[Default] [Help]
Holding Cabinet Usage			
Operating Hours per Day	16.0	h/day	[Default] [Help]
Operating Days per Year	365	d/year	[Default] [Help]
Utility Cost and Lifespan			
Electric Cost per kWh	0.100	$/kWh	[Default] [Help]
Electric Demand Charge per kW	0.00	$/kW	[Default] [Help]
Lifespan of Holding Cabinet in Years	5.0	years	[Default] [Help]
Discount Rate	3.10	%/year	[Default] [Help]
	Calculate		[Default All]

Sample Results

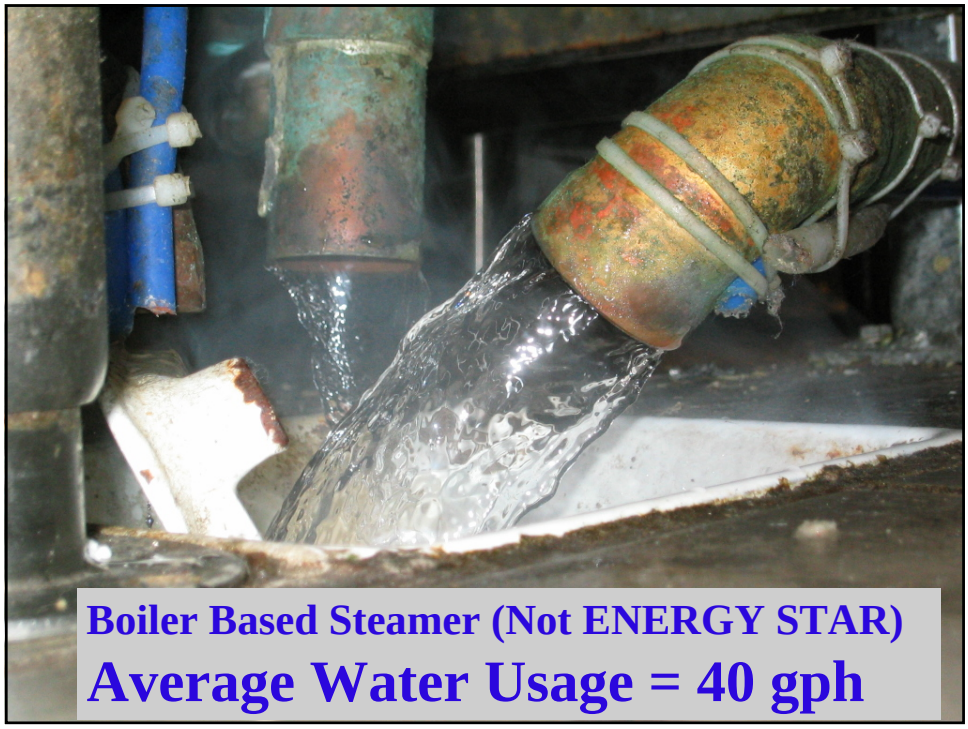
Results: Energy Cost	Base Model Holding Cabinet [About]	User Input Holding Cabinet [About]	Energy Star® Holding Cabinet [About]
Idle Energy Rate by Volume (W/Cu Ft)	70.0	20.0	40.0
Annual Energy Consumption (kWh)	8176	2336	4672
Probable Contribution to Demand (kW) [Help]	1.4	0.4	0.8
Annual Energy Cost	$818	$234	$467
Lifetime Energy Cost (Discounted)	$3851	$1102	$2199
Input Additional Costs (Optional)			
Maintenance Costs per Year [Help]	$0	$0	$0
Initial Cost of Holding Cabinet	$1164	$1705	$0
Results: Total Cost			
Lifetime Energy Cost (Discounted)	$3851	$1102	$2199
Lifetime Maintenance Cost (Discounted)	$0	$0	$0
Initial Cost of Holding Cabinet	$1164	$1705	$0
Total Cost	$5015	$2807	$2199

Life-Cycle Costs*
Hot Food Holding Cabinets



*Based on 10¢/kWh, a 5-year life expectancy and a 3.1% discount rate

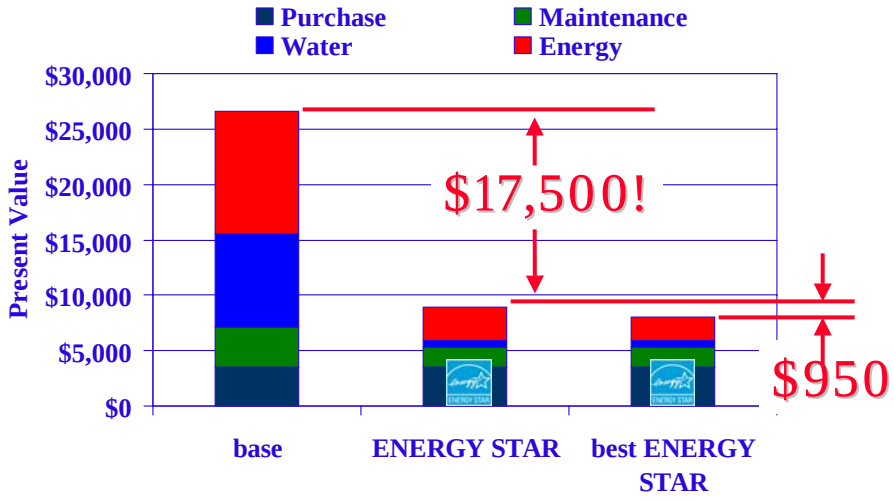
Energy Star Steamer
Saves Big on Water and Energy



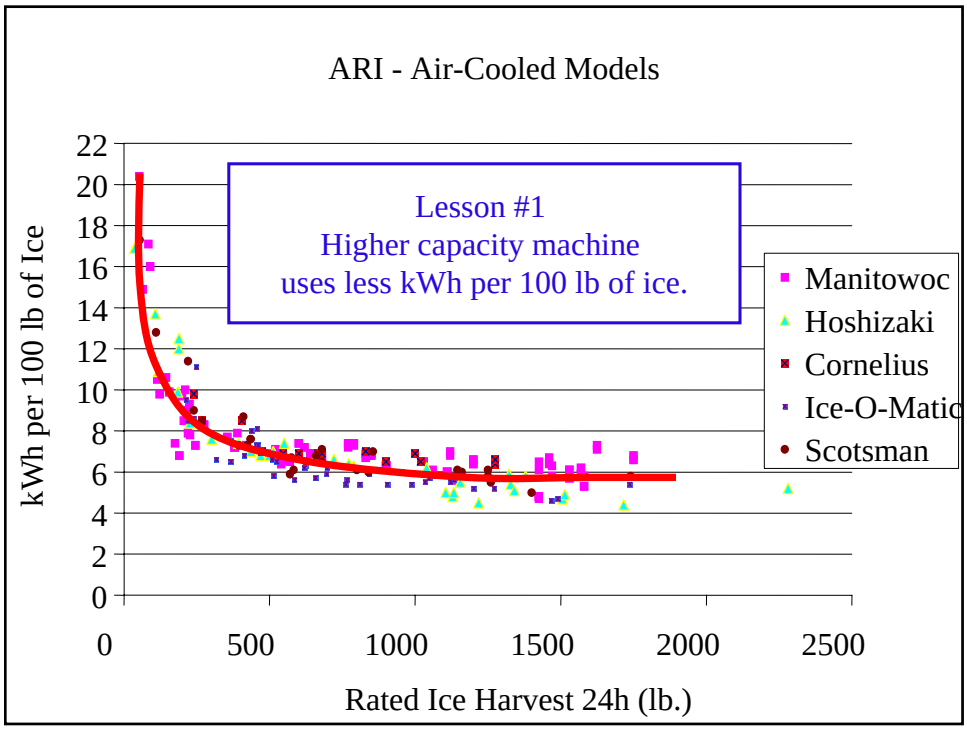
Boiler Based Steamer (Not ENERGY STAR)

Average Water Usage = 40 gph

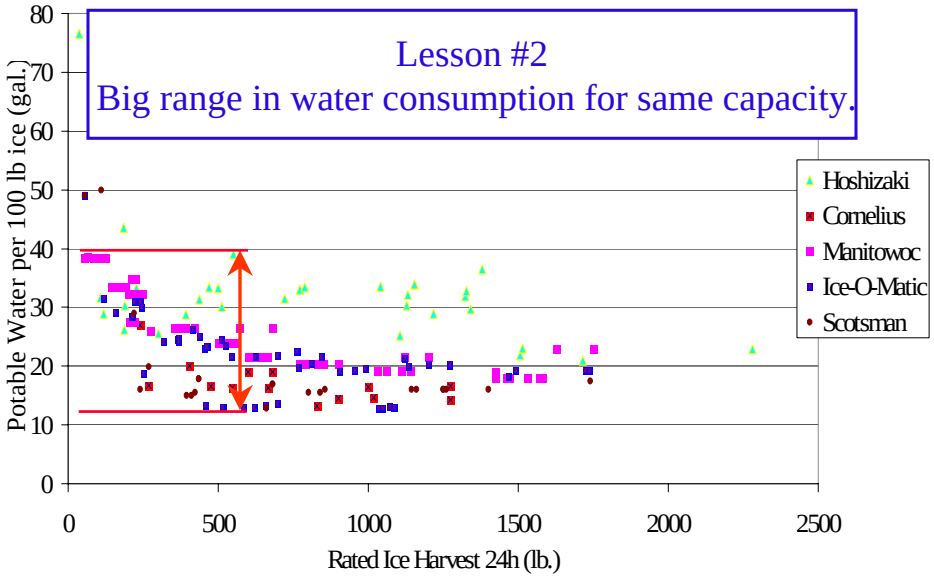
8-Year Life-Cycle Cost
Three-pan Steamer Example



Ice Machines Tips/Tools

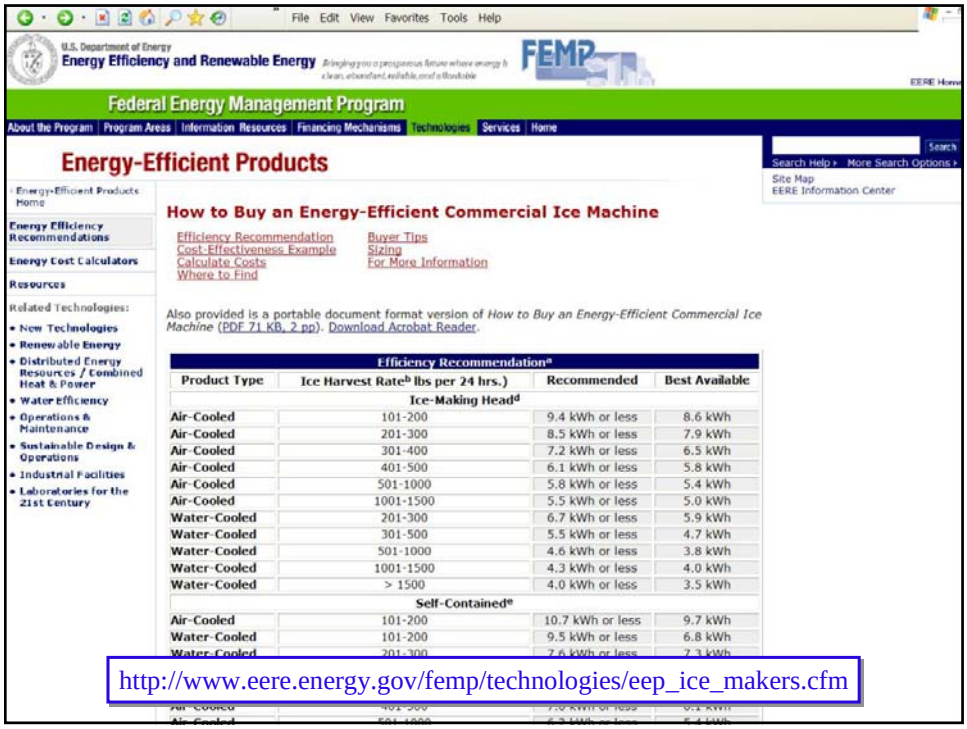


Water Use of Air Cooled Ice Machines

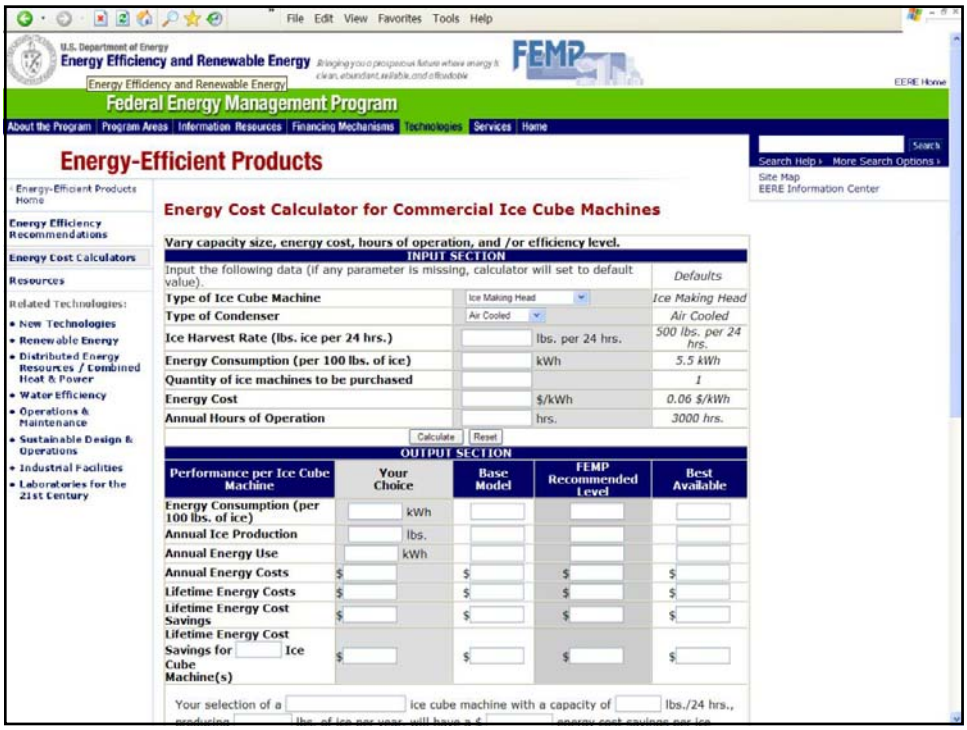


Ice Machines

- Choose high-efficiency air-cooled machines.
- Choose the most water-efficient machines.
- "Remote" the condenser (put it outside)
- Oversize the bins.
- Run the machines at night only.



http://www.eere.energy.gov/femp/technologies/eep_ice_makers.cfm



Lowest Hanging Fruit

Pre-rinse Spray Valves: Not Created Equal!

1.6 gpm $1400/yr → 1.6 gpm → 2.6 gpm → 4.5 gpm $4000/yr

@ 3 hr per day usage

RINSE & SAVE

In 2003-04 the CUWCC, in partnership with water utilities, installed more than 17,000 spray valves in California food service facilities under a CPUC funded program

California Public Utilities Commission

Who Wouldn't Like a New Sprayer?

Conclusion?

- Plenty of opportunity to save energy and water!
- The resources are available to you.
- Positive design and purchasing decisions have a long lasting impact!

THANK YOU!

www.fishnick.com