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*
Foodservice is energy intensive ...

...and Water Intensive!

On-line Toolbox...
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

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

The controlled environment “levels the playing field.”
All appliances are not created equal!
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…
California Energy Commission

Southern California Edison
An Edison International® Company

Pacific Gas and Electric Company®

SDGE®
A Sempra Energy utility™

Water Utilities

EBMUD

CONTRA COSTA WATER DISTRICT

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
Specify ENERGY STAR Appliances

www.energystar.gov
Life Cycle Cost – The Big Picture

Acquisition Costs

Sustaining Costs can be 2 to 20 times greater
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 additional 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

Rebate!

Insulated Energy Star
Hot Food Holding Cabinets
# Holding Cabinet Cost Calculator

## User Inputs

| Holding Cabinet Performance *(Based on ASTM Standard Test Method F 2140-01)* |
|---------------------------------|-------------------------------|
| **Cabinet Volume**              | 20.0 Cu Ft                    |
| **Idle Energy Rate**            | 400 Watts                     |

## Holding Cabinet Usage

| Operating Hours per Day         | 16.0 h/day                     |
| Operating Days per Year         | 365 d/year                     |

## Utility Cost and Lifespan

| Electric Cost per kWh           | 0.100 $/kWh                    |
| Electric Demand Charge per kW   | 0.00 $/kW                      |
| Lifespan of Holding Cabinet in Years | 5.0 years                  |
| Discount Rate                   | 3.10 %/year                    |

Calculate

## Results: Energy Cost

<table>
<thead>
<tr>
<th>Results: Energy Cost</th>
<th>Base Model Holding Cabinet (Almost)</th>
<th>User Input Holding Cabinet (Almost)</th>
<th>Energy Star Holding Cabinet (Almost)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Idle Energy Rate by Volume (W/Cu Ft)</td>
<td>70.0</td>
<td>20.0</td>
<td>40.0</td>
</tr>
<tr>
<td>Annual Energy Consumption (kWh)</td>
<td>8176</td>
<td>2236</td>
<td>4672</td>
</tr>
<tr>
<td>Probable Contribution to Demand (kW)</td>
<td>1.4</td>
<td>0.4</td>
<td>0.8</td>
</tr>
<tr>
<td>Annual Energy Cost</td>
<td>$818</td>
<td>$234</td>
<td>$467</td>
</tr>
<tr>
<td>Lifetime Energy Cost (Discounted)</td>
<td>$3851</td>
<td>$1102</td>
<td>$2199</td>
</tr>
</tbody>
</table>

## Input Additional Costs (Optional)

| Maintenance Costs per Year *(Help)* | $0 | $0 | $0 |
| Initial Cost of Holding Cabinet     | $1164 | $1705 | $0 |

## Results: Total Cost

<table>
<thead>
<tr>
<th>Results: Total Cost</th>
<th>Lifetime Energy Cost (Discounted)</th>
<th>Lifetime Maintenance Cost <em>(Discounted)</em></th>
<th>Initial Cost of Holding Cabinet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cost</td>
<td>$5015</td>
<td>$2803</td>
<td>$2199</td>
</tr>
</tbody>
</table>
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

Present Value

$30,000
$25,000
$20,000
$15,000
$10,000
$5,000
$0

Purchase
Water
Maintenance
Energy

base
ENERGY STAR
best ENERGY STAR

$17,500!
$950
Lesson #1
Higher capacity machine uses less kWh per 100 lb of ice.
Lesson #2
Big range in water consumption for same capacity.

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.
Energy-Efficient Products

How to Buy an Energy-Efficient Commercial Ice Machine

Effective Recommendations
Buy Tips
Buy Tips
For More Information

Efficiency Recommendations

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Ice Harvest Rate</th>
<th>Recommended</th>
<th>Best Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air-Cooled</td>
<td>181-300</td>
<td>0.4 kWh or less</td>
<td>0.6 kWh</td>
</tr>
<tr>
<td>Air-Cooled</td>
<td>275-300</td>
<td>0.3 kW or less</td>
<td>0.5 kW</td>
</tr>
<tr>
<td>Air-Cooled</td>
<td>385-400</td>
<td>0.2 kW or less</td>
<td>0.3 kW</td>
</tr>
<tr>
<td>Air-Cooled</td>
<td>485-500</td>
<td>0.1 kW or less</td>
<td>0.2 kW</td>
</tr>
<tr>
<td>Air-Cooled</td>
<td>585-600</td>
<td>0.0 kW or less</td>
<td>0.1 kW</td>
</tr>
<tr>
<td>Water-Cooled</td>
<td>1001-1200</td>
<td>5.5 kW or less</td>
<td>6.0 kW</td>
</tr>
<tr>
<td>Water-Cooled</td>
<td>1201-1500</td>
<td>4.3 kW or less</td>
<td>4.5 kW</td>
</tr>
<tr>
<td>Water-Cooled</td>
<td>1501-2000</td>
<td>3.2 kW or less</td>
<td>3.3 kW</td>
</tr>
<tr>
<td>Water-Cooled</td>
<td>&gt; 2000</td>
<td>2.0 kW or less</td>
<td>2.1 kW</td>
</tr>
</tbody>
</table>

Self-Contained

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Ice Harvest Rate</th>
<th>Recommended</th>
<th>Best Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air-Cooled</td>
<td>181-300</td>
<td>10.7 kWh or less</td>
<td>12.0 kWh</td>
</tr>
<tr>
<td>Water-Cooled</td>
<td>181-300</td>
<td>10.7 kWh or less</td>
<td>12.0 kWh</td>
</tr>
</tbody>
</table>

Energy Cost Calculator for Commercial Ice Cube Machines

Customer capacity, energy cost, hours of operation, and ice efficiency level.

Type of Ice Cube Machine:  
Air-Cooled
Ice Harvest Rate (lbs. ice per 24 hrs.): 990 lbs. per 24 hrs.
Energy Consumption (per 100 lbs. of ice): 1.5 kWh
Quantity of Ice Machines to be purchased: 1
Energy Cost: $0.06/kWh
Annual Hours of Operation: 3650 hrs.

Performance per Ice Cube Machine:

<table>
<thead>
<tr>
<th>Year</th>
<th>Basic Model</th>
<th>FEMP Recommended</th>
<th>Best Available</th>
</tr>
</thead>
</table>

Your selection of a ice cube machine with a capacity of 100 lbs. per 24 hrs., including the cost of operation over 1 year.
Lowest Hanging Fruit

Pre-rinse Spray Valves: Not Created Equal!

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

@ 3 hr per day usage
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

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