



# ENERGY STAR® Guide for Cafés, Restaurants, and Institutional Kitchens





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ENERGY STAR®, a U.S. Environmental Protection Agency program, helps us all save money and protect our environment through energy efficient products and practices. For more information, visit [www.energystar.gov](http://www.energystar.gov).

## Contents

## Page

An Introduction: ENERGY STAR for Commercial Food Service .....	1
Energy Efficiency and Your Kitchen.....	1
ENERGY STAR Certified Refrigerators, Freezers, & Ice Machines.....	2
ENERGY STAR Certified Cooking & Kitchen Appliances .....	3
Beyond ENERGY STAR: Additional Energy-efficient Kitchen Equipment Options.....	5
Eligible Incentives & Rebates for Efficient Kitchen Equipment .....	6
Heating, Ventilation, & Air Conditioning .....	7
Light Bulbs & Lighting Fixtures .....	8
Front-of-the-House (and other parts of your facility) .....	9
Additional Savings Tips – Water & Waste.....	9
Benchmark for Continuous Improvement.....	10
Start Saving Today!.....	11

### IN PARTNERSHIP WITH

**PG&E's Food Service Technology Center (FSTC)** is the industry leader in commercial kitchen energy efficiency and appliance-performance testing as well as a leading source of expertise in commercial kitchen ventilation and sustainable building design. Learn more at [www.fishnick.com](http://www.fishnick.com).

**National Restaurant Association's Conserve initiative** is designed to initiate and inspire actions that improve a company's bottom line, but also are good for people and the planet. Get inspired at [www.restaurant.org/conserve](http://www.restaurant.org/conserve).

### ACKNOWLEDGEMENTS

This best-practices guide was created with the assistance of California's four investor-owned utilities (Southern California Gas Company, Pacific Gas and Electric Company, San Diego Gas and Electric Company, and Southern California Edison). These energy suppliers are working together to provide comprehensive energy efficiency resources for California's food service industry, including, but not limited to, the following resources: rebates for cooking and refrigeration equipment, food-service-specific seminars and workshops, Web tools, energy audits, appliance testing, and energy education centers. The California energy-efficiency research and educational programs are funded by California ratepayers under the auspices of the California Public Utilities Commission and are administered by the four investor-owned utilities.



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*Disclaimer: all energy, water, and monetary savings listed in this document are based upon average savings for end users and are provided for educational purposes only. Actual energy savings might vary based on use and other factors.*

Using energy efficiently is a sound business practice that improves profitability, reduces greenhouse gas emissions, and conserves natural resources. This guide is designed to help you identify ways to save energy and water in your restaurant, or other commercial or institutional kitchen, and boost your bottom line while helping to protect the environment.

## AN INTRODUCTION: ENERGY STAR FOR COMMERCIAL FOOD SERVICE

Throughout this guide, commercial and institutional kitchen operators will learn about ENERGY STAR and other energy-saving kitchen equipment options. This guide provides estimates of savings potential from energy-efficient CFS equipment, suggestions on additional ways to save energy in your kitchen, and key resources to help you learn best practices.

ENERGY STAR, a voluntary labeling program managed by the U.S. Environmental Protection Agency (EPA) and recognized by more than 85 percent of Americans, helps us all save money and protect our environment. Restaurant operators and commercial or institutional kitchens can save money annually and over the equipment lifetime by choosing ENERGY STAR certified models. To meet the program's stringent requirements for energy efficiency, manufacturers use high-quality components and innovative technologies that often lead to other benefits such as shorter cook times, improved recovery times, higher production rates, and longer product lifetimes. For added savings, many utilities offer rebates across ENERGY STAR's eight CFS equipment categories, including: dishwashers, fryers, griddles, hot food holding cabinets, ice makers, ovens, refrigerators and freezers, and steam cookers.

The current lists of ENERGY STAR certified products can be viewed at [www.energystar.gov/cfs](http://www.energystar.gov/cfs). For more information about the scope of products covered and the benefits of certified products, see the training presentations and individual product fact sheets on the ENERGY STAR Training Center at [www.energystar.gov/training](http://www.energystar.gov/training).

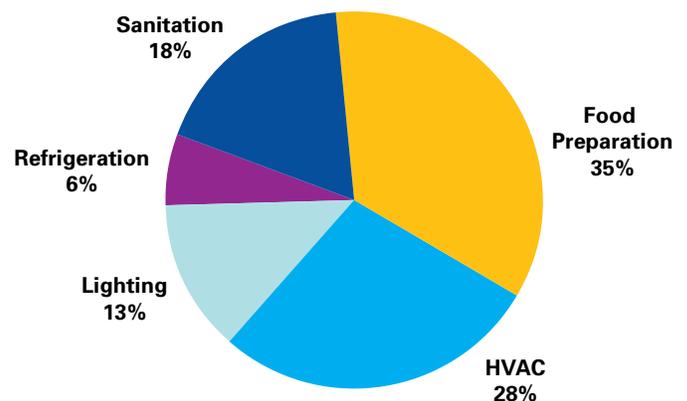
Operators that are using ENERGY STAR certified equipment are encouraged to tell their story! If you know of an organization or your organization has installed ENERGY STAR certified CFS equipment, we want to hear about it. EPA invites you to inspire others to improve the energy efficiency of their operations and help protect the environment. To submit a story, download the submission form at [www.energystar.gov/cfs/success](http://www.energystar.gov/cfs/success).

## ENERGY EFFICIENCY AND YOUR RESTAURANT

Restaurants are extremely energy intensive, using about 5 to 7 times more energy per square foot than other commercial buildings, such as office buildings and retail stores. High-volume quick-service restaurants (QSRs) may even use up to 10 times more energy per square foot than other commercial buildings.

Most commercial kitchen appliances are also very energy intensive. For instance, a typical electric deep fat fryer uses more than 18,000 kilowatt-hours (kWh), while the average U.S. household electricity use is approximately 11,000 kWh annually. As energy costs increase, investing in energy efficiency is a great way to protect your business against these rising prices.

**Example of the Average Energy Consumption in a Full-Service Restaurant**  
(British Thermal Units [Btu])



When replacing old appliances, or buying new ones, look beyond the sticker price. Ongoing costs of utilities and maintenance greatly outweigh the initial purchase price of a piece of equipment. Buying and installing equipment that has earned the ENERGY STAR could trim thousands of dollars from your annual utility bills. In order to maximize savings from ENERGY STAR certified equipment, you must train your staff to use energy wisely by following good operating practices.

## ENERGY STAR CERTIFIED REFRIGERATORS, FREEZERS & ICE MAKERS

### Refrigerators and Freezers

ENERGY STAR certified commercial refrigerators and freezers offer average **energy savings of 30 percent compared to standard models.**



#### Cost-Saving Tips

- ▶ Look for the ENERGY STAR
- ▶ Turn off door heaters when possible
- ▶ Inspect and clean the coils
- ▶ Set defrost timers
- ▶ Replace worn gaskets
- ▶ Ensure adequate airflow around the unit

ENERGY STAR certified commercial refrigerators and freezers can save:

- \$60 for electricity annually (per solid door refrigerator) or \$70 annually (per transparent door refrigerator)
- \$180 for electricity annually (per solid door freezer) or \$330 annually (per transparent door freezer)
- \$560-\$700 over the product lifetime (refrigerators)
- \$1,700-\$3,300 over the product lifetime (freezers)

The ENERGY STAR commercial refrigerators and freezers specification covers a wide array of solid, glass, and mixed solid/glass door (hybrid) product types, including reach-in, roll-in, or pass-through units; merchandisers; under counter units; milk coolers; bottle coolers; and beer-dispensing units. Some ways that manufacturers have increased the efficiency of certified products include improved insulation and components, such as; high-efficiency compressors, improved coil design, and efficient interior lighting. ENERGY STAR refrigerators and freezers also emit less heat into the kitchen compared to standard models.

### Ice Makers

Commercial automatic ice makers that have earned the ENERGY STAR are on average **15 percent more energy efficient**. Batch-type ice makers are approximately **25 percent more water efficient** when compared with standard models.

The ENERGY STAR label can be found on air-cooled batch-type (cubed) and continuous-type (flake and nugget) ice makers. Covered configurations include ice-making head (IMH), self-contained (SCU), and remote



condensing units (RCUs). Air-cooled RCUs designed for connection to remote rack compressors that are alternately sold with a dedicated remote condensing unit are also eligible. Water-cooled ice makers are not covered.

Technologies used in ENERGY STAR certified ice makers to make them more efficient include harvest-assist devices, high efficiency compressors, fan motors, and water pumps. Such technologies in ENERGY STAR certified equipment can result in longer product lifetimes and quicker ice harvesting compared to standard machines.

#### Cost-Saving Tips

- ▶ Look for the ENERGY STAR
- ▶ Inspect and clean the coils
- ▶ Keep the bin lid closed
- ▶ Adjust the purge water timer
- ▶ Cut down on your daytime electricity demand by installing a timer and shifting ice production to nighttime (off-peak hours), if possible
- ▶ Choose size wisely and you could get twice the ice capacity at half the energy cost per pound of ice (*bigger ice machines are typically more efficient than smaller ones, yet the price difference is usually not very large*)
- ▶ Avoid open-loop, water-cooled ice machines (*because of their high water cost, they are significantly more expensive to operate*)

ENERGY STAR certified ice makers can save:

- \$100 for electricity annually (for batch-type) or \$150 annually (for continuous-type)
- \$800-\$1,000 over the product lifetime



The ENERGY STAR label can be found on gas and electric steam cookers. Eligible models include countertop models; wall-mounted models; and floor-models mounted on a stand, pedestal, or cabinet-style base. Steamers must be 3-pan or larger to qualify for ENERGY STAR and cannot be a combination/hybrid steamer or a pressure steamer. ENERGY STAR steam cookers may incorporate better insulation, improved gaskets, and connectionless designs to reduce energy and water consumption.

### Fryers

**Standard sized** commercial fryers that have earned the ENERGY STAR are up to **30 percent more energy efficient** than standard models. Large vat fryers that have earned the ENERGY STAR are up to **35 percent more energy efficient** than standard models.



## ENERGY STAR CERTIFIED COOKING & KITCHEN APPLIANCES

### Steam Cookers

Steam cookers are an effective way to batch-cook food but generating steam is an energy-intensive process. ENERGY STAR certified steamers have a sealed cooking cavity that consumes **60 percent less energy** than a traditional open design system. ENERGY STAR connectionless models can also **save 90 percent or more water** when compared with standard steamers. In many cases the dollar savings are so great that it makes sense to replace an existing steamer with an ENERGY STAR certified one.



#### Cost-Saving Tips

- ▶ Look for the ENERGY STAR
- ▶ Use the timer instead of “manual” mode
- ▶ Reduce idle time
- ▶ Perform regular steam generator maintenance
- ▶ Maintain door gaskets

#### ENERGY STAR certified steamers can save:

- \$1,100 in gas or electricity annually
- An additional \$1,100 for water and sewer costs annually—totaling more than \$2,200 total savings annually
- \$11,100-\$11,900 over the product lifetime (electric and gas models, respectively)

#### Good practices can save:

\$400 in annual energy costs for a traditional, electric, open-system steamer by eliminating an hour of idle time per day.

#### Cost-Saving Tips

- ▶ Look for the ENERGY STAR
- ▶ Reduce idle time & turn off back-up fryers when possible
- ▶ Calibrate the fryer controls to operate at the correct temperature
- ▶ Perform regular maintenance



#### ENERGY STAR certified fryers can save:

- \$100 (electric) or \$440 (gas) annually for standard sized fryers
- \$150 (electric) or \$500 (gas) annually for large vat fryers
- \$1,100 (electric) or \$4,600 (gas) over the product lifetime for standard fryers
- \$1,600 (electric) or \$5,200 (gas) over the product lifetime for large vat fryers

#### Good practices can save:

\$200 annually for a gas fryer by cutting four hours of idle time per day.

Certified fryers may offer shorter cook times, faster temperature recovery times, improved ease of cleaning through oil conservation and management, and an extended product lifetime. Electric models may also utilize an insulated fry pot, which reduces standby losses and gives the fryer a lower idle energy rate. The ENERGY STAR label can be found on gas and electric open deep-fat fryers, including standard fry pot sizes ( $\geq 12$  inches and  $< 18$  inches wide) and large vat fryers (18 to 24 inches wide). Countertop and floor-type models are eligible for the ENERGY STAR.

## Ovens

The ENERGY STAR label can be found on both convection and combination ovens. This includes full-size gas and full- and half-size electric convection ovens. Full- and half-size gas and electric combination ovens are also eligible. Commercial ovens that have earned the ENERGY STAR may feature direct-fired gas or infrared burners, improved insulation and gaskets, and digital control features that help use energy more efficiently than standard models. These technical approaches can lead to higher production capacity, improved air circulation, and faster and more uniform cooking processes. These benefits can also lead to a reduction in heat loss by the oven leading to a cooler kitchen and improved working environment.



## Cost-Saving Tips

- ▶ Look for the ENERGY STAR
- ▶ Reduce idle time & turn off back-up ovens when possible
- ▶ Fully load the oven when cooking
- ▶ Inspect and replace gaskets & tighten hinges when needed
- ▶ Maintain the steam generators in combination ovens

## Combination Ovens

Do your homework when buying a combination oven: ENERGY STAR models are on average **30 percent more energy efficient** than standard models. The combination oven is a versatile piece of cooking equipment, which often includes a self-cleaning feature. Operating a combination oven in "steam" or "combination" mode typically uses more energy and water than operating it in convection mode. Use the oven's programming capabilities to properly control different cooking modes to maximize energy efficiency and cost savings. Eligible gas combination ovens must have a capacity of 6 or more pans. For electric models, the pan capacity must be at least 5 pans and no more than 20.



## Convection Ovens

Convection ovens cook food faster because of increased hot air circulation inside the oven cavity. ENERGY STAR certified convection ovens are approximately **20 percent more energy efficient** than standard models.



### ENERGY STAR certified convection ovens can save:

- \$100 (electric) or \$150 (gas) annually
- \$1,100 (electric) or \$1,600 (gas) over the product lifetime

## Griddles

Griddles are a versatile, workhorse piece of equipment, found on most cook lines. Griddles that have earned the ENERGY STAR are approximately **10 percent more energy efficient** than standard models. Variations in efficiency, production capacity, and temperature uniformity make it important to choose wisely when shopping for a griddle.



### ENERGY STAR certified combination ovens can save:

- \$250 (gas) or \$700 (electric) annually
- \$2,500 (gas) or \$6,800 (electric) over the product lifetime

### Good practices can save:

up to \$800 annually by reducing an electric combination oven's idle time by two hours daily.

## Cost-Saving Tips

- ▶ Look for the ENERGY STAR
- ▶ Reduce idle time by turning the griddle down or off during periods of slow production
- ▶ Calibrate the griddle controls to operate at the correct temperature
- ▶ Replace missing control knobs

### ENERGY STAR certified griddles can save:

- \$100 (gas) or \$120 (electric) annually
- \$1,100 (gas) or \$1,200 (electric) over the product lifetime

### Good practices can save:

\$250 annually from a gas griddle by cutting three hours of idle time per day.

The ENERGY STAR label can be found on gas and electric, single and double-sided models that are thermostatically controlled. Manually controlled griddles and fry-top ranges are not currently eligible. Some of the approaches manufacturers use to earn the ENERGY STAR for their griddles include improved thermostatic controls, advanced burner design, and highly reflective plate materials. Some benefits of these high-performance griddles include improved uniformity of temperature across the griddle plate, and a higher production capacity.

### Hot Food Holding Cabinets (HFHCs)

ENERGY STAR certified HFHCs typically feature improved insulation, so heat stays in the cabinet and out of the kitchen. An insulated ENERGY STAR holding cabinet is approximately

**70 percent more energy efficient** than a standard model.



#### Cost-Saving Tips

- ▶ Look for the ENERGY STAR
- ▶ Shut off overnight
- ▶ Use the timer
- ▶ Replace missing or worn out control knobs



### ENERGY STAR certified HFHCs can save:

- \$300 annually for electricity
- \$2,800 over the product lifetime

### Good practices can save:

650 annually by turning off an un-insulated holding cabinet when the kitchen is closed (8 hours).

The ENERGY STAR label can be found on glass and solid door cabinets (fully enclosed compartment with one or more doors). Additionally, ENERGY STAR certified HFHCs may feature technologies such as full-perimeter door gaskets, magnetic door handles, and/or Dutch doors for increased efficiency. These approaches help certified models to offer improved temperature

uniformity within the cabinet and a cooler external cabinet temperature – resulting in a cooler kitchen and reduced impact on your air conditioning systems.

### Dishwashers

From an operational standpoint, dishwashers are one of the most expensive pieces of equipment in your kitchen. Commercial dishwashers that have earned the ENERGY STAR are on average **40 percent more energy efficient and 40 percent more water efficient** than standard models. ENERGY STAR certified dishwashers have features that conserve energy and water such as advanced controls and diagnostics, improved nozzles and rinse arm design, and heat recovery.



#### Cost-Saving Tips

- ▶ Look for the ENERGY STAR
- ▶ Turn off at night
- ▶ Replace torn wash curtains
- ▶ Repair leaks and perform regular maintenance
- ▶ Replace worn spray nozzles



You can improve the efficiency of your dishwasher even further with inexpensive good practices, such as:

- Run fully loaded dish racks through the dish machine. Cutting wash cycles could save you hundreds of dollars annually in energy, water, and chemical charges.
- Pay attention to your dishwasher's pressure gauge—if it's showing pressure above 25 psi, there is a good chance you are using much more water than is necessary. Most dishwashers require only around 20 psi.
- If you have a conveyor-style dishwasher, make sure you are using it in auto mode, which saves electricity by running the conveyor motor only when needed.

While many variables play into what type of dishwasher a facility may require, restaurants typically use undercounter or door type dishwashers while conveyor and flight type dishwashers are often found in larger restaurants and institutional kitchens. All of the abovementioned dishwasher types of can earn the ENERGY STAR.

The ENERGY STAR label can be found on high temp (hot water sanitizing), low temp (chemical sanitizing) machines, and dual sanitizing machines. The following product types are eligible: under counter; single tank, door type; single tank conveyor; multiple tank conveyor and flight type machines. Glasswashing machines; pot, pan, and utensil machines are also eligible.

To save even more money, consider purchasing a dishwasher with heat recovery technology.

ENERGY STAR certified commercial dishwashers can save:

- \$4,100 annually and \$49,000 over the product lifetime of flight type machines
- \$1,300 annually and \$15,000 over the product lifetime for other eligible dishmachines
- Additionally, ENERGY STAR certified flight type machines can save over 150,000 gallons of water annually.

## BEYOND ENERGY STAR: ADDITIONAL ENERGY-EFFICIENT KITCHEN EQUIPMENT OPTIONS

If the ENERGY STAR label is not available for the type of equipment you are looking for, don't worry you still have options. You can ask distributors and manufacturers for energy use information, and check online for equipment reviews. The California CFS incentive program is also a useful third-party resource because, like ENERGY STAR, appliances that qualify for the program must meet designated efficiency standards. The list of qualifying appliances can be found at [www.fishnick.com/saveenergy/rebates](http://www.fishnick.com/saveenergy/rebates).

### Broilers

Broilers are true kitchen workhorses but their dependability and simplicity come at a price: searing heat requires a great deal of energy and broilers have simple, non-thermostatic controls. This combination can make the broiler the most energy-intensive cooking appliance in the kitchen. For example, one gas broiler can use more energy than six gas fryers. A new generation of broilers incorporates better controls that limit the overall burner output, allowing the broiler to get the job done while consuming about 25 percent less energy.

#### Cost-Saving Tips

- ▶ Cut preheat time
- ▶ Turn off unneeded sections
- ▶ Reduce idle time
- ▶ Replace missing knobs



Good practices can save:

\$1,000 annually by cutting out three hours of idle time per day.

### Ranges

The range top is one of the most widely used pieces of equipment in restaurant kitchens. Ranges are manually controlled and can be energy guzzlers depending on how you operate them. To improve energy efficiency on your gas range, consider changing your cooking vessel. Pot designs incorporating metal fins on the bottom increase the surface area exposed to the flame, thus considerably improving heat transfer. A potential alternative to traditional ranges is induction range. While induction ranges are more expensive, they are very efficient and offer rapid heat up, precise temperature control, and low maintenance.

#### Cost-Saving Tips

- ▶ Maintain and adjust burners
- ▶ Use a lid
- ▶ Calibrate the standing pilot
- ▶ Reduce idle time
- ▶ Replace missing knobs



### Walk-In Refrigerators and Freezers

Walk-in refrigerators and freezers are important to any successful restaurant. Proper operation and maintenance can cut energy costs and prevent costly equipment failure. Improve this equipment's energy performance with a few inexpensive upgrades and good practices, such as:

- Adding strip curtains or plastic swing doors and automatic door closers to your walk-in refrigerator: they are *inexpensive and easy-to-install*. Strip curtains can cut outside air infiltration by about 75 percent!
- Swapping out incandescent light bulbs for ENERGY STAR certified light-emitting diode (LED) light bulbs, which not only use less energy but also emit less heat into the walk-in.
- Installing electronically commutated motors (ECM) on the evaporator and condenser fans can reduce fan energy consumption by approximately two-thirds.
- Performing walk-in maintenance: check and replace door gaskets; and the door sweep; adjust door hinges; clean evaporator and condenser coils; insulate refrigerant suction lines; check refrigerant charge.

#### Cost-Saving Tips

- ▶ Allow air circulation
- ▶ Insulate suction lines
- ▶ Check refrigerant charge
- ▶ Repair and realign doors
- ▶ Clean coils



## ELIGIBLE INCENTIVES & REBATES FOR EFFICIENT KITCHEN EQUIPMENT

Not only will ENERGY STAR certified equipment save you money over the product lifetime, but you may also get money back on your purchase via rebates from your local energy utility.

More than 100 utilities across the nation offer incentives for commercial kitchen equipment. To see if your state utility offers incentives use the map above, contact your local utility, or visit [www.energystar.gov/cfs/incentives](http://www.energystar.gov/cfs/incentives). Utility programs change on a regular basis. Please confirm with your utility that a rebate is still available prior to making a purchase.

## Map of Available Commercial Food Service Utility Incentives



States in blue have utilities that offer rebates for energy-efficient kitchen equipment

Even if your utility does not offer a rebate on efficient kitchen equipment, if you are doing a major renovation or retrofit, you should still contact your utility. They may have custom incentives that could apply to your project.

Incentive ranges for CFS equipment currently supported under ENERGY STAR are as follows:

PRODUCT	INCENTIVE RANGE
Dishwashers	\$50-\$2,700
Fryers	\$66-\$1,200
Griddles	\$25-\$600
Hot food holding cabinets	\$50-\$900
Ice machines	\$18-\$2,400
Ovens	\$100-\$2,600
Refrigerators and freezers	\$35-\$1,975
Steam cookers	\$70-\$3,200

### Find Monetary Incentives

Access the ENERGY STAR CFS Incentive Finder and CFS Incentive Guide at [www.energystar.gov/cfs/incentives](http://www.energystar.gov/cfs/incentives).

## HEATING, VENTILATION & AIR CONDITIONING (HVAC)

Selecting ENERGY STAR certified CFS equipment can reduce the heat output into your commercial kitchen and potentially reduce the impact on your HVAC system—lowering your utility bills and increasing comfort. Below are some additional tips to help make smart decisions about your facility's HVAC system.



### Light Commercial HVAC (LCHVAC)

For many facilities, heating and cooling is second only to food preparation in terms of annual energy consumption. ENERGY STAR certified LCHVAC equipment can save \$350 per year or more than



\$4,200 over the equipment's lifetime (assuming \$1.70 savings per square foot for a 2,500 square foot restaurant and a 12-year life).

To save additional energy in your facility, look for ENERGY STAR ventilating fans for the bathroom and ceiling fans in the front-of-the-house. ENERGY STAR certified ventilating fan models use 70 percent less energy than standard models. Certified ceiling fan/light combination units are over 50 percent more efficient than conventional units.

### Cost-Saving Tips

- ▶ Look for ENERGY STAR LCHVAC if your facility is smaller and you do not have commercial code requirements
- ▶ Clean heat-transfer coils
- ▶ Replace air filters
- ▶ Consider an Energy Management System (EMS)
- ▶ Repair broken duct work
- ▶ Re-commission economizers

According to the Consortium for Energy Efficiency (CEE), at least 25 percent of all rooftop HVAC units are oversized, resulting in increased energy costs and equipment wear. Properly sized equipment dramatically cuts energy costs, increases the life of the equipment, and reduces greenhouse gas emissions.

### Commercial Water Heaters

Commercial kitchens can also benefit from ENERGY STAR certified commercial water heaters which could save a full service restaurant \$1,500 per year. The ENERGY STAR label can be found on gas storage and instantaneous (tankless) units that use 75 percent of the energy of a conventional commercial unit by employing more efficient heat exchangers.

For more information on ENERGY STAR certified HVAC products and savings opportunities, visit the commercial water heater, ventilating fan, ceiling fan, and LCHVAC specifications at [www.energystar.gov/products](http://www.energystar.gov/products).



### Commercial Kitchen Ventilation (CKV)

An unbalanced or poorly designed kitchen exhaust system can allow heat and smoke to spill into your kitchen, spelling trouble for both your restaurant’s air quality and for your utility bills. Spillage leads to a hot, uncomfortable working environment and higher energy bills for air-conditioned kitchens. Some practices to optimize your CKV system and save energy include:

- Add side panels to hoods to increase capture and containment of heat and smoke.
- Turn off your exhaust hood when the appliances are off during non-business hours.
- Install a demand-based exhaust control which uses sensors to monitor your cooking and varies the exhaust fan speed to match your ventilation needs. Demand ventilation controls could reduce your exhaust system costs by anywhere from 30 to 50 percent and can either be installed on new equipment or retrofitted to existing hoods.

#### Learning More About Kitchen Ventilation

Kitchen ventilation is not covered by the ENERGY STAR Program, but if you are getting ready to design a new kitchen or renovate an old one, check out “Improving Commercial Kitchen Ventilation System Performance,” a two-part kitchen ventilation design guide written by the experts at PG&E FSTC and available at [www.fishnick.com/ventilation/designguides](http://www.fishnick.com/ventilation/designguides).

### LIGHT BULBS & LIGHTING FIXTURES

Lighting is a significant energy user—averaging 13 percent of the total energy use of a restaurant – and is a great place to start an efficiency upgrade. ENERGY STAR certified light fixtures and bulbs, used in both the front and back of the house, save energy, save money and help protect the environment.



In a typical restaurant, lights are usually on for 16 to 20 hours a day. For many areas in your restaurant, ENERGY STAR certified compact fluorescent lamps (CFLs), LED bulbs, and fixtures are your ticket to savings. Traditional lighting not only consumes 75 percent more energy but also wastes that extra energy as heat.

Upgrading lighting systems with efficient light sources, fixtures, and controls can reduce lighting energy use, improve the visual environment, and impact the sizing need of HVAC and electrical systems.

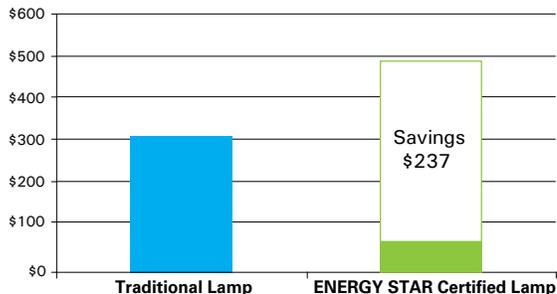


#### ENERGY STAR Lighting Tips:

- Install ENERGY STAR certified fixtures and light bulbs in your dining area and reduce energy consumption and heat output by 75 percent. ENERGY STAR certified lighting also lasts 10–25 times longer than incandescent lighting.
- Install occupancy sensors in closets, storage rooms, break rooms, restrooms, and even walk-in refrigerators. Look for sealed, low- temperature-specific sensors for refrigerated environments. Be sure to ensure compatibility with your energy-efficient lighting.
- If your restaurant features linear fluorescent lighting with T12 lamps and magnetic ballasts, it is time to upgrade. Switch to more efficient T8 or T5 lamps with electronic ballasts. Electronic ballasts typically have faster on-times and do not hum or flicker.
- Look for utility incentives for lighting upgrades in your area. Visit [www.energystar.gov/rebatefinder](http://www.energystar.gov/rebatefinder).
- Swap your old Open/Closed and EXIT signs with LED technology for additional energy savings. Visit [www.energystar.gov/lighting](http://www.energystar.gov/lighting) for more cost-saving information.

For more information about the wide array of certified lighting options and savings potential, download the “ENERGY STAR Lighting Options for Restaurants & Commercial Kitchens” fact sheet at [www.energystar.gov/cfs](http://www.energystar.gov/cfs).

**Annual Savings After Replacing Eight Traditional Lamps with Eight ENERGY STAR Certified Lamps**



#### ENERGY STAR Certified vs. Traditional Light Bulbs: Potential Savings Across U.S. Restaurant

If each of the nearly one million restaurants in the U.S. replaced only one traditional light bulb with an ENERGY STAR certified bulb, the restaurant industry could save nearly \$30 million annually and reduce CO2 emissions by more than 450 million pounds each year, equivalent to the emissions from more than 44,000 passenger vehicles.

Calculations based on 980,000 restaurants according to the National Restaurant Association 2013 Restaurant Industry Forecast.

## FRONT-OF-THE-HOUSE (AND OTHER PARTS OF YOUR FACILITY)

### ENERGY STAR Options

The ENERGY STAR program covers more than 65 product categories, many applicable to other areas of your restaurant or facility. From televisions and computers/monitors to energy-efficient windows, learn more below!



### Digital Signage

Did you know that the ENERGY STAR Program covers commercial signage displays that can be used for digital menu boards?

Commercial signage displays that earn the ENERGY STAR are, on average, **20 percent more energy efficient** than conventional models. If all commercial displays (including digital menu signage) sold in the U.S. were ENERGY STAR certified, the energy cost savings would grow to about \$205 million each year and greenhouse gas emissions equivalent to the emissions from more than 280,000 vehicles would be prevented.

### Televisions and Audio/Video Products

Televisions that earn the ENERGY STAR are on average **25 percent more energy efficient** than conventional models. TVs as large as 80" and have features such as internet connectivity have earned the ENERGY STAR. The ENERGY STAR label can also be found on products like audio amplifiers, soundbars, AV receivers, and Blu-ray disc players.

### Computers, Monitors and Printers

An office equipped with a desktop computer, LCD monitor, and multifunction device (MFD) that have all earned the ENERGY STAR and have power management enabled, can **save up to \$430 over the life of the products**.

### Other Options

#### Patio Heaters

The best approach to saving money with patio heaters is to cut back their use—both for hours of operation and for the number of patio heaters running at any given time. Patio heaters are radiant devices that heat up quickly so there is no reason to leave them running if a seating area is temporarily empty.

#### Good practices can save:

\$200 per heater annually by cutting three hours of use per day.

### Parking-lot lighting

Most parking lots are illuminated by older high-intensity discharge lighting technology without any energy-saving controls. New LED technology can cut parking lot lighting energy bills by 40 percent, or much more with controls, while delivering additional benefits including long life, reduced maintenance costs, and improved lighting uniformity.

The U.S. Department of Energy's (DOE's) Better Buildings Alliance has developed a performance specification to help building owners take advantage of these improved lighting technologies.

Restaurants are invited to join the Lighting Energy Efficiency in Parking (LEEP) Campaign for access to tools and technical assistance to help lower your facility's exterior lighting operating costs through thoughtful design of a new parking site or lighting retrofit. Campaign members have unique access to the technical expertise and may be recognized for their achievements. For more information, visit [www.leepcampaign.org/](http://www.leepcampaign.org/).

## ADDITIONAL SAVINGS TIPS – WATER & WASTE

### Water Use

In addition to energy-saving equipment, using water more efficiently preserves water supplies, saves money, and protects the environment. By conserving hot water you trim not just one but two bills: one for the water and sewer and another for the electricity or natural gas required to heat the water used in bathroom faucets, kitchen sinks, pre-rinse spray valves (PRSVs), and dishwashers.

#### Good practices can save:

- \$1,000 annually by fixing leaks in sinks, mop-stations, and dish machines
- \$1,500 annually by turning down dipper wells and making sure they are OFF when the kitchen is closed

### WaterSense®

Similar to the ENERGY STAR label, the WaterSense label identifies water-efficient products and programs. WaterSense is a partnership program sponsored by EPA, and additional information is available at [www.epa.gov/watersense](http://www.epa.gov/watersense).



Look for WaterSense labeled products and also certified professionals for restaurant landscaping:

- Labeled toilets are at least 20 percent more water-efficient
- Labeled urinals are at least 50 percent more water-efficient
- Replacing a standard clock timer with a WaterSense labeled weather-based irrigation controller can reduce irrigation water use by 15 percent

A WaterSense labeled commercial PRSV is one of the most cost-effective energy- and water-saving devices available to the food service operator. And it is easy to install! Just unscrew your old spray valve and screw in your new, water-efficient one.

## WaterSense Labeled Commercial Pre-Rinse Spray Valves (PRSVs)

In addition to minimizing hot water consumption, reduce your water-heating and sewer expenditures per month with



WaterSense labeled PRSVs. Typical spray valves can release hot water at a rate of three to four gallons of water per minute (gpm). While the current standard for high-efficiency PRSVs is 1.6 gpm, WaterSense labeled options have been independently certified to use 1.28 gpm or less without sacrificing cleaning power. What does this mean for you?

Replacing one standard 1.6 gpm PRSV with a WaterSense labeled model can save:

- More than 7,000 gallons of water per year—equivalent to washing nearly 5,000 racks of dishes.
- \$115 annually in water, sewer, and natural gas costs—paying for itself in as little as eight months!
- More than 1,700 kWh of electricity per year in kitchens that use electricity for water heating, or \$240 per year in water, sewer, and electricity costs—paying for itself in as little as 4 months.

Because kitchens use hot water to pre-rinse dishes, replacing a PRSV with a WaterSense labeled model can reduce your annual natural gas use by more than 6,400 cubic feet per year. That's enough energy to run a convection oven for 12 hours a day for three weeks. To learn more about WaterSense labeled spray valves visit [www.epa.gov/watersense/products/prsv.html](http://www.epa.gov/watersense/products/prsv.html).

### Cost-Saving Tips

- ▶ Look for the ENERGY STAR and WaterSense labels
- ▶ Install WaterSense labeled toilets and urinals
- ▶ Add faucet aerators
- ▶ Repair leaks, especially hot water leaks
- ▶ Reduce sink and tap usage

Save more money annually by implementing best practices. Facilities can use *WaterSense at Work: Best Management Practices for Commercial and Institutional Facilities* guide to identify best practices to implement and calculate potential water savings and simple payback. This guide is available at [www.epa.gov/watersense/commercial/bmps.html](http://www.epa.gov/watersense/commercial/bmps.html).

## Waste Reduction

Waste reduction is good business—helping with increased operating efficiency and cost savings. Decreased solid waste generation reduces collection and disposal costs just as reducing electricity and water consumption reduces utility bills. Waste



minimization also may reduce your purchasing costs for restaurant supplies. Use of recycling and composting bins as well as sustainable take-out containers are excellent ways to demonstrate to your customers your efforts to be more environmentally sustainable. For help identifying waste reduction opportunities please visit [www.epa.gov/wastewise](http://www.epa.gov/wastewise).

## BENCHMARK FOR CONTINUOUS IMPROVEMENT

Understanding current and past energy use is how many organizations identify opportunities to improve energy performance and gain financial benefits. By benchmarking your facility's energy use and tracking it over time, you will be able to understand the impacts of your efforts to reduce energy use and identify new opportunities.

### Portfolio Manager Guidance

ENERGY STAR's Portfolio Manager tool is designed to help businesses benchmark and track energy use, costs, and greenhouse gas emissions. Portfolio Manager also offers the option to track water use and renewable energy credits—all in a password-protected online user account. Portfolio Manager users can track individual facilities or track across an entire building portfolio.

Your commercial kitchen or restaurant can generate a Statement of Energy Performance that includes a weather-normalized kBtu/ft<sup>2</sup> energy use intensity calculation, associated greenhouse gas emissions, and a national average for similar building types. Access to the tool and free online training in the use of Portfolio Manager is available at [www.energystar.gov/benchmark](http://www.energystar.gov/benchmark).

Once you have identified the areas of potential energy savings, decide which energy efficiency upgrades you want to install and what practices to initiate. If your finances and operating schedule make it impractical to perform all of the upgrades at once, you can take a staged approach and install them as time and money allow.

Remember, having your restaurant or facilities manager 100 percent on board is absolutely key to saving your restaurant money and protecting the environment! Your best-laid energy-saving plans are only as good as the staff that is implementing them!

## Energy Audits

The best first step in improving the energy efficiency of your operations is to perform an energy audit on your facility. Energy service providers (utilities), state energy offices, and private sector product and service providers can assist you in identifying a trained professional to conduct your audit.

However, comprehensive, affordable energy audits are not available in every community, EPA provides free online, energy-saving tools and information through its ENERGY STAR Program. Basic guidance for self-assessment are part of the Guidelines for Energy Management, "Step 2: Assess Performance," at [www.energystar.gov/guidelines](http://www.energystar.gov/guidelines).

## START SAVING TODAY!

To recap what you have learned throughout this guide, you can reduce your commercial kitchen facility's energy consumption by following the tips below:

- **SELECT ENERGY STAR CERTIFIED MODELS.** If you are in the market for new equipment, think in terms of life-cycle costs, which include purchase price, annual energy costs, maintenance and other long-term costs associated with the equipment. While efficient appliances could cost more up front, lower utility bills and utility incentives can make up for the price difference. Be sure to ask your dealer or kitchen designer to supply you with ENERGY STAR certified equipment. For a list of ENERGY STAR CFS equipment dealer partners, visit [www.energystar.gov/cfs/wheretobuy](http://www.energystar.gov/cfs/wheretobuy).
- **ASK YOUR UTILITY ABOUT REBATES.** Whenever you look for new equipment, check with your utility for rebates.
- **INVESTIGATE ENERGY SAVINGS OPPORTUNITIES OUTSIDE THE KITCHEN.** The ENERGY STAR program covers more than just CFS equipment. Make sure you look for energy-efficient products in all areas of your facilities.
- **CUT IDLE TIME.** If you leave your equipment ON when it is not performing useful work, it costs you money. Implement a startup shutdown plan to make sure you are using only the equipment that you need, when you need it.

- **TAKE TIME TO EXAMINE YOUR OPERATIONS AND MAINTENANCE.** There are many low or no cost energy savings options available.
- **MAINTAIN AND REPAIR.** Leaky walk-in refrigerator gaskets, freezer doors that do not shut, cooking appliances that have lost their knobs—all these "energy leaks" add up to money wasted each month. Don't let every day wear and tear drive up your energy bills.
- **COOK WISELY.** Ovens tend to be more efficient than rotisseries; griddles tend to be more efficient than broilers. Examine your cooking methods and menu; find ways to rely on your more energy-efficient appliances to cook for your customers.
- **RECALIBRATE TO STAY EFFICIENT.** The performance of your kitchen equipment changes over time. Thermostats and control systems can fail, fall out of calibration, or be readjusted. Take the time to do a regular thermostat check on your appliances, refrigeration, dish machines, and hot water heaters and reset them to the correct operating temperature.
- **START BENCHMARKING.** Measure your progress with ENERGY STAR's Portfolio Manager tool. Access the tool and free online training at [www.energystar.gov/benchmark](http://www.energystar.gov/benchmark).

For more information, please consult the following online resources:

- ENERGY STAR Commercial Kitchen Package: [www.energystar.gov/cfs](http://www.energystar.gov/cfs)
- ENERGY STAR Restaurants: [www.energystar.gov/restaurants](http://www.energystar.gov/restaurants)
- ENERGY STAR Portfolio Manager: [www.energystar.gov/benchmark](http://www.energystar.gov/benchmark)
- PG&E Food Service Technology Center: [www.fishnick.com](http://www.fishnick.com)
- National Restaurant Association Conserve: [www.restaurant.org/conserve](http://www.restaurant.org/conserve)
- EPA WaterSense: [www.epa.gov/watersense](http://www.epa.gov/watersense)
- EPA WasteWise: [www.epa.gov/wastewise](http://www.epa.gov/wastewise)

## SHARE YOUR STORY!

Restaurants and any commercial or institutional kitchens that are using ENERGY STAR certified equipment are encouraged to tell their story at [www.energystar.gov/success](http://www.energystar.gov/success) and inspire others today!

See how other operators have used ENERGY STAR certified CFS equipment in their operations and the results they have been able to achieve.

For more information visit [www.energystar.gov/cfs](http://www.energystar.gov/cfs)



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*Promoting Energy Efficiency in Food Service*

