

COOK UP SOME SAVINGS

Putting Energy into Profits



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AND BOOST YOUR BOTTOM LINE.

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Save Energy. Save Money.

Energy Star Guide for Restaurants

Every dollar saved through energy efficiency is a dollar of additional profit, and even modest improvements to efficiency can lead to major increases in overall profits. In the case of new appliances, it pays to look beyond the sticker price. Make an energy-smart purchase by thinking in terms of life-cycle costs, which include purchase price, annual energy costs, and other long-term costs associated with the equipment. Thinking in the long term can really pay off. Multiply those annual savings by the entire life of the appliance and the financial benefits of energy efficiency become truly striking.

Full Service Restaurant - Standard vs. Energy Efficient Product Savings Estimates

Technology	Standard Equipment (\$/yr)	Energy Efficient Equipment (\$/yr)	Savings (\$/yr)
Solid Reach-in Refrigerator	\$210.00	\$97.00	\$113.00
Under-counter Refrigerator	\$146.00	\$124.00	\$22.00
Solid Reach-in Freezer	\$432.00	\$281.00	\$151.00
Walk-in Freezer/Cooler	\$118.00	\$39.00	\$80.00
Hot-Food Holding Cabinet	\$767.00	\$438.00	\$329.00
Fryer	\$1,169.00	\$806.00	\$364.00
Steamer	\$2,700.00	\$508.00	\$2,191.00
Under-counter Freezer	\$228.00	\$196.00	\$32.00
Glass Reach-in Refrigerator	\$325.00	\$163.00	\$162.00
Convection Oven	\$1,051.00	\$731.00	\$320.00
Prep Table	\$406.00	\$182.00	\$223.00
Toaster	\$964.00	\$128.00	\$836.00
Broiler	\$3,539.00	\$2,882.00	\$657.00
Combination Oven	\$4,163.00	\$2,596.00	\$1,567.00
Pre-rinse Sprayer	\$1,973.00	\$1,052.00	\$921.00
Ware Washer	\$7,657.00	\$6,432.00	\$1,226.00
Ice Machine	\$3,650.00	\$2,940.00	\$710.00
Demand Control Exhaust Hood	\$7,500.00	\$5,000.00	\$2,500.00
Griddle	\$1,117.00	\$1,056.00	\$61.00
	\$38,115.00	\$25,651.00	\$12,465.00

Assumptions: \$0.10/kWh, \$1.00/therm, \$2.00/CCF water, \$3.00/CCF Sewer. Steamer and spray nozzle savings include consideration of water and sewer costs. Attributes for standard-efficiency appliances and high-efficiency appliances derived from default settings in online calculators.

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ENERGY STAR Guidelines for Energy Management

Steamers

Until recently, most steamers were boiler-based water hogs, consuming an average of 40 gallons of water per hour. Bringing so much water to a boil requires a lot of energy—thousands of dollars worth per year for larger restaurants.

- **Invest in connectionless technology.** Connectionless steamers require less maintenance than boiler-based steamers and consume far less energy and water. Field testing by the Food Service Technology Center (FSTC) has shown just how great the savings can be: In one head-to-head challenge between a three-pan connectionless steamer and a traditional, boiler-based steamer, the connectionless steamer slashed annual water bills by \$2,000 and annual electricity bills by \$3,000.
- **Close the door!** Your profits are literally evaporating away if you're operating your steamer with its door open.
- **Use only as many compartments as you need.** With steamers, two—or three or four—compartments are not better than one when it comes to saving energy and money. Shut down unnecessary compartments during slow periods.
- **Cut standby time.** Eliminating an hour of standby time daily on a boiler-based steamer can save from \$50 to \$300 over the course of a year.
- **Use the timer.** If you're not using your steamer's timer, you're probably paying the price for it. Timers save energy by ensuring that the steamer runs at full heat only when needed.
- **Keep it clean.** Flushing out the boilers and removing mineral deposits will help ensure that you're always operating at maximum efficiency.
- **Fix leaks.** When gaskets loosen or tear, don't waste time before replacing them. Steam leaks reduce cooking efficiency and drive up utility bills.

Broilers

Broilers are true kitchen workhorses, but their dependability and usability come at a price: one broiler can use as much energy as six fryers! Making matters worse, broilers tend to rank among the least efficient appliances in the kitchen. Fortunately, a few good cooking habits can help trim energy waste and have a direct impact on your bills.

- **Cut preheat time.** Don't start the heat before you need it—you'll waste energy and needlessly heat up your kitchen, forcing your air conditioner to work harder. A typical broiler requires no more than 20 – 30 minutes to preheat.
- **Reduce the cooking area.** Because broilers use so much energy, turning off a section of your broiler can yield noticeable savings.
- **Eliminate standby time.** Don't leave your broiler at full heat during long lulls in activity—turn it down or off whenever possible. If you can manage to cut three hours of standby time every day, you could save upwards of \$1,350 annually.
- **Rely on your griddle.** For some restaurants, griddles may be good alternatives to broilers. Thermostatically controlled griddles tend to use far less energy than broilers, and grooved griddles can be used to sear "grill marks" onto foods so they look broiled.
- **Align broilers with exhaust hoods.** Sometimes appliances get pulled out for cleaning and don't make it all the way back under the exhaust hood. This adds extra heat and smoke to the kitchen. Make sure that your broiler is fully under the hood and pushed as far back to the rear wall as possible.



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Pasta Cookers

You might not think that doing something as simple as boiling water could cost thousands of dollars per year, but that's probably the case—especially if you happen to cook enough pasta to require a dedicated pasta cooker.

- **Dial in minimum settings.** Do you boil water with your temperature dials to the max? If so, you might be throwing away more than \$1,000 per year. Find the minimum settings required to maintain a boil—your food will cook just as fast, and you'll slash your energy bills in the process.
- **Cut the idle time.** Shutting down appliances during slow hours is always a good idea. In the case of pasta cookers, you could save \$600 annually simply by cutting two hours of idle time each day. If you can't shut down your pasta cooker, consider at least turning it down—a pasta cooker standing by at less than boiling temperature will use far less energy than a pasta cooker running a constant boil.

Dishwashers

- **Don't waste the space!** You'll pay the same amount to run a half loaded dish rack as a fully load one, so make sure you only run fully loaded dish racks through the dish machine. Cutting wash cycles could save you hundreds of dollars annually.
- **Turn it off.** High-temp dishwashers typically feature internal tank heaters. If you've got one of these dishwashers and you're not turning it off at night, you're wasting energy by heating water that you don't need. The same holds true for booster heaters and dishwasher exhaust hoods.
- **Check rinse pressure.** Pay attention to your dishwasher's pressure gauge—if it's showing pressure above 25 psi, there's a good chance you're using much more water than is necessary. Most dishwashers require only around 20 psi.
- **Check water temperature.** Follow manufacturer specifications for tank temperature and rinse temperature.
- **Operate conveyors in auto mode.** If you have a conveyor-style dishwasher, make sure you're using it in auto mode, which saves electricity by running the conveyor motor only when needed.
- **Add or maintain wash curtains.** Wash curtains—the plastic strips that hang on both sides of conveyor dishwashers—improve washing efficiency by trapping heat. Replace curtains when the old ones begin to deteriorate.
- **Design your new dishwashing system with both energy and water efficiency in mind.** Compared to a standard electric booster heater, a gas booster heater could trim energy costs significantly due to the relative lower cost of natural gas as a fuel. Also, look for dishwashing systems that use one gallon or less of water per rack washed—typically, the less water required per rack, the less you'll pay in energy costs.
- **Consider heat recovery.** Refrigerant heat-recovery systems use waste heat from the walk-in refrigerators and freezers to preheat water that can be used in the kitchen. These systems are relatively simple and have reasonable payback periods when installed in kitchens with moderate to high hot-water needs.

Fryers

Fryers are one of four classes of kitchen equipment that include ENERGY STAR qualified models. Simply look for the ENERGY STAR label when narrowing down your purchase options; once you're up and running, mix in some of the smart cooking practices below and you'll be on the fast track to lower bills.

- **Buy an ENERGY STAR qualified fryer.** Fryers that have earned the ENERGY STAR label are up to 25 percent more energy-efficient than standard models. With natural gas fryers, the added efficiency can save you about \$350 annually.
- **Cut idle time.** FSTC has observed that kitchen fryers tend to spend upwards of 75 percent of the day idling. Cutting out four hours of idle time each day could save around \$250 annually for a gas fryer and about \$350 for an electric fryer.
- **Check and adjust thermostats.** Are you cooking hotter than you think? It's not uncommon for fryer thermostats (or any other appliance thermostat, for that matter) to lose accuracy over time. Invest in periodic temperature checks and recalibration as necessary.

Braising Pans

- **Close the lid.** FSTC has found that you can use 50 percent less energy simply by closing your braising pan's lid during periods of extended use.
- **Buy an insulated braising pan.** If you're in the market for a braising pan, look for one with insulated walls.



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Refrigerators and Freezers

- **Buy ENERGY STAR.** Compared to standard models, ENERGY STAR labeled commercial solid door refrigerators and freezers can lead to energy savings of as much as 45 percent.
- **Turn off door heaters.** Simply switch off the door heater on your reach-in refrigerator or freezer and you could save up to \$75 annually per door. Turn the switch back on if you notice significant frost around the door or if there is water dripping on the floor from the front of the refrigerator.
- **Allow for air circulation.** Refrigerators remove heat from inside the box and reject that heat out through the coils on the top or bottom of the unit. Don't push your reach-ins into tight spaces where that heat will build up or the unit will end up working harder and using more energy.
- **Clean condenser and evaporator coils.** If you take a look at your refrigerator's condenser you'll see that the fins are virtual magnets for dust and grime which blocks air flow across the coils and drags down efficiency.
- **Close the lid on your food wells.** Leaving the lid up on your prep table could increase electricity consumption by up to percent.
- **Check and set defrost cycles.** The key is to only defrost for as long as you need, which in most cases is no more than 15 minutes, four times daily. Find your defrost time clock: Use the pins on the outside ring to set the number of defrost cycles, and use the center dial to set how long each defrost cycle lasts. One restaurant owner saved more than \$800 annually by shortening the length of each defrost cycle from 70 minutes to 15 minutes.
- **Replace old gaskets.** Add new door gaskets to any refrigerator that has torn or loose door gaskets.
- **Upgrade your walk-in.** By some estimates, strip curtains alone can cut outside-air infiltration by 75 percent.
- **Use efficient lights.** Swapping out incandescent lights for low-temperature CFLs in your walk-in is a smart move. Incandescent lighting gives off much more heat than CFLs, forcing your refrigerator to work harder.
- **Shade remote condensers.** Use a few strategically placed panels to shade the condenser from direct sun during the hottest part of the day, while still allowing for good airflow into and around the condenser unit.
- **Insulate suction lines.** Adding inexpensive insulation to suction lines can help keep them from absorbing heat during the transfer process, ultimately making the entire refrigeration process more efficient.
- **Add night curtains to display cases.** Cut down on energy waste by installing night curtains, which will help trap cold air inside the refrigerator case while you're closed.
- **Recharge low refrigerant.** Operating a walk-in with too little refrigerant puts extra strain on the compressor, driving energy costs up and increasing the risk of equipment failure. Fortunately, it's fairly simple to keep track of your refrigerant level; simply look for the sight glass—the small window into the refrigerant line—on the condenser. If you see bubbles while the system is running, then it's probably time to arrange for a recharge.
- **Switch to efficient fan motors.** Installing efficient fan motors—specifically, the “electronically commutated” (ECM) variety—on a small, two-fan walk-in freezer has been shown to save about \$200 a year per fan.

Holding Cabinets

When it comes to saving energy with hot food holding cabinets, the answer is in the insulation. Well-insulated holding cabinets have been shown to be up to 65 percent more efficient than un-insulated models. Expect to save between \$350 and \$450 annually simply by choosing a well-insulated cabinet.

- **Buy an ENERGY STAR qualified cabinet.** Each ENERGY STAR qualified hot food holding cabinet can save businesses nearly 3,300 kWh annually, or an average of \$330/year on utility bills.
- **Shut it off!** Don't waste energy by heating empty space—implement a shutdown schedule and make sure your cabinets are part of it. An un-insulated holding cabinet left idling for eight hours every night could wind up costing you around \$500 per year! On some models, electronic control systems can monitor up to six, independent timers for each compartment, to facilitate “first-in, first-out” product rotation.

Griddles

- **Cut standby time.** Chances are that you don't need your griddle ready and waiting all day, every day. Save up to \$250 annually by cutting three hours of griddle standby time per day.
- **Invest in a double-duty griddle.** Consider a model that features both grooved and flat cooking surfaces—especially if you do a lot of broiling. Griddles tend to be more efficient than broilers, and grooved griddles can achieve broiler-like char marks on food. Shifting cooking duties from a broiler to a grooved griddle will save money.



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Ice Machines

- **Shift your ice production time.** Cut down on your daytime electricity demand by installing a timer and shifting ice production to nighttime off-peak hours. Most restaurants pay less for electricity at night and you'll be turning off a hot, noisy piece of equipment during normal kitchen hours.
- **Shop for efficiency.** Ice machine manufacturers voluntarily list the water and energy-use numbers for their ice-cube machines with the Air Conditioning and Refrigeration Institute. With this list in hand, you can comparison shop for the most efficient ice machine and save yourself hundreds of dollars a year in water and electricity bills.
- **Purchase with capacity in mind.** Bigger ice machines are typically more efficient than smaller ones in the sizes used by most restaurants. For instance, a 520 pound-per-day machine will make ice using as little as half the energy per pound of ice produced as needed by a smaller 200 pound-per-day machine. The best part is that the bigger 520-pound machine does not cost twice as much as the 200-pound unit. So, choose wisely and you could get twice the ice capacity at half the energy cost per pound of ice. The larger machine also makes it easier to shift all of your ice making to nighttime hours.

Ranges

Like broilers, ranges are manually controlled and can be energy guzzlers depending on how you use them.

- **Maintain and adjust burners.** Wavy, uneven or yellow flames are all signs that it's time for a good burner cleaning and adjustment of the air shutter. Loosen the adjustment screw and move the shutter until the flame is bullet shaped and mostly blue, then retighten the screw. Never drill out the burners or the gas orifice to get a bigger flame—you'll end up lowering the efficiency of your burner.
- **Put a lid on it.** Use a lid on stockpots to hold in heat, boost efficiency, and shorten cook times.
- **Consider induction technology.** Induction ranges are a potential alternative to traditional range tops; they are more expensive than traditional gas or electric ranges but offer very high efficiency, rapid heat up, precise controls, and easy maintenance. Induction hobs can be purchased as single units or grouped together and can be set on top of or built into counter tops. Induction cook tops do require magnetic cookware in order to work properly.

Ovens

- **Use "combi" mode sparingly.** Combination mode can use double the energy use of convection mode. Worse still, ovens operating in combination mode can use upwards of 40 gallons of water per hour! Typically, it is not necessary to operate these units in the combination mode during an entire cooking cycle. Follow the manufacturer's recommendations—use the oven's built-in programmability and limit the amount of cooking in the combination cycle.
- **Cut idle time.** The bigger the oven, the more energy you're wasting by leaving it idle. The amount of energy wasted can quickly add up, especially with conveyor ovens, which allow heat to escape at both ends. Turn ovens down or off during slow periods, shut down your backup ovens during lulls and shut oven doors all the way when the oven is empty but still on.
- **Keep it full.** It is more efficient to cook in a fully loaded oven than a partially loaded one. If your workload permits it, cook in large batches and then turn off the oven in between loads.
- **Replace seals and tighten hinges.** When seals and gaskets tear, replace them. When oven door hinges loosen, tighten them and re-align the doors.

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