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Food service businesses use almost two and one-half times as much energy per square foot as the average commercial building. Nearly half of this energy use is attributable to food preparation and refrigeration. Energy efficiency, therefore, is critical to profitability.

In many cases, the easiest and least expensive thing you can do is to modify the way you operate the cooking equipment. The tips listed below can help you save money without any investment in new equipment. Upgrading your cooking equipment is another good way to save money on your energy bills. This may require a capital investment, but using efficient equipment can make a big difference.

COOKING PRACTICES

- Preheating for longer than 10 to 15 minutes is generally unnecessary. For items other than baked goods, preheating is generally not needed at all.
- Fill cooking equipment to capacity whenever possible.
- Use microwave ovens; they use significantly less energy than other cooking equipment and can be used for thawing, partially cooking and reheating food.
- Use ovens, fryers and steamers, which are typically more efficient than range tops, griddles and broilers.
- When cooking on a range top, use the right size pot, and use a lid. Pots should be no more than one inch larger in diameter than the burner on which they sit. If you put a small pot on a large burner, more heat can escape and heat the room. Cooking with a lid is estimated to increase efficiency by 8 percent to 14 percent.
- Clean grease and sediment off of cooking equipment so that build-up does not make your cooking equipment work harder and use more energy.
- Load and unload the oven as quickly as possible. Every second the oven door is open, the temperature drops 3 to 10 degrees.
- Fry items between 300 and 350 degrees Fahrenheit and idle at 200 degrees. Higher temperatures are inefficient and unnecessary. Idling fryers at 200 degrees can conserve up to 50 percent of energy use per hour.

- Use a steamer when possible. Steam cooking is the most efficient form of cooking because it cooks moderately, transfers heat rapidly, requires little preheating and shortens cooking time. Begin cooking in a steamer to partially cook food and finish with your usual cooking method.

COOKING EQUIPMENT

- **Induction stovetops** heat the pan by creating a strong magnetic field to induce a current in the pan. The current causes the pan to heat and cooks the food. The stovetop stays relatively cool, since all heat is generated in the cookware. A conventional burner uses some of its energy to directly heat up the room, further taxing air conditioning equipment.
- **Flashbake ovens** use a combination of intense visible light from halogen bulbs and infrared energy to cook food and produce a browning effect in half the time of conventional ovens. They only operate when cooking is actually taking place, so no preheating is required.
- **Convection ovens** use fans to circulate hot air around food as it cooks. The motion of the air increases the rate at which heat is transferred to the food. As a result, convection ovens cook food more quickly (as much as 10 percent) and at lower temperatures (as much as 25 degrees Fahrenheit) to achieve the same result as conventional ovens. Also, convection ovens can be loaded more fully than conventional ovens due to the increased circulation. The U.S. Department of Energy estimates that convection ovens are 23 percent more efficient than conventional ovens.
- **Pressure cookers** can save up to 66 percent on energy costs compared to cooking with pots and pans on a range-top. For a given burner setting, pressure cookers cook at higher temperatures because the pressure they produce raises the boiling point. The higher temperature allows the cooking to be completed faster, reducing energy costs by up to two-thirds.

KITCHEN VENTILATION

- **Ventilation controls** reduce the use of the fan motor. Many kitchens operate at 25 percent of capacity or less, for periods during the day, yet exhaust fans typically run at full power all day. Not

only does the fan motor run when it is not needed, but conditioned air from inside the building is being exhausted unnecessarily, putting a heavier burden on heating and air conditioning systems. Installing exhaust ventilation controls can save 30 percent or more of the energy costs associated with kitchen ventilation.

Example: In a 2,000 square foot restaurant in Wisconsin, annual ventilation fan use may be 5,000 kWh per year. Total cooling may be 9,000 kWh per year, of which roughly half (4,500 kWh) could be due to the ventilation. Total heating may be 2,000 therms, of which roughly half (1,000 therms) could be due to the high amount of ventilation. Installing ventilation controls could save 3,000 kWh of electricity or more (about \$210) and 300 therms of gas (about \$150) each year, for a total annual energy savings of \$360.

- **Energy efficient exhaust hoods** draw in outside air at the perimeter of the hood and substitute it in the exhaust air stream for conditioned air. This reduces the amount of conditioned room air that leaves the building, meaning that less outside air will need to be brought into the building and conditioned.
- **Side curtains on vent hoods** allow the ventilation fan velocity to be reduced, saving fan motor power and reducing the amount of conditioned air being exhausted.

- **Shut ventilation hoods when leaving** since allowing vent hoods to run when the restaurant isn't operating is extremely wasteful.

DISHWASHING

- Fully load the dishwasher before running it.
- Install high efficiency gas booster heaters to replace electric or older gas boosters.
- Vent heat and humidity out of the kitchen to avoid putting a greater burden on the air conditioning.

Example: A full service restaurant serving 300 meals per day uses about 210 gallons per day for high temperature dishwashing. This results in 11,225 kWh of electricity use, or \$785. If the booster heater were switched to a natural gas model, the new unit would use 480 therms, or \$290 annually. The net cost savings for this retrofit would be \$495 (assumes \$0.07/kWh, \$0.60/therm, 7 days/week operation).

FOR MORE INFORMATION

Focus on Energy offers technical data sheets on refrigeration equipment and lighting. To obtain these publications and learn about other ways to improve your energy efficiency, contact your Focus on Energy advisor, or call 800.762.7077.